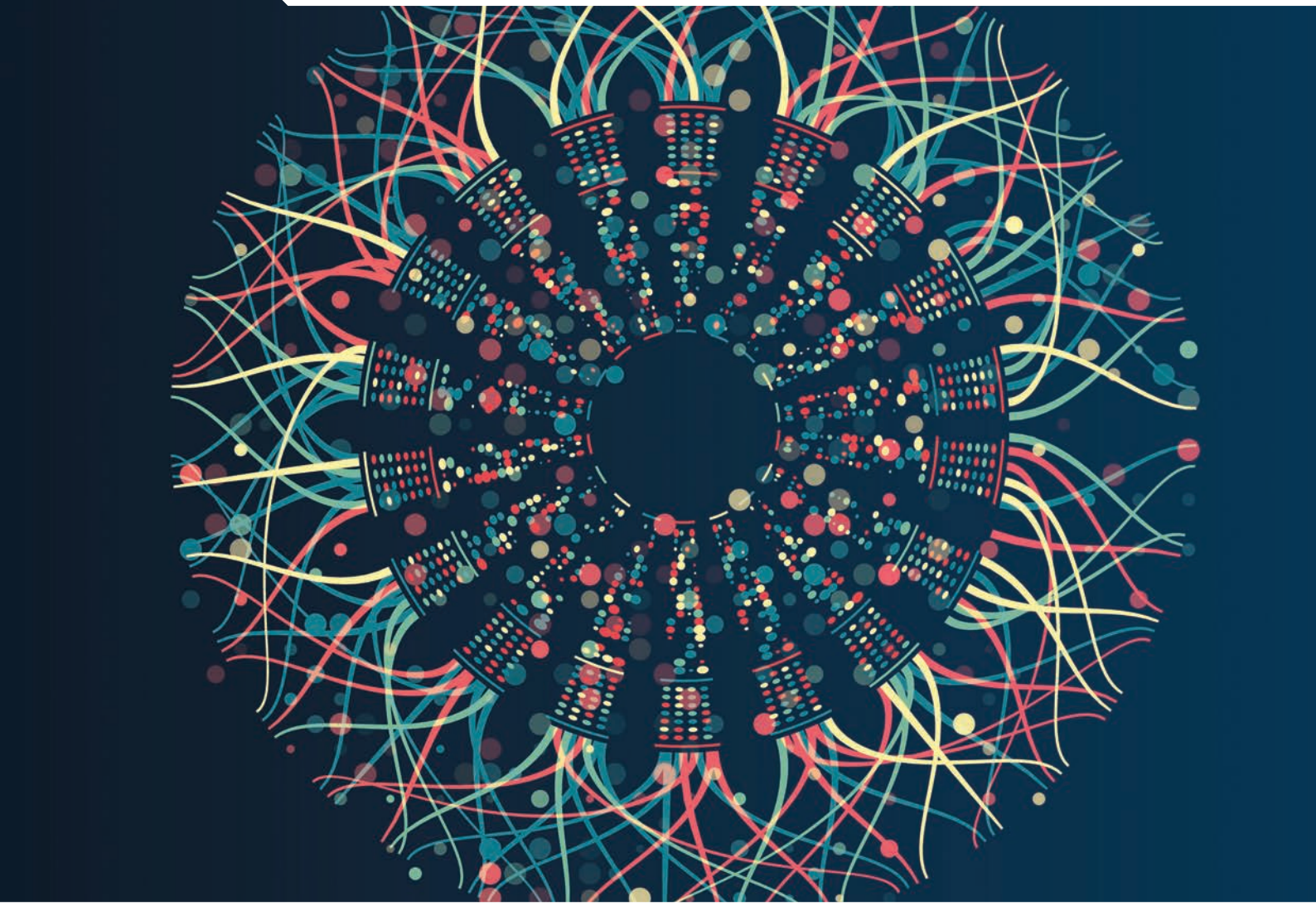
OECD SME and Entrepreneurship Outlook 2023



OECD

OECD SME and Entrepreneurship Outlook 2023



This document, as well as any data and map included herein, are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.

The statistical data for Israel are supplied by and under the responsibility of the relevant Israeli authorities. The use of such data by the OECD is without prejudice to the status of the Golan Heights, East Jerusalem and Israeli settlements in the West Bank under the terms of international law.

Note by the Republic of Türkiye
The information in this document with reference to "Cyprus" relates to the southern part of the Island. There is no single authority representing both Turkish and Greek Cypriot people on the Island. Türkiye recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Türkiye shall preserve its position concerning the "Cyprus issue".

Note by all the European Union Member States of the OECD and the European Union
The Republic of Cyprus is recognised by all members of the United Nations with the exception of Türkiye. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Please cite this publication as:
OECD (2023), *OECD SME and Entrepreneurship Outlook 2023*, OECD Publishing, Paris, https://doi.org/10.1787/342b8564-en.

ISBN 978-92-64-85147-4 (print)
ISBN 978-92-64-89576-8 (pdf)
ISBN 978-92-64-86345-3 (HTML)
ISBN 978-92-64-97529-3 (epub)

OECD SME and Entrepreneurship Outlook
ISSN 2959-9490 (print)
ISSN 2959-9504 (online)

Photo credits: Cover © ArtHead-/Gettyimages.

Corrigenda to OECD publications may be found on line at: www.oecd.org/about/publishing/corrigenda.htm.

© OECD 2023

The use of this work, whether digital or print, is governed by the Terms and Conditions to be found at https://www.oecd.org/termsandconditions.

Preface

The global economy has begun to recover from the succession of recent shocks, including COVID-19, Russia's war of aggression against Ukraine, and also other geopolitical tensions. As the international community continues to reflect on and adapt its policy responses to address the immediate impacts of these shocks, governments also need to consider the longer-term policy challenges. Small and medium-sized enterprises (SMEs) and entrepreneurs have been on the front-line of these developments and many countries provided significant policy support to shield them from the shocks. Now, building resilience to future crises and harnessing their potential to contribute to major economic, environmental, and societal transitions, will require more targeted efforts.

Governments have been engaged across multiple fronts to enable SMEs and entrepreneurs navigate this complex and evolving environment. This includes efforts to strengthen the resilience and sustainability of global value chains (GVCs) and increase the capacity of SMEs and entrepreneurs to integrate, partner and build stronger linkages with multinationals, as well as by closing gender gaps in exporting through targeted programmes. They have also continued supporting SME integration into (global) knowledge and innovation networks and deployed efforts to respond to rapidly changing skills demands.

As governments revert back to more prudent fiscal policies and phase out blanket temporary support for SMEs and entrepreneurs, they will need to ramp up their support to increase SMEs access to technology, data, finance, and skills. Business networks are an often under-utilised vehicle to help SMEs access key resources and to scale-up their businesses, as they contribute to knowledge spillovers and generate external economies of scale. SMEs and entrepreneurs still have limited participation in GVCs due to their lack of access to business networks. And the simultaneous disruptions and shifts now occurring across a multitude of both production and innovation networks may reduce their chances to develop, integrate and evolve across different networks.

The 2023 edition of the SME and Entrepreneurship Outlook provides new evidence and analysis on the structure and performance of the SME and Entrepreneurship (SME&E) sector and developments in business conditions to help inform policy responses. It also takes a deep dive into ongoing or possible disruptions and reconfigurations of different SME&E networks, during and post-COVID, and the role governments can play, and are playing, to improve SME&E access to production, knowledge and innovation networks for driving the recovery and adapting to major transitions.

This SME and Entrepreneurship Outlook will support the 2023 Meeting of the Committee on SMEs and Entrepreneurship (CSMEE) at Ministerial Level, where it is being launched. This publication, alongside the OECD Recommendation on SME and Entrepreneurship Policy, the Recommendation on SME Financing and the OECD Data Lake on SME and Entrepreneurship Policies, is part of the OECD's efforts to monitor SME&E business conditions and performance, and support governments in ensuring that their SME and Entrepreneurship policies help them prepare for future changes in their business environment.



Mathias Cormann
OECD Secretary-General

Foreword

The SME and Entrepreneurship Outlook is a biannual flagship publication produced jointly by the OECD Centre for Entrepreneurship, SMEs, Regions and Cities (CFE), led by Lamia Kamal-Chaoui, and the OECD Statistics and Data Directorate (SDD), led by Paul Schreyer. The report was prepared under the aegis of the OECD Committee on SMEs and Entrepreneurship (CSMEE).

The first edition, released in 2019, provided comparative evidence on business dynamics, productivity growth, wage gaps and export trends, as well as a comprehensive overview of SME&E business conditions and policy frameworks. In 2021, the second edition focused entirely on the impact of the COVID-19 crisis on SMEs and entrepreneurs and related policy responses. This third edition of the report resumes the series by providing a post-pandemic perspective on the structure and performance of the SME and Entrepreneurship (SME&E) sector, recent shifts in SME&E business conditions, and related policy developments, offering guidance to governments on how to build SME resilience to future crises.

Sandrine Kergroach (Head of the SME and Entrepreneurship Performance, Policies and Mainstreaming Unit, CFE) coordinated the production of the 2023 edition under the overall supervision of Céline Kauffmann (Head of the Entrepreneurship, SME and Tourism Division, CFE), Annabelle Mourougane (Head of the Trade and Productivity Statistics Division, SDD), Nadim Ahmad (Deputy Director, CFE) and Asa Johansson (Deputy Director, SDD).

Chapter 1, “Recent SME Developments and Forthcoming Challenges”, was prepared by Annabelle Mourougane, Gueram Sargsyan (SDD) and Sandrine Kergroach, with input from Marco Marchese (CFE). Thanks to Lucia Cusmano, Miriam Koreen and Maria Camila Jiménez Suárez for their comments (all CFE).

Chapter 2, “The Role of Networks for SME Innovation, Resilience and Sustainability”, was prepared by Sandrine Kergroach with inputs from Chiara Petroli and Lora Pissareva (CFE). Thanks to Mario Cervantes (OECD Directorate for Science, Technology and Innovation, STI) for providing comments.

Chapter 3, “Women-led Firms in International Trade”, was prepared by Jane Korinek (OECD Trade and Agriculture Directorate, TAD), Annabelle Mourougane and Elisabeth Van Lieshout (TAD), and benefited from comments by the OECD Working Party of the Trade Committee. Thanks to David Halabisky and Bruno De Menna (CFE) for their inputs, and to Julia Nielson (TAD) for providing comments.

Chapter 4, “SMEs in more Resilient, Sustainable and Circular Supply Chains”, was prepared by Sandrine Kergroach, with input from Milenko Fadic, Chiara Petroli and Juan Felipe Rodrigo Lopez (all CFE). It benefited from comments from Jane Korinek and Sébastien Miroudot (TAD), and Stratos Kamenis and Martin Wermelinger of the OECD Directorate for Financial and Enterprise Affairs (DAF).

Chapter 5, “Knowledge and Innovation Networks for SMEs and Start-Ups”, was prepared by Sandrine Kergroach, Lora Pissareva and Jonathan Potter, with input from Madison Lucas, Juan Felipe Rodrigo Lopez, Pablo Shah, and Ekaterina Travkina (all CFE). Thanks to Marco Bianchini (CFE) for his comments.

Chapter 6, “The Role of SME Ecosystems in Upskilling, Reskilling and Finding Talent”, was prepared by Lucia Cusmano and Raffaele Trapasso, with inputs from Lukas Kleine-Rueschkamp, Insung Kwon and Giorgia Ponti (all CFE). Thanks to Luca Marcolin (OECD Economics Department, ECO) for providing comments.

The country profiles were designed by Sandrine Kergroach and Annabelle Mourougane. Milenko Fadic coordinated the production and review process, jointly with Sergio Montoya (CFE). Thanks to Perla Ibarlucea Flores (DAF) and Gueram Sargsyan (SDD) for statistical input.

Bruno De Menna (CFE) assisted with the coordination of the overall publication. Oualid Mokhantar, Sergio Montoya and Juan Felipe Rodrigo Lopez (CFE) carried out policy mappings and research work.

Thanks also to Marion Jansen (Director, TAD), Lamia Kamal-Chaoui (Director, CFE) and Paul Schreyer (Director, SDD) for commenting on the publication at different stages of its development.

The publication process was managed by CFE. François Iglesias designed the cover and Pilar Philip served as coordinator. Heather Mortimer-Charoy provided project and secretariat assistance.

This report was developed as part of the Programme of Work and Budget of the OECD Committee on SMEs and Entrepreneurship (CSMEE) and the OECD Statistics and Data Directorate (SDD). The final report was approved by written procedure on 31 May 2023.

Table of contents

Preface 3

Foreword 4

Acronyms and abbreviations 17

Executive summary 21

1 Recent SME developments and forthcoming challenges 23
In Brief 24
Recent SME performance has been uneven across firms, sectors and countries 25
SMEs face mounting short-term challenges 39
The pace of digitalisation is rapid but still brings challenges to SMEs 48
The transition to a decarbonised economy requires rethinking industrial systems and business models 53
References 54

Part I Thematic chapters 61

2 The role of networks for SME innovation, resilience and sustainability 62
In Brief 63
SMEs need to transform and their networks can enable them to leapfrog 64
SMEs are part of a complex network of networks 64
Networks are critical for SME transitions towards higher productivity, resilience and sustainability 67
SMEs' ability to integrate networks and take advantage of them remains limited 73
There is a large range of policy measures to support SME network expansion 76
Annex 2.A. Definitions 79
Annex 2.B. Networks and their impact on SME performance: Insights from the literature 82
Annex 2.C. Agglomeration benefits in innovation and production networks 84
References 85
Notes 91

3 Women-led firms in international trade 93
In Brief 94
Issue 96
Exporting by entrepreneurs and gender export gaps 96
Impact of the COVID-19 pandemic 102

Challenges accessing international markets 103
Policies to support women business leaders in trade 108
Annex 3.A. Descriptive statistics of Future of Business Survey sample 120
References 121
Notes 124

4 SMEs in more resilient, sustainable and circular supply chains 127
In Brief 128
Introduction and background 129
Issue: Challenges and opportunities for SMEs in existing and emerging GVCs 130
Recent shocks and structural changes in GVCs 134
SME&E policy action for more resilient, sustainable and circular GVCs 147
Annex 4.A. Russia and Ukraine in global trade 155
Annex 4.B. Structural changes in GVCs 157
References 161
Notes 170

5 Knowledge and innovation networks for SMEs and start-ups 171
In Brief 172
Introduction and background 174
Issue: The importance of knowledge and innovation networks for SMEs and start-ups 174
SMEs amidst shifting innovation networks: Structural and emerging trends 176
The role of public policy in shaping and strengthening SME knowledge and innovation networks 192
Annex 5.A. Additional statistical material 202
References 204
Notes 210

6 Upskilling, reskilling and finding talent: The role of SME ecosystems 211
In Brief 212
SME skills needs are evolving rapidly due to the digital and green transition 213
Several short-term and structural factors limit SMEs' access to talent 219
Skills policies need to account for the specificities of SMEs 226
Conclusion 233
References 233
Notes 239

Part II Country profiles 241

7 Reader's guide 242
Reader's guide 242
Caveats and caution in interpretation 248
References 248

8 Country Profiles 251
Australia 251
Austria 256
Belgium 262
Canada 268
Chile 274
Colombia 277

Costa Rica 281
Czech Republic 286
Denmark 292
Estonia 298
Finland 304
France 310
Germany 317
Greece 323
Hungary 330
Ireland 337
Iceland 343
Israel 348
Italy 354
Japan 361
Korea 366
Lithuania 372
Luxembourg 379
Latvia 384
Mexico 389
Netherlands 395
Norway 401
New Zealand 407
Poland 414
Portugal 420
Slovak Republic 426
Slovenia 432
Spain 437
Sweden 443
Switzerland 449
Türkiye 455
United Kingdom 462
United States 468
References 474

Annexe A. Sources and definitions 475

FIGURES

Figure 1.1. Firm entries and exits since 2018 26
Figure 1.2. Firm entries and exits in selected OECD countries 27
Figure 1.3. Firm entries and exits by sector 27
Figure 1.4. Firm bankruptcies 28
Figure 1.5. Change in bankruptcies in selected countries 29
Figure 1.6. Changes in the number of SMEs, 2021 30
Figure 1.7. Increase in the number of firms by sector in the United States 31
Figure 1.8. Growth in the number of start-ups 32
Figure 1.9. Distribution of SMEs sales growth in 2021 33
Figure 1.10. Percentage of SMEs with an increase in sales 34
Figure 1.11. Determinants of the 2021 increase in sales 35
Figure 1.12. Employment and value-added annual growth by firm size in the European Union 36
Figure 1.13. Labour productivity in micro and large firms 37
Figure 1.14. Shift-share analysis of productivity 38

Figure 1.15. Exposure of SMEs to trade with Russia and Ukraine 39
Figure 1.16. Framework to assess the vulnerability of SMEs to energy prices 40
Figure 1.17. Vulnerability analysis, 2018 41
Figure 1.18. Global economic and policy uncertainties 42
Figure 1.19. Supply-chain disruptions in SMEs in 2021 45
Figure 1.20. Proportion of SMEs with a Facebook page receiving government support since the start of the pandemic 47
Figure 1.21. Firms purchasing cloud computing services 50
Figure 2.1. A typology of SME networks: Stylised view 65
Figure 2.2. Innovative firms (even smaller ones) co-operate more than non-innovative ones (even the larger) 69
Figure 2.3. Co-operation more often takes place within production and knowledge networks but with substantial gaps between small and large firms 70
Figure 2.4. Despite similar sourcing strategies, SMEs rely less on external sources of knowledge than large firms overall, especially highly technical sources and professional networks 74
Figure 2.5. Many SMEs do not belong to any formal network and membership varies across sectors 75
Figure 2.6. Most OECD governments place the strongest focus on integrating SMEs into production and supply chain networks 76
Figure 3.1. SME share of employment, turnover and export 97
Figure 3.2. Variation in the gender export gap in firms with a Facebook page, March 2022 98
Figure 3.3. Probability to export, depending on the gender, sector and firm size 99
Figure 3.4. Export behaviour of exporting firms, March 2022 101
Figure 3.5. Challenges faced by SMEs to exporting, March 2022 106
Figure 4.1. Global supply chain conditions may have returned to normal after a massive setback 135
Figure 4.2. International investments rebounded in 2021 but greenfield investment is still subdued 136
Figure 4.3. Higher shipping costs and supply delays were the most frequent difficulties reported by SMEs in 2021 138
Figure 4.4. SMEs engaged in global trade experienced disproportionately some business challenges 139
Figure 4.5. Export barriers differ for trading and non-trading SMEs 139
Figure 4.6. Large firms are driving the deployment of Industry 4.0 technologies 142
Figure 5.1. OECD VC investments surged in 2021 but slowed in 2022, back to historical trends 180
Figure 5.2. SMEs' R&D spending has accelerated in recent years, catching up with large firms 181
Figure 5.3. Smaller R&D performers tend to spend relatively more on R&D and do more basic and applied research 182
Figure 5.4. Most influential R&D actors, small and large alike, have kept growing R&D capacity despite difficult economic conditions 183
Figure 5.5. Before COVID-19, access to knowledge and collaboration networks was the least of business concerns for innovating 184
Figure 5.6. For co-operating on innovation, SMEs turn increasingly towards KIBS providers 186
Figure 5.7. Smaller businesses are catching up in the adoption of platform technologies 187
Figure 5.8. SMEs face increasing security breaches, especially medium-sized ones and those operating in KIBS 190
Figure 5.9. R&D networks are organised into regionalised and specialised blocks 192
Figure 5.10 About one-third of policies aim at connecting SMEs to knowledge and innovation networks, with a more complementary role for other types of linkages 193
Figure 5.11. Across innovation networks, policy efforts focus on SME co-operation through R&D and via non-equity alliances 195
Figure 5.12. About half of the innovation-related network policies are (at least partially) international in scope, with strategic partnerships having the strongest cross-border orientation 198
Figure 5.13. On average, less than 15% of policies across the OECD leverage digital platforms to expand SME innovation networks 199
Figure 5.14. Efforts to connect start-ups or high-potential SMEs to innovation networks are spread unevenly and do not feature in the policy mix of all countries 201
Figure 6.1. Employers increasingly seek critical thinking and analysis, problem-solving and self-management skills 214
Figure 6.2. SME employees are increasingly using digital tools 215
Figure 6.3. Demand for digital skills accelerated with the COVID-19 pandemic 216
Figure 6.4. Production constraints from labour shortages have become widespread 220
Figure 6.5. Recruiting challenges are acute in low-pay sectors but also in high-pay services 220
Figure 6.6. Shortages largely concern highly skilled occupations 221
Figure 6.7. Lack of skilled labour represents the main challenge for enterprises in the euro area 222

Figure 6.8. SME employees are typically less involved in formal and non-formal training activities 223
Figure 6.9. SME employees are also less engaged in continuing vocational training 224
Figure 6.10. Smaller firms offer less ICT training to employees 224
Figure 8.1. SME share of employment and turnover 251
Figure 8.2. Firm dynamics and self-employment 252
Figure 8.3. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 252
Figure 8.4. Share (%) of firms trading globally by gender of leadership 253
Figure 8.5. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 254
Figure 8.6. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 255
Figure 8.7. SME share of employment, exports, and turnover 256
Figure 8.8. Self-employment 257
Figure 8.9. Share (%) of firms trading globally by gender of leadership 258
Figure 8.10. SME integration in trade and embeddedness of foreign affiliates' activities (%) 259
Figure 8.11. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 260
Figure 8.12. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 261
Figure 8.13. SME share of employment, exports, and turnover 262
Figure 8.14. Firm dynamics and self-employment 263
Figure 8.15. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 263
Figure 8.16. Share (%) of firms trading globally by gender of leadership 264
Figure 8.17. SME integration in trade and embeddedness of foreign affiliates' activities (%) 265
Figure 8.18. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 266
Figure 8.19. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 267
Figure 8.20. SME share of exports 268
Figure 8.21. Firm dynamics and self-employment 269
Figure 8.22. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 269
Figure 8.23. Share (%) of firms trading globally by gender of leadership 270
Figure 8.24. SME integration in trade and embeddedness of foreign affiliates' activities (%) 271
Figure 8.25. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 272
Figure 8.26. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 273
Figure 8.27. Self-employment 274
Figure 8.28. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 274
Figure 8.29. Share (%) of firms trading globally by gender of leadership 275
Figure 8.30. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 276
Figure 8.31. Self-employment 277
Figure 8.32. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 277
Figure 8.33. Share (%) of firms trading globally by gender of leadership 278
Figure 8.34. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 279
Figure 8.35. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 280
Figure 8.36. SME share of exports, and turnover 281
Figure 8.37. Self-employment 282
Figure 8.38. Share (%) of firms trading globally by gender of leadership 283
Figure 8.39. SME integration in trade (%) 284
Figure 8.40. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 285
Figure 8.41. SME share of employment, exports, and turnover 286
Figure 8.42. Self-employment 287
Figure 8.43. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 287
Figure 8.44. Share (%) of firms trading globally by gender of leadership 288
Figure 8.45. SME integration in trade and embeddedness of foreign affiliates' activities (%) 289
Figure 8.46. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 290
Figure 8.47. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 291
Figure 8.48. SME share of employment, exports, and turnover 292
Figure 8.49. Firm dynamics and self-employment 293
Figure 8.50. Share (%) of firms trading globally by gender of leadership 294

Figure 8.51. SME integration in trade and embeddedness of foreign affiliates' activities (%) 295
Figure 8.52. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 296
Figure 8.53. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 297
Figure 8.54. SME share of employment, exports, and turnover 298
Figure 8.55. Firm dynamics and self-employment 299
Figure 8.56. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 300
Figure 8.57. SME integration in trade and embeddedness of foreign affiliates' activities (%) 301
Figure 8.58. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 302
Figure 8.59. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 303
Figure 8.60. SME share of employment, exports, and turnover 304
Figure 8.61. Firm dynamics and self-employment 305
Figure 8.62. Share (%) of firms trading globally by gender of leadership 306
Figure 8.63. SME integration in trade and embeddedness of foreign affiliates' activities (%) 307
Figure 8.64. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 308
Figure 8.65. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 309
Figure 8.66. SME share of employment, exports, and turnover 310
Figure 8.67. Firm dynamics and self-employment 311
Figure 8.68. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 312
Figure 8.69. Share (%) of firms trading globally by gender of leadership 313
Figure 8.70. SME integration in trade and embeddedness of foreign affiliates' activities (%) 314
Figure 8.71. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 315
Figure 8.72. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 316
Figure 8.73. SME share of employment, exports, and turnover 317
Figure 8.74. Firm dynamics and self-employment 318
Figure 8.75. Share (%) of firms trading globally by gender of leadership 319
Figure 8.76. SME integration in trade and embeddedness of foreign affiliates' activities (%) 320
Figure 8.77. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 321
Figure 8.78. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 322
Figure 8.79. SME share of employment, exports, and turnover 323
Figure 8.80. Firm dynamics and self-employment 324
Figure 8.81. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 325
Figure 8.82. Share (%) of firms trading globally by gender of leadership 326
Figure 8.83. SME integration in trade and embeddedness of foreign affiliates' activities (%) 327
Figure 8.84. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 328
Figure 8.85. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 329
Figure 8.86. SME share of employment, exports, and turnover 330
Figure 8.87. Firm dynamics and self-employment 331
Figure 8.88. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 332
Figure 8.89. Share (%) of firms trading globally by gender of leadership 333
Figure 8.90. SME integration in trade and embeddedness of foreign affiliates' activities (%) 334
Figure 8.91. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 335
Figure 8.92. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 336
Figure 8.93. SME share of employment, exports, and turnover 337
Figure 8.94. Self-employment 338
Figure 8.95. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 338
Figure 8.96. Share (%) of firms trading globally by gender of leadership 339
Figure 8.97. SME integration in trade and embeddedness of foreign affiliates' activities (%) 340
Figure 8.98. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 341
Figure 8.99. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 342
Figure 8.100. SME share of employment, exports, and turnover 343
Figure 8.101. Firm dynamics and self-employment 344
Figure 8.102. SME integration in trade (%) 345

Figure 8.103. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 346
Figure 8.104. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 347
Figure 8.105. SME share of employment and exports 348
Figure 8.106. Self-employment 349
Figure 8.107. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 349
Figure 8.108. Share (%) of firms trading globally by gender of leadership 350
Figure 8.109. SME integration in trade and embeddedness of foreign affiliates' activities (%) 351
Figure 8.110. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 352
Figure 8.111. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 353
Figure 8.112. SME share of employment, exports, and turnover 354
Figure 8.113. Firm dynamics and self-employment 355
Figure 8.114. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 356
Figure 8.115. Share (%) of firms trading globally by gender of leadership 357
Figure 8.116. SME integration in trade and embeddedness of foreign affiliates' activities (%) 358
Figure 8.117. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 359
Figure 8.118. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 360
Figure 8.119. SME share of employment 361
Figure 8.120. Self-employment 362
Figure 8.121. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 362
Figure 8.122. Share (%) of firms trading globally by gender of leadership 363
Figure 8.123. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 364
Figure 8.124. Share of firms accessing digital skills (%) by outsourcing 365
Figure 8.125. SME share of employment, exports, and turnover 366
Figure 8.126. Self-employment 367
Figure 8.127. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 367
Figure 8.128. Share (%) of firms trading globally by gender of leadership 368
Figure 8.129. SME integration in trade (%) 369
Figure 8.130. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 370
Figure 8.131. Share of firms accessing digital skills (%) by outsourcing, by firm size class 371
Figure 8.132. SME share of employment, exports, and turnover 372
Figure 8.133. Firm dynamics and self-employment 373
Figure 8.134. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 374
Figure 8.135. Share (%) of firms trading globally by gender of leadership 375
Figure 8.136. SME integration in trade and embeddedness of foreign affiliates' activities (%) 376
Figure 8.137. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 377
Figure 8.138. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 378
Figure 8.139. SME share of employment, exports, and turnover 379
Figure 8.140. Self-employment 380
Figure 8.141. SME integration in trade and embeddedness of foreign affiliates' activities (%) 381
Figure 8.142. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 382
Figure 8.143. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 383
Figure 8.144. SME share of employment, exports, and turnover 384
Figure 8.145. Self-employment 385
Figure 8.146. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 385
Figure 8.147. SME integration in trade and embeddedness of foreign affiliates' activities (%) 386
Figure 8.148. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 387
Figure 8.149. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 388
Figure 8.150. SME share of exports 389
Figure 8.151. Self-employment 389
Figure 8.152. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 390
Figure 8.153. Share (%) of firms trading globally by gender of leadership 391
Figure 8.154. SME integration in trade (%) 392

Figure 8.155. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 393
Figure 8.156. Share of firms accessing digital skills (%) by outsourcing, by firm size class 394
Figure 8.157. SME share of employment, exports, and turnover 395
Figure 8.158. Firm dynamics and self-employment 396
Figure 8.159. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 396
Figure 8.160. Share (%) of firms trading globally by gender of leadership 397
Figure 8.161. SME integration in trade and embeddedness of foreign affiliates' activities (%) 398
Figure 8.162. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 399
Figure 8.163. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 400
Figure 8.164. SME share of employment, exports, and turnover 401
Figure 8.165. Firm dynamics and self-employment 402
Figure 8.166. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 402
Figure 8.167. Share (%) of firms trading globally by gender of leadership 403
Figure 8.168. SME integration in trade and embeddedness of foreign affiliates' activities (%) 404
Figure 8.169. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 405
Figure 8.170. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 406
Figure 8.171. SME share of employment 407
Figure 8.172. Firm dynamics and self-employment 408
Figure 8.173. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 409
Figure 8.174. Share (%) of firms trading globally by gender of leadership 410
Figure 8.175. SME integration in trade (%) 411
Figure 8.176. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 412
Figure 8.177. Share of firms accessing digital skills (%) by hiring or training, by firm size class 413
Figure 8.178. SME share of employment, exports, and turnover 414
Figure 8.179. Firm dynamics and self-employment 415
Figure 8.180. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 415
Figure 8.181. Share (%) of firms trading globally by gender of leadership 416
Figure 8.182. SME integration in trade and embeddedness of foreign affiliates' activities (%) 417
Figure 8.183. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 418
Figure 8.184. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 419
Figure 8.185. SME share of employment, exports, and turnover 420
Figure 8.186. Firm dynamics and self-employment 421
Figure 8.187. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 421
Figure 8.188. Share (%) of firms trading globally by gender of leadership 422
Figure 8.189. SME integration in trade and embeddedness of foreign affiliates' activities (%) 423
Figure 8.190. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 424
Figure 8.191. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 425
Figure 8.192. SME share of employment, exports, and turnover 426
Figure 8.193. Self-employment 427
Figure 8.194. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 427
Figure 8.195. Share (%) of firms trading globally by gender of leadership 428
Figure 8.196. SME integration in trade and embeddedness of foreign affiliates' activities (%) 429
Figure 8.197. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 430
Figure 8.198. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 431
Figure 8.199. SME share of employment, exports, and turnover 432
Figure 8.200. Firm dynamics and self-employment 433
Figure 8.201. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 433
Figure 8.202. SME integration in trade and embeddedness of foreign affiliates' activities (%) 434
Figure 8.203. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 435
Figure 8.204. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 436
Figure 8.205. SME share of employment, exports, and turnover 437
Figure 8.206. Firm dynamics and self-employment 438

Figure 8.207. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 438
Figure 8.208. Share (%) of firms trading globally by gender of leadership 439
Figure 8.209. SME integration in trade and embeddedness of foreign affiliates' activities (%) 440
Figure 8.210. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 441
Figure 8.211. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 442
Figure 8.212. SME share of employment, exports, and turnover 443
Figure 8.213. Firm dynamics and self-employment 444
Figure 8.214. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 444
Figure 8.215. Share (%) of firms trading globally by gender of leadership 445
Figure 8.216. SME integration in trade and embeddedness of foreign affiliates' activities (%) 446
Figure 8.217. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 447
Figure 8.218. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 448
Figure 8.219. SME share of employment, exports, and turnover 449
Figure 8.220. Self-employment 450
Figure 8.221. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 450
Figure 8.222. Share (%) of firms trading globally by gender of leadership 451
Figure 8.223. SME integration in trade and embeddedness of foreign affiliates' activities (%) 452
Figure 8.224. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 453
Figure 8.225. Share of firms accessing digital skills (%) by outsourcing or hiring, by firm size class 454
Figure 8.226. SME share of employment, exports, and turnover 455
Figure 8.227. Firm dynamics and self-employment 456
Figure 8.228. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 457
Figure 8.229. Share (%) of firms trading globally by gender of leadership 458
Figure 8.230. SME integration in trade and embeddedness of foreign affiliates' activities (%) 459
Figure 8.231. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 460
Figure 8.232. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 461
Figure 8.233. SME share of employment, exports, and turnover 462
Figure 8.234. Firm dynamics and self-employment 463
Figure 8.235. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 463
Figure 8.236. Share (%) of firms trading globally by gender of leadership 464
Figure 8.237. SME integration in trade and embeddedness of foreign affiliates' activities (%) 465
Figure 8.238. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 466
Figure 8.239. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class 467
Figure 8.240. SME share of exports 468
Figure 8.241. Firm dynamics and self-employment 469
Figure 8.242. SME outstanding loans (constant 2007 prices), year-over-year growth (%) 469
Figure 8.243. Share (%) of firms trading globally by gender of leadership 470
Figure 8.244. SME integration in trade and embeddedness of foreign affiliates' activities (%) 471
Figure 8.245. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100) 472
Figure 8.246. Share of firms accessing digital skills (%) by outsourcing, by firm size class 473

INFOGRAPHICS

Infographic 3.1. Challenges to exporting faced by women-led firms 107

TABLES

Table 1. Acronyms 17
Table 2. Country abbreviations and national currency (ISO codes) 19
Table 1.1. Employment performance and initial level of productivity 36
Table 1.2. Selected examples of programmes to help SMEs go digital in OECD countries 51

Table 2.1. SMEs networks: Typologies, partners, linkages and benefits 66
Table 2.2. Achieving resilience through networks 72
Table 2.3. Policies in support of SME network expansion: selected OECD country examples 77
Table 3.1. SME challenges to engage in international trade 103
Table 3.2. Gender mainstreaming in New Zealand's trade promotion agency 114
Table 3.3. Main official statistical sources for gender and trade analyses 119
Table 4.1. More circularity in production networks is likely to boost innovation and activities in a broad range of SME-dominated sectors 131
Table 4.2. Mega-challenges affecting production systems and supply chains 140
Table 4.3. Production systems transform across all firm size categories 142
Table 4.4. Different GVC trajectories towards resilience and their impact on SME ecosystems 143
Table 4.5. Selected policy options for GVCs' resilience, sustainability and circularity 147
Table 4.6. Selected examples of policies to enhance autonomy and resilience in strategic GVCs 149
Table 4.7. Selected examples of policies to strengthen the positioning of domestic SMEs in GVCs 150
Table 4.8. Selected policy initiatives for the regionalisation of GVCs 151
Table 4.9. Selected policy initiatives to enhance the social and environmental sustainability of GVCs 153
Table 5.1. Selected examples of policies to enhance SME integration into knowledge and innovation networks 196
Table 6.1. Creating a data culture and building relevant skills – Overview of SME-targeted policies in selected OECD countries 229

Annex Table 2.B.1. Structures and approaches of SME and entrepreneurship networks 82

Table A.1. Sources and definitions 475

BOXES

Box 1.1. The Future of Business Survey 33
Box 1.2. Shift-share analysis of productivity 38
Box 1.3. A snapshot of SME vulnerability to energy prices 40
Box 1.4. Financing instruments in rescue packages 48
Box 2.1. Collaborative platforms for opening digital innovation to SMEs: Selected examples 67
Box 2.2. Productivity spillovers between multinationals and domestic SMEs 68
Box 2.3. Agglomeration benefits in innovation and production networks 71
Box 3.1. The Future of Business Survey 97
Box 3.2. Reducing the gender gap in trade finance and diversifying funding sources 105
Box 3.3. Ireland's Action Plan for Women in Business 108
Box 3.4. The Global Trade and Gender Arrangement (GTAGA) 110
Box 3.5. How New Zealand's export promotion agency has enhanced its support for women exporters 113
Box 3.6. The Organisation of Women in International Trade (OWIT) 115
Box 3.7. Mainstreaming support to SMEs owned and led by women in Canada 116
Box 3.8. Strong support for women and youth entrepreneurs in Türkiye 118
Box 4.1. Trade in circular-economy-enabling services: New evidence from Finland 132
Box 4.2. The Future of Business Survey 138
Box 5.1. Innovation networks in cultural and creative sectors and effects on the wider economy 175
Box 5.2. How networks transform for greater efficiency and resilience: Selected examples 177
Box 5.3. Collaboration networks and open innovation to tackle the COVID-19 urgency 185
Box 5.4. Platform technologies: Expanding networks, creating network effects and achieving external economies of scale 188
Box 5.5. Expanding SME networks via clusters and strategic partnerships: Selected policy examples across the OECD 193
Box 5.6. Expanding SME innovation networks via digital platforms: Selected examples 200
Box 6.1. Defining the entrepreneurial mindset 213
Box 6.2. Emerging digital technologies generate multidimensional skills needs 216
Box 6.3. The green transition's implications for local jobs, skills and workers 217
Box 6.4. Are all small firms open to change? 227
Box 6.5. Skills ecosystems 228

Follow OECD Publications on:



 http://twitter.com/OECD_Pubs

 http://www.facebook.com/OECDPublications

 http://www.linkedin.com/groups/OECD-Publications-4645871

 http://www.youtube.com/oecdilibrary

 http://www.oecd.org/oecddirect/

This book has...

StatLinks

A service that delivers Excel® files from the printed page!

Look for the StatLink at the bottom of the tables or graphs in this book. To download the matching Excel® spreadsheet, just type the link into your Internet browser or click on the link from the digital version.

Acronyms and abbreviations

Table 1. Acronyms

AI	Artificial Intelligence
API	Application Programming Interfaces
APO	Asian Productivity Organization
B2B	Business to Business
BDI	Baltic Dry index
BEA	US Bureau Of Economic Analysis
BEIS	UK Department for Business Energy and Industrial Strategy
BERD	Business Research and Development Expenditure
BOW-GTFP	Banking on Women Global Trade Finance Programme
CC	Cloud Computing
CCS	Cultural and Creative Sectors
CE	Circular Economy
CEO	Chief Executive Officer
CEPR	Centre for Economic Policy Research
CIIP	Canada's International Innovation Programme
CIS	Community Innovation Survey
COVID-19	Coronavirus Disease 2019
CPI	Consumer Price Index
CRM	CRM Customer Relationship Management
CSM	Supply Chain Management
CSR	Corporate Social Responsibility
D4SME	OECD Digital for SMEs Global Initiative
DIH	Digital Innovation Hubs
DSA	Digital Service Act
EBC	European Banking Committee
EC	European Commission
ECB	European Central Bank
ECCP	European Cluster Collaboration Platform
EDC	Export Development Canada
ENISA	European Union Agency for Cybersecurity
EPR	Extended Producer Responsibility
ERBD	European Bank for Reconstruction and Development
ESG	Environmental, Social and Governance
ETS	Emissions Trading System
EU	European Union
EUIPO	European Union Intellectual Property Office
FDI	Foreign Direct Investment
Fintech	Financial Technology
FOBS	Future of Business Survey
GDP	Gross Domestic Product
GDPR	EU General Data Regulation
GEM	Global Entrepreneurship Monitor
GEPU	Global Economic and Policy Uncertainties Index
GSCPI	Global Supply Chain Pressures Index
GTAGA	Global Trade and Gender Arrangement
GVC	Global Value chain
HEI	Higher Education Institutions
HRM	Human Resource Management

ICIO	Inter Country Input-Output Tables
ICT	Information and Communication Technologies
IEA	International Energy Agency
ILO	International Labour Organisation
IMF	International Monetary Fund
IMO	International Maritime Organisation
IoT	Internet of Things
IP	Intellectual Property
IPR	Intellectual Property Rights
IRENA	International Renewable Energy Agency
ISI	Innovation Superclusters Initiative
IT	Information Technology
KIBS	Knowledge and Innovation Business Services
KTP	Knowledge Transfer Partnership
MEP	Manufacturing Extension Partnership
MNE	Multinational Enterprise
MSME	Micro, Small and Medium-sized Enterprises
NAAS	Network as a Service
NIST	National Institute of Standards and Technology
NZTE	New Zealand Export Promotion Agency
OWIT	Organization for Women in Trade
PIAAC	International Assessment of Adult Competencies
PME	Petite et Moyenne Entreprise
PMI	Purchase Manager Index
PPP	Purchasing Power Parity
R&D	Research and Development
RBC	Responsible Business Conduct
RTO	Research and Technology Organization
S&T	Science and Technology
SAFE	Survey on Access to Finance of Enterprises
SBDC	Small Business Development Centres Programme
SDBS	Structural and Demographic Business Statistics
SES	European Structure of Earnings Survey
SMBs	Small and Medium-sized Business
SME	Small and Medium-sized Enterprise
SME&E	Small and Medium-sized Enterprise and Entrepreneur
STEM	Science, Technology Engineering and Mathematics
TCS	Trade Commissioner Service
TEC	Trade by Enterprise Characteristics
TFI	Trade Facilitation Indicators
UNCTAD	United Nations Conference on Trade and Development
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
USD	United States Dollar
USPTO	United Stated Patent and Trademark Office
UTSA	University of Texas in San Antonio
VC	Venture Capital
VPN	Virtual Private Network
WB	World Bank
WEF	World Economic Forum
WHO	World Health Organisation
WTO	World Trade Organization

Table 2. Country abbreviations and national currency (ISO codes)

ARG	Argentina	Argentine peso	ARS
AUS	Australia	Australian dollar	AUD
AUT	Austria	Euro	EUR
BEL	Belgium	Euro	EUR
BRA	Brazil	Brazilian real	BRL
CAN	Canada	Canadian dollar	CAD
CHE	Switzerland	Franc	CHF
CHL	Chile	Chilean peso	CLP
CHN	People's Republic of China	Yuan renminbi	CNY
CIR	Costa Rica	Colón	CRC
COL	Colombia	Colombian peso	COP
CZE	Czech Republic	Koruna	CZK
DEU	Germany	Euro	EUR
DNK	Denmark	Krone	DKK
ESP	Spain	Euro	EUR
EST	Estonia	Estonian kroon	EEK
EU	European Union	Euro	EUR
FIN	Finland	Euro	EUR
FRA	France	Euro	EUR
GBR	United Kingdom	British pound	GBP
GRC	Greece	Euro	EUR
HUN	Hungary	Forint	HUF
IDN	Indonesia	Rupiah	IDR
IRL	Ireland	Euro	EUR
ISL	Iceland	Króna	ISK
ISR	Israel	New Israeli sheqel	ILS
ITA	Italy	Euro	EUR
JPN	Japan	Yen	JPY
KOR	Korea	Won	KRW
LTU	Lithuania	Lithuanian litas	LTL
LUX	Luxembourg	Euro	EUR
LVA	Latvia	Latvian lat	LVL
MEX	Mexico	Mexican peso	MXN
NLD	Netherlands	Euro	EUR
NOR	Norway	Krone	NOK
NZL	New Zealand	New Zealand dollar	NZD
POL	Poland	Zloty	PLN
PRT	Portugal	Euro	EUR
ROU	Romania	Romanian leu	RON
RUS	Russian Federation	New Russian ruble	RUB
SVK	Slovak Republic	Koruna	SKK
SVN	Slovenia	Euro	EUR
SWE	Sweden	Krona	SEK
TUR	Turkey	Turkish lira	TRY
USA	United States	United States dollar	USD
ZAF	South Africa	South African rand	ZAR

Country groupings

BRIICS	Brazil, Russian Federation, India, Indonesia, People's Republic of China, South Africa.
EU27	European Union (Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak Republic, Slovenia, Spain, Sweden).
G20	Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union.
OECD	Total OECD 38 member countries (Australia, Austria, Belgium, Canada, Chile, Colombia, Costa Rica, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, Netherlands, New Zealand, Norway, Poland, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, United Kingdom, United States).

Executive summary

Small and medium-sized enterprises (SMEs) and entrepreneurs have been greatly impacted by the COVID-19 pandemic and the fallout from Russia's large-scale aggression against Ukraine, putting millions of jobs and businesses at risk. While most SMEs have little direct exposure to Russia and Ukraine, they have been affected by rising geo-political tensions, high inflation, tighter monetary and fiscal policy, and supply-chain disruptions. Since the start of the war, firm entries have also been growing at a much slower pace, in part reflecting the relatively high growth rates observed in countries as they recovered from the pandemic shock. At the same time, firm exits have risen substantially, as firms had to cope with the ensuing energy crisis and the withdrawal of fiscal support. Trends in bankruptcies have been accelerating in several European countries, and although they continued to fall in the United States in 2022, they have risen in the most recent period. Tight labour markets have also accentuated inflationary pressures, as well as access to skilled labour, compounding difficulties for small firms.

SMEs engaged in global value chains (GVCs) tend to be more productive, have higher revenue, and obtain access to more diversified products and services. While GVC disruptions have abated recently, SMEs have faced disproportionate challenges in adapting to shifts in the trade environment. In 2021, delays in receiving supplies and increased shipping costs were the most common supply-chain difficulties reported by SMEs. At the same time, long-standing vulnerabilities and an increased focus on strategic products and national self-reliance are also impacting on the international trade system, together with growing pressure to enhance sustainability and due diligence across global production systems. In addition, rising cybersecurity risks have made exposure and risk management capacity key factors in partnership decisions, which may weaken the ability of SMEs that are unprepared to meet certain standards to export successfully, as well as to integrate, partner and build stronger linkages with multinationals across changing supply chains.

Among the many challenges in this regard, increasing export activity among women-led firms should not be overlooked. In 2022, only 11% of women-led SMEs exported, compared to 19% of men-led firms. Even when discounting the gender-biases that often result in women-led firms being smaller and more likely to produce services, which are less traded than goods, and which, in part, explain lower female participation rates, gender-based challenges directly related to trade, including unconscious (and sometimes conscious) bias and societal norms remain. Easing procedures and reducing delays at borders, in particular through digital tools, would therefore especially benefit women-led firms. As governments are working to close gender gaps in exporting through targeted programmes, e.g. for accessing (trade) finance or by prioritising sectors in which women work and own businesses for improving market access in trading partner countries, it will be important to monitor their success, including by developing more gender-differentiated data on engagement in international trade.

Looking forward, the twin transition is expected to continue to alter the way firms operate and force a rethink of industrial systems, business models and digital preparedness. Open innovation practices have continued to spread, including through increased use of digital platforms by small firms to access and drive innovation. In 2021, the use of social media had become broadly mainstreamed, with uptake by over 60% of the total business population, and the share of SMEs using cloud computing services doubled in less than six years. However, many small firms continue to lack the skills needed to fully leverage on the potential of digital technologies, increasing the risks of deepening digital gaps. According to the March 2022 Future of Business Survey, the most prevalent challenges reported by small firms, and in particular micro firms, were a lack of technical skills and knowledge. This is true across all sectors, but particularly acute in manufacturing. In addition, while small businesses have significant potential to drive and benefit

from the green transition, not least because they contribute to over one-third of industrial greenhouse gas (GHG) emissions and are important drivers of green innovations, fewer SMEs have taken steps to improve their environmental performance as compared to large firms.

Attracting and retaining staff has emerged as a major constraint to production for businesses across OECD countries. Against a background of tight labour markets, the green and digital transitions are also changing skill demands for a broad range of jobs across the economy, and competition for skills is amplifying traditional challenges faced by SMEs in accessing and developing talent. Heightened labour shortages were one of the most pressing challenges reported by SMEs in 2022. Yet, access to skills is critical for SMEs to adapt to rapid changes in economies, where value creation increasingly hinges on human capital and intangible assets. SMEs will therefore have to strengthen efforts to close skills gaps, retain trained and skilled staff, as well as upgrade transversal skills, including technical and managerial skills, to drive innovation, make the most of digitalisation and invest in decarbonisation. Governments have a strong role to play too, through support that raises awareness on skill needs, reduces training costs for SMEs and promotes workplace training, including through tax incentives and subsidies (e.g., vouchers). Tailored policy strategies with a spatial lens are also increasingly being deployed to leverage on local skills ecosystems composed of public and private stakeholders, including research and education organisations.

In this context of multiple and compounding challenges and transformations, networks represent strategic assets to improve SME access to finance, digital solutions, data and skills, to capture and leverage on knowledge spillovers, and achieve external economies of scale. They can also represent a source of resilience to better manage uncertainty and disruptions, and governments are actively leveraging on them. An analysis of over 600 policy initiatives across OECD countries identified close to 400 policies that target stronger SME integration into production/ supply chain networks and nearly 300 policies target their integration into (global) knowledge and innovation networks. Another set of policies, though less frequently used but with significant potential, target the development of strategic partnerships to link SMEs with business partners through contractual agreements, joint ventures, or consortia, and to support SME integration into clusters, with strong specialisation and spatial concentration features.

1 Recent SME developments and forthcoming challenges

This chapter reviews recent developments in firm performance and identifies key challenges small firms will have to cope with in the short, medium and long term. Prior to the war in Ukraine, the recovery of the SME sector was essentially driven by stronger performance of micro-firms. SMEs engaged in international trade also performed well compared to non-trading SMEs. The war and the rise in energy costs have slowed down global growth and weighed on firm performance. Even though most SMEs have little direct exposure to Russia and Ukraine, they have been indirectly affected by geopolitical tensions and elevated uncertainty, high inflation, tightening financial conditions, and lesser monetary and fiscal support. Supply-chain disruptions and heightened labour shortages add to the challenges. Looking forward, digitalisation and the green transition are expected to alter the way firms operate. SMEs will have to upgrade their technical skills and knowledge to manage the twin transition.

In Brief

- This chapter reviews recent developments in business dynamics and firm performance and identifies key challenges and opportunities small- and medium-sized enterprises (SMEs) and entrepreneurs will face in the short, medium and long terms.
- Prior to Russia's war of aggression against Ukraine, the recovery of the SME sector was essentially driven by a rebound in the performance of micro firms, which exhibited strong employment growth. However, smaller firms continued to be, on average, less productive than larger firms.
- SMEs engaged in international trade also performed well compared to non-trading SMEs. Just over half of SMEs with a digital presence recorded a rise in sales between 2020 and 2021, according to the OECD-World Bank-Meta Future of Business Survey (hereafter the Future of Business Survey). Engagement in international trade is estimated to have increased the probability of an increase in SME sales by between 3 and 10 percentage points.
- Even though most SMEs have little direct exposure to Russia and Ukraine, they have been indirectly affected by the sharp increases in energy and commodity prices, tightening financial conditions and lesser monetary and fiscal support. Although declining, inflation has remained at high levels which, together with elevated uncertainty, have hampered firm performance. Early evidence points to firm entry growth slowing markedly in many OECD countries, while firm exit growth and bankruptcy rates have risen. Supply-chain disruptions and financial sector stress have compounded those challenges.
- Looking forward, digitalisation and the green transition are expected to lead to durable changes by altering the way firms operate and require rethinking industrial systems and business models.
- Retaining and attracting staff has become a major issue in OECD countries, despite emerging signs of easing labour-market pressures. Labour shortages (beyond the Great Resignation) and the competition for skills are likely to persist over time, placing SMEs at an even greater disadvantage. SMEs will have to upgrade their technical and managerial skills and knowledge to make the most of digitalisation and to be able to invest in decarbonisation.

Over the past few years, the global economy has experienced a number of deep shocks, which have had a marked impact on SMEs and entrepreneurs. While rapid and significant support from governments helped protect small businesses from the economic impact of the pandemic, in the wake of Russia's unprovoked aggression against Ukraine, new threats have emerged. Rising geopolitical tensions and global financial risks, high inflation, tighter monetary and fiscal policy stances, financial sector stress, labour shortages, trade barriers and slowing integration in global value chains are all adding to a more challenging economic environment. Rising interest rates will make debt repayment more expensive for SMEs and entrepreneurs, with many of them being heavily indebted.

Whilst the pace of digitalisation accelerated during the first phase of the COVID-19 crisis and helped many firms weather the economic shock, a number of small firms continue to lack the skills needed to make the most of the digital transition, increasing the risks of deepening digital gaps. Small firms also have difficulties in accessing networks that can provide sources of digital solutions, data and knowledge transfers. Moreover, while small firms have significant potential to drive and benefit from the green transition and the deployment of more sustainable, responsible and circular value chains, these transitions also present significant challenges.

Better understanding the short-, medium- and long-term challenges of SMEs is critical to fostering sustainable growth and long-term resilience. Challenges and opportunities will vary over time and differ by firm. Against this background, this chapter reviews the latest developments in business dynamics and firm performance and how they differ across country, firm size and sector, depending on the economic environment, financial conditions and government policies.

Recent SME performance has been uneven across firms, sectors and countries

The economic outlook has deteriorated since Russia's invasion of Ukraine and the energy crisis it precipitated and global financial uncertainties have intensified. In the OECD March Interim Economic Outlook, global GDP growth was projected to slow to 2.7% in 2023 from 3.3% in 2022, before picking up slightly to 2.9% in 2024 (OECD, 2023[1]). These figures mask regional differences. Asia is foreseen to be the main engine of growth in 2023 and 2024, whereas growth in Europe, North America and South America is expected to remain below historical trends (OECD, 2022[2]).

Firm dynamics have displayed marked heterogeneity across countries and sectors

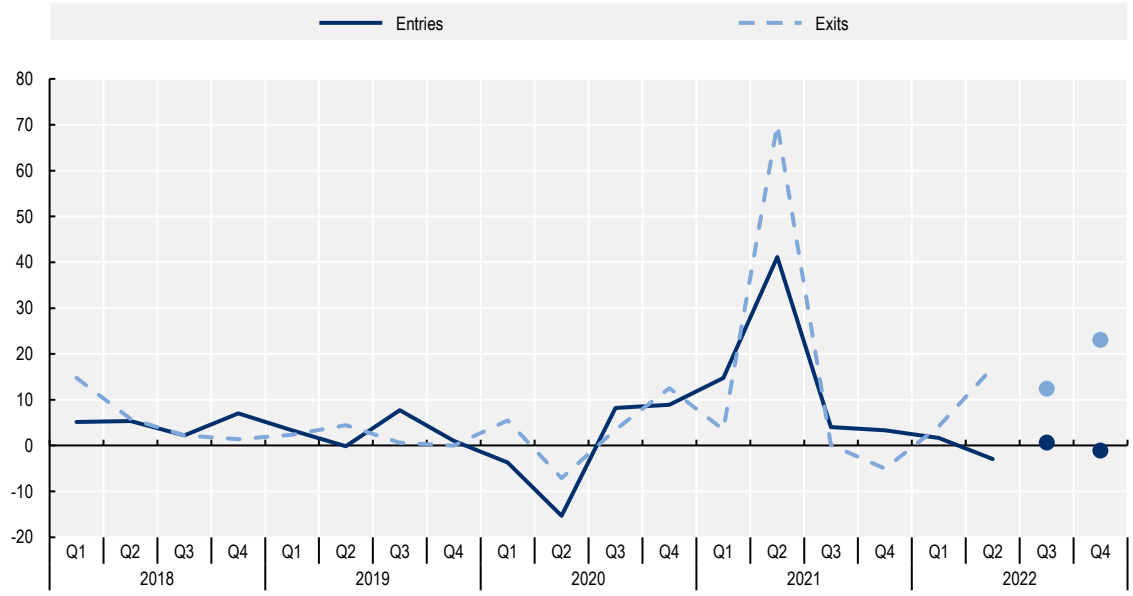
Firm entry growth slowed markedly and exits accelerated in the aftermath of the war in Ukraine

Prior to the war in Ukraine, firm entries rebounded but to varying degrees across countries. The pace of the recovery was on average rapid, with a pick-up in the second half of 2020 and relatively strong growth in firm entries in the first half of 2021, partly explained by the sharp drop in entries at the start of the COVID-19 crisis (Figure 1.1). Such a pattern was observed in many countries but with marked differences in the shape of the recovery (Agresti et al., 2022[3]).

Firm exits increased in 2021 in many countries, reflecting the drop observed at the start of the COVID-19 crisis and, potentially, the unwinding of COVID-19 support packages and tightening monetary conditions. Evidence suggests that in the United States, the overall rate of business exits is usually driven by very small firms (Crane et al., 2022[4]; Fairlie et al., 2022[5]). In Japan, voluntary exits due to population ageing have also contributed to firm exits in the decade prior to the COVID-19 crisis (Hong et al., 2020[6]).

Figure 1.1. Firm entries and exits since 2018

Year-on-year growth rate, average across countries



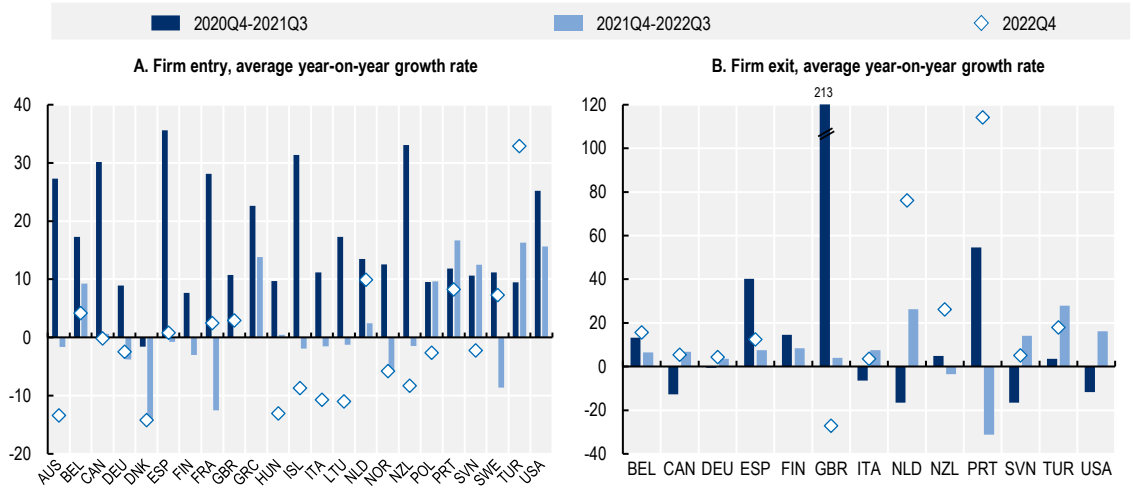
Note: Entries - The solid line plots the average of Australia, Belgium, Canada, Denmark, Finland, France, Germany, Hungary, Iceland, Italy, Lithuania, the Netherlands, New Zealand, Norway, Portugal, Slovenia, Spain, Sweden, Türkiye, the United Kingdom and the United States. The dot markers plot the average of the same countries excluding Finland (in 2022Q4) and the United States (in 2022Q3 and 2022Q4).
Exits - The dotted line plots the average of Belgium, Canada, Finland, Germany, Italy, the Netherlands, New Zealand, Portugal, Slovenia, Spain, Türkiye, the United Kingdom and the United States. The dot markers plot the same average excluding Finland (in 2022Q4) and the United States (in 2022Q3 and 2022Q4).
Source: OECD.Stat (n.d.[7]), *Timely Indicators of Entrepreneurship by Enterprise Characteristics*, https://stats.oecd.org/Index.aspx?DataSetCode=TIMELY_IE.

StatLink https://stat.link/pznwvj

Since the start of the war in Ukraine in February 2022, firm entries have grown at much slower rates, in part reflecting the relatively high growth rates observed in countries as they recovered from the pandemic shock. The deceleration was broad-based, with Portugal, Slovenia and Türkiye being exceptions (Figure 1.2). Information on a subset of countries also points to some heterogeneities across sectors (Figure 1.3). Firm entries declined from 2021 to 2022 in “manufacturing” and “financial and insurance services”, while entries increased in “mining and quarrying” and “electricity, gas and steam”.

Firm exits have risen substantially since the start of Russia’s war of aggression against Ukraine, as firms had to cope with the ensuing energy crisis and high inflation, combined with the tightening of monetary policies and the withdrawal of fiscal support. The increase in firm exits was widespread and can be observed in all of the business sectors for which data are available (Figure 1.3).

Figure 1.2. Firm entries and exits in selected OECD countries

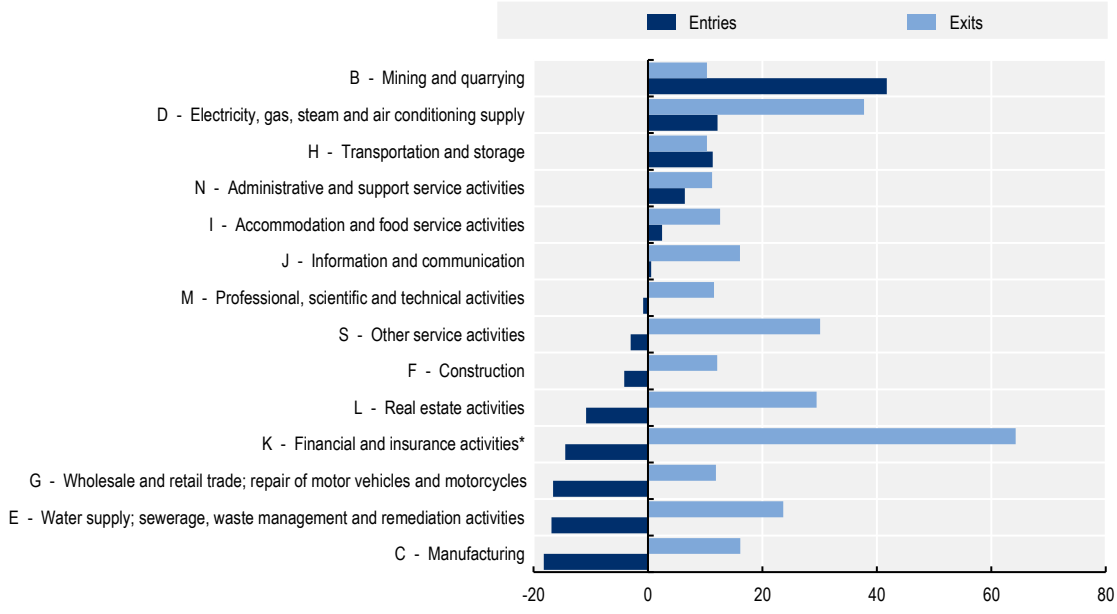


Source: OECD.Stat (n.d.[7]), *Timely Indicators of Entrepreneurship by Enterprise Characteristics*, https://stats.oecd.org/Index.aspx?DataSetCode=TIMELY_IE.

StatLink https://stat.link/9q341n

Figure 1.3. Firm entries and exits by sector

Annual percentage change, 2022 versus 2021



Note: Each bar reports an average of 18 countries for entries and 8 OECD countries for exits. Data usually refer to business registrations, focusing, when possible, on all businesses (including sole proprietorship). In some countries (e.g. Italy and Norway), information on the sector is missing for a significant share of business openings and exits.
* The significant increase in "Financial and insurance activities" reflects developments in the Netherlands.
Source: OECD.Stat (n.d.[7]), *Timely Indicators of Entrepreneurship by Enterprise Characteristics*, https://stats.oecd.org/Index.aspx?DataSetCode=TIMELY_IE.

StatLink https://stat.link/c5bq4m

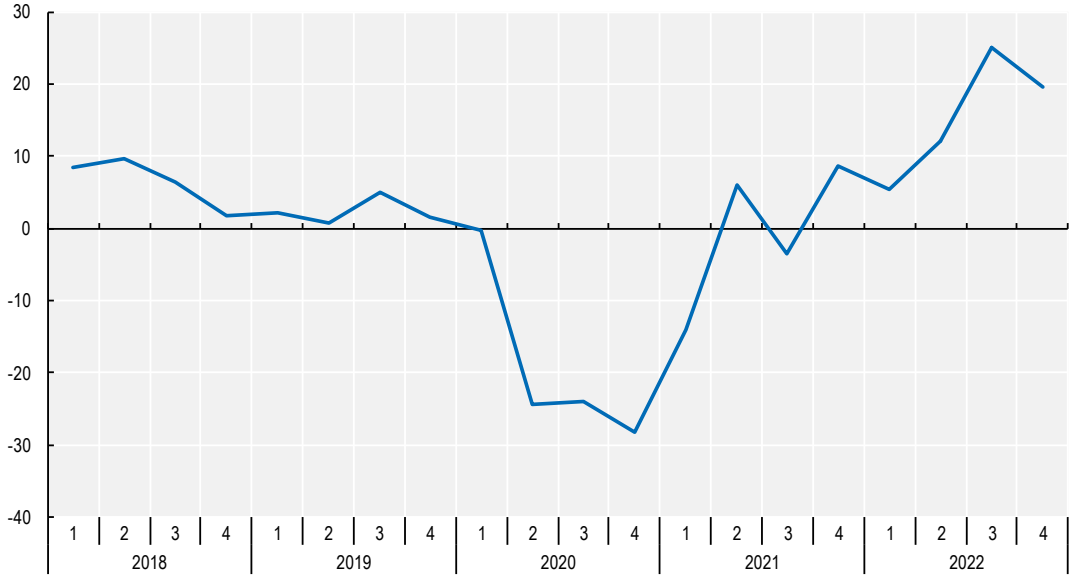
Bankruptcies accelerated in 2022

Contrary to the 2007-08 financial crisis, bankruptcies fell in 2020. Greenwood, Iverson and Thesmar (2020[8]) reported that 2020 bankruptcy filings by small businesses in the United States were significantly lower than in prior years. Most OECD countries temporarily modified insolvency processes during the pandemic, complementing more general support to firms and the broader economy, which contributed to the sharp fall in bankruptcies. The most common insolvency measures were exceptional deferrals of payments of liabilities, a relaxation of directors' duties, extension of deadlines in insolvency procedures and the suspension or simplification of insolvency filing obligations (André and Demmou, 2022[9]). Moratoria in all insolvency procedures were also common. Six countries introduced special insolvency frameworks for SMEs.

Bankruptcy rates have trended up since 2021 (Figure 1.4, (OECD, 2023[10])). In 2021, about 40% of the countries for which data are available registered an increase in bankruptcy rates, compared to only 20% in 2020. The highest increases were registered in the Czech Republic, the Slovak Republic and Spain. However, bankruptcies fell markedly in other economies, notably Estonia, the Netherlands, Sweden and the United States.

Figure 1.4. Firm bankruptcies

Year-on-year growth rate, average across countries



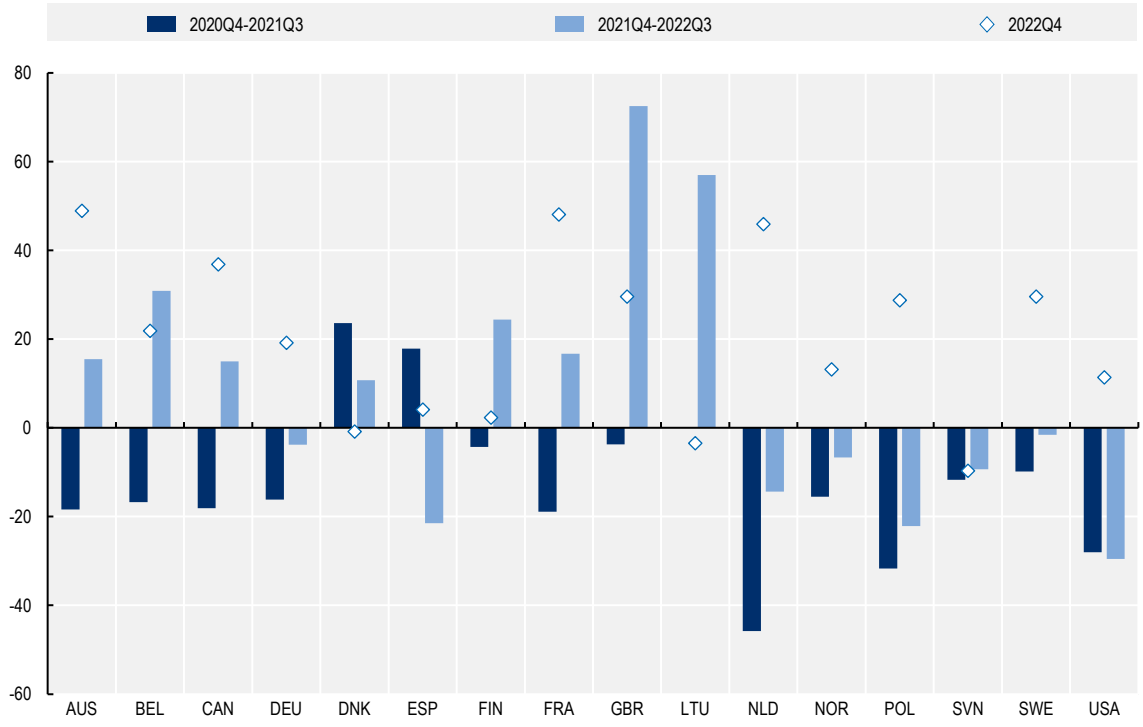
Note: The line plots the average of Australia, Belgium, Canada, Denmark, Finland, France, Germany, Iceland, the Netherlands, Norway, Slovenia, Spain, Sweden, the United Kingdom and the United States.
Source: OECD.Stat (n.d.[7]), *Timely Indicators of Entrepreneurship by Enterprise Characteristics*, https://stats.oecd.org/Index.aspx?DataSetCode=TIMELY_IE.

StatLink https://stat.link/dq8k7s

The pace of bankruptcies accelerated in 2022 in several European countries. Bankruptcies continued to fall in the United States on average during 2022 but have risen in the most recent period. Developments in bankruptcies also reflected policy changes. For instance, the number of bankruptcies in the United Kingdom was partly explained by a change in eligibility limits for Debt Relief Orders in England and Wales, which came into effect on 29 June 2021 (UK Insolvency Services, 2022[11]).

Figure 1.5. Change in bankruptcies in selected countries

Year-on-year growth rate



Source: OECD.Stat (n.d.[7]), *Timely Indicators of Entrepreneurship by Enterprise Characteristics*, https://stats.oecd.org/Index.aspx?DataSetCode=TIMELY_IE.

StatLink https://stat.link/12ey6i

Micro firms have outperformed SMEs in the past two years

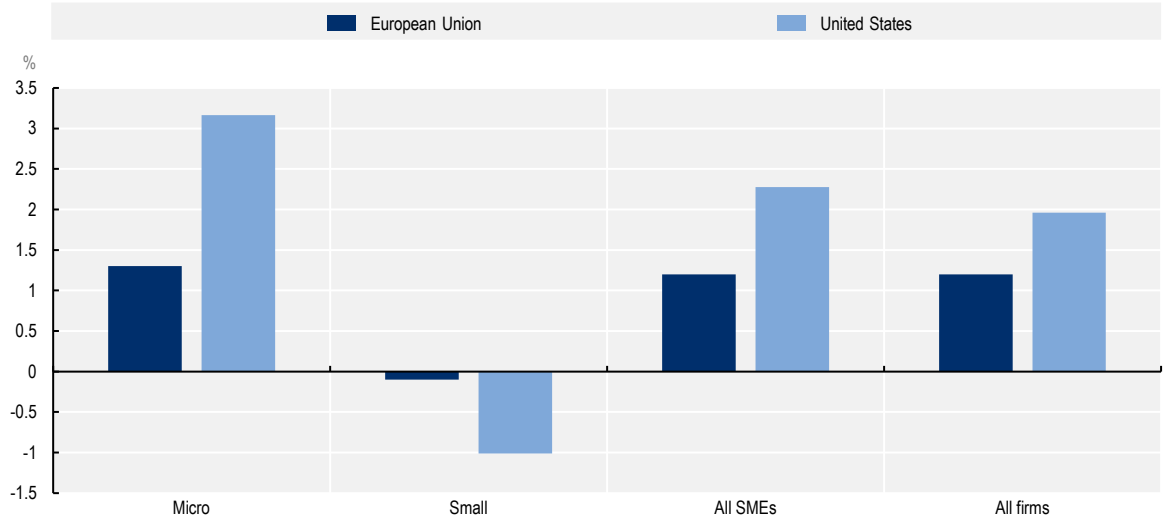
Number of firms

While SMEs were disproportionally hit by the COVID-19 crisis in 2020 (OECD, 2021[12]), their number rose in the European Union and the United States in 2021 (Figure 1.6). Amongst SMEs, the number of firms increased markedly for micro firms (of less than 9 employees), while the number of small firms (between 10 and 249 firms in the European Union) declined. Lower firm exits and some downscaling of firms from small to micro may have happened but those appear to be limited relative to the growth in the number of micro firms, suggesting genuine firm creation in the micro firm segment. Although it is premature to draw any solid conclusions, this may signal that the size of new firms may be smaller than in the past, as already observed in the 2019 edition of the OECD SME and Entrepreneurship Outlook (SME&E) Outlook (OECD, 2019[13]).

The economic shocks that hit OECD economies since the outbreak of the pandemic have had a sectoral dimension, affecting some sectors more than others (OECD, 2021[12]). Changes in the number of firms have varied accordingly. This is consistent with theory and evidence from the literature according to which the cleansing effect of the COVID-19 crisis has been sector-specific (Ascari, Colciago and Silvestrini, 2021[14]; Andrews, Charlton and Moore, 2021[15]). In the case of the United States, for instance, there is evidence that the number of firms has risen strongly between 2020 and 2021 in “information”, “transport”, “warehouse” and “financial sectors” but have been muted in “manufacturing”, “retail and wholesale trade”

(Figure 1.7, Panel A). In 2021 the number of firms was still below those observed in 2019 in the latter sectors (Figure 1.7, Panel B). As observed at the aggregated levels, developments were largely driven by micro firms.

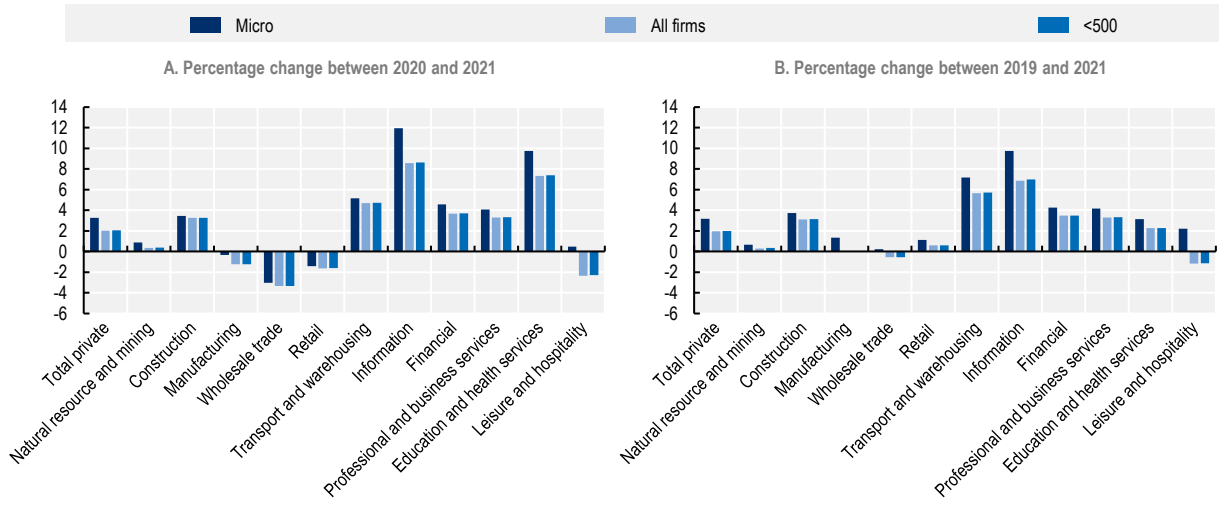
Figure 1.6. Changes in the number of SMEs, 2021



Note: Non-financial business sector for the European Union, private sector (including financial activities) for the United States. SMEs are those with fewer than 250 employees for the European Union and fewer than 500 employees for the United States. The definition of micro (fewer than 9 employees) and small firms (between 10 and 49 employees) is the same in the 2 areas.
Source: EC (2022[16]), *Annual Report on European SMEs 2021/2022*, European Commission; U.S. BLS (n.d.[17]), *Business Employment Dynamics*, https://www.bls.gov/bdm/business-employment-dynamics-data-by-age-and-size.htm.

StatLink https://stat.link/e5rlvs

Figure 1.7. Increase in the number of firms by sector in the United States



Note: Firms <500 include micro firms.
Source: OECD using U.S. Bureau of Economic Analysis (BEA) data.

StatLink https://stat.link/q4byme

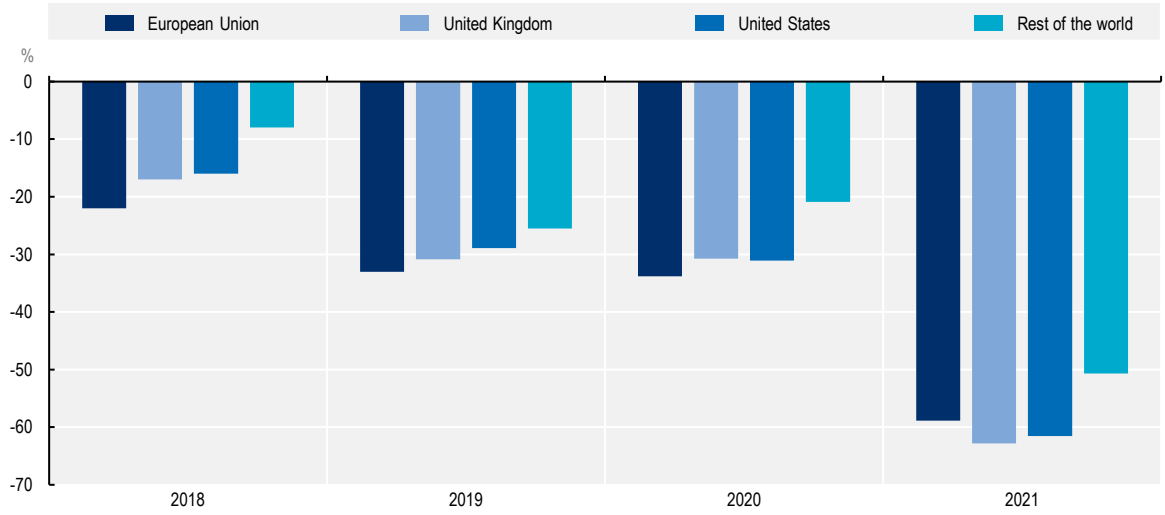
In some economies, such as emerging-market economies, a high proportion of micro and small- and medium-sized firms operate within the informal sector, outside the legal requirements of governments and the conventional regulatory framework. These enterprises are usually very small in size and turnover but collectively can be significant for the economy.

Historically, informality has mitigated economic downturns as informal economy output tends to move in the same direction as formal economy output but in a more muted manner (Elgin et al., 2021[18]). This will mechanically reduce economy-wide productivity growth in a typical economic crisis, as informal firms are usually less productive than formal ones (Ohnsorge and Yu, 2022[19]). During the COVID-19 crisis, however, firms in the informal sector, which are mostly concentrated in low-productivity service sectors, were hit severely (Qiang and Kuo, 2020[20]), not least as many were unable to access government support.

Start-ups

Recent studies have pointed to a drop in start-up creation during the COVID-19 crisis (Benedetti-Fasil, Sedlácek and Sterk, 2021[21]), although there may be some differences across countries. Globally, the number of start-ups is estimated to have been on a downward trend even before the crisis (Figure 1.8). Start-ups are defined here as active, for-profit companies with fewer than 250 employees that were founded between 1st January 2017 and 31st December 2021 and identified using the Crunchbase database, which gathers information on venture capital financed firms. The fall in the number of start-ups accelerated in 2021, falling by 60% in the European Union, the United Kingdom and the United States (EC, 2022[16]). However, the number of start-ups rose somewhat in 2021 in Germany in knowledge-intensive services sectors, after a trend decline since the early 2000s (Deutsche Bundesbank, 2022[22]).

Figure 1.8. Growth in the number of start-ups



Note: Start-ups were identified from the list of companies in the Crunchbase database which were: i) active; ii) for-profit companies with fewer than 250 employees; and iii) were founded between 1 January 2017 and 31 December 2021. Start-ups in Crunchbase have some venture capital financing and differ from business births which cover a wider range of businesses.
Source: EC (2022[16]), *Annual Report on European SMEs 2021/2022*, European Commission, using Crunchbase.

StatLink https://stat.link/fba6p0

The missing start-ups can worsen long-term productivity developments. Historically, a severe economic downturn is often associated with a missing generation of start-ups or weaker growth performance of start-ups that manage to go ahead. While this effect is expected to be marginal in the short term, as new firms account for a small share of firms, the absence of those start-ups can affect long-term productivity as they often play a key role in competition, innovation/creation (Kolev et al., 2022[23]) and/or in diffusing new technologies and business models (Criscuolo, Gal and Menon, 2016[24]). Some start-ups also have strong growth potential, with related economic benefits (OECD, 2021[25]).

Sales

Sales are a key indicator of firm performance and can sometimes provide useful insights into future developments. Just over half of SMEs in OECD countries with a digital presence, namely a Facebook page, recorded a rise in sales between 2020 and 2021, while more than 40% saw sales contracts, according to the Future of Business Survey (Figure 1.9, Box 1.1). More than 10% of small firms recorded an increase in sales of above 60%. For comparison, SME sales in OECD countries grew on average by 3.4% in 2019, according to the OECD Structural and Demographic Business Statistics (SDBS) database. In 2021, the percentages of SMEs with an increase in sales were higher in “manufacturing” and “information and communications” (in both cases close to 60%) but lower in “transportation and storage” and “hotel and restaurants” (around 40%). Large SME sales (by more than 60%) were recorded in “energy” and “water supply and waste management”. There was also a wide disparity across countries (Figure 1.10). While more than 60% of SMEs were reported to have witnessed an increase in sales in Chile, France and Norway, the percentage was only 40% in Germany and Korea.

Box 1.1. The Future of Business Survey

This chapter relies on data from the Future of Business Survey. A questionnaire was distributed to a random sample of businesses with a Facebook business page in March 2022. There was no compensation delivered to participants for engaging with the survey.

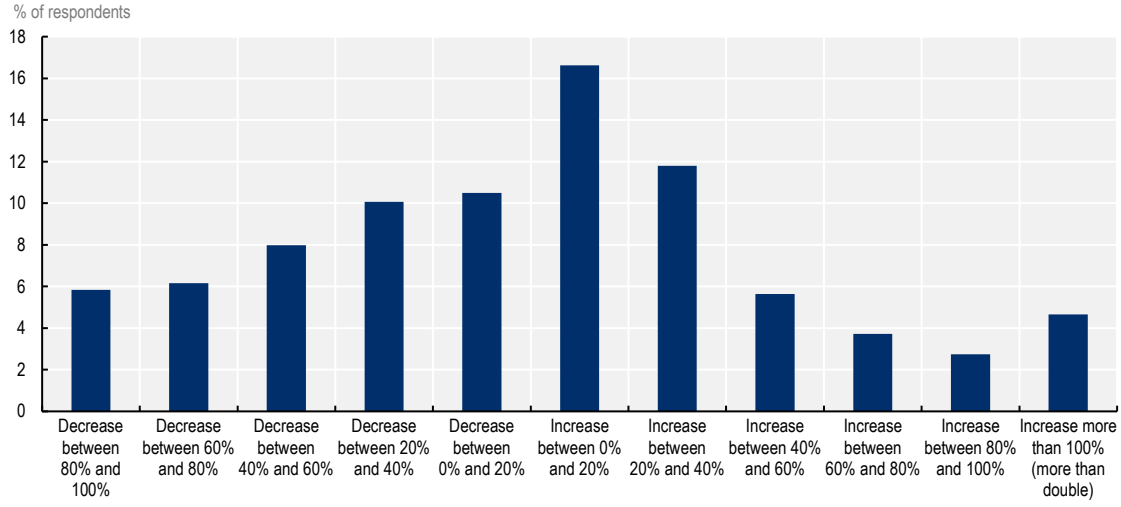
Information for almost 15 000 businesses in every OECD country came from answers on recent performance in sales, main obstacles to operating and engaging in international trade, as well as other business characteristics such as size and sector of activity. The data used in this analysis refer to micro, small- and medium-sized firms, i.e. those with fewer than 250 employees.

Surveys were randomly sampled. Results were weighted using non-response weights for the entire sample (derived from country-specific logistic regressions) to ensure they are representative of the entire Meta population. Such a weighting scheme is found to be relatively constant from one survey wave to another.

As the survey covers only firms with a digital Facebook page and is weighted in accordance with the page administrator population rather than the total business population, it should be regarded as representative of firms with an online presence rather than the entire business population.

Source: Schneider, J. (2020[26]), *Future of Business Survey Methodology Note*, mimeo.

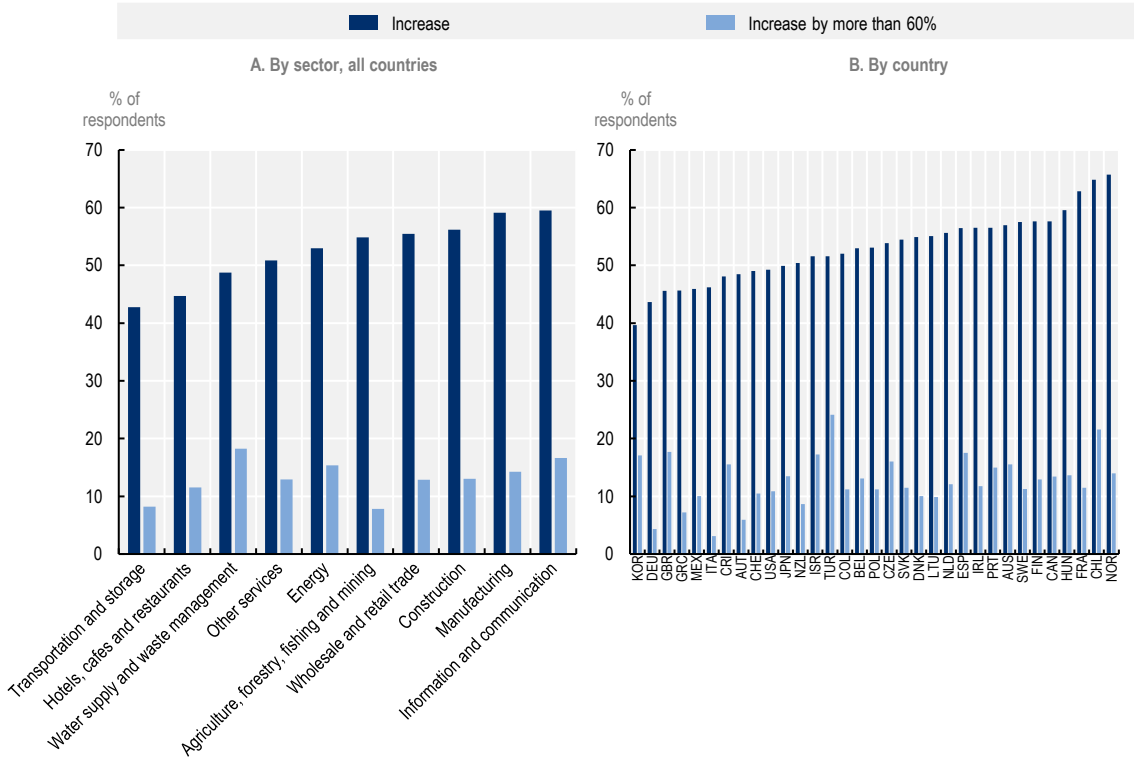
Figure 1.9. Distribution of SMEs sales growth in 2021



Note: 14.3% of respondents were not in operation in 2020. See Box 1.1.
Source: OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/gcule3

Figure 1.10. Percentage of SMEs with an increase in sales



Note: See Box 1.1 for more details.
Source: Using the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

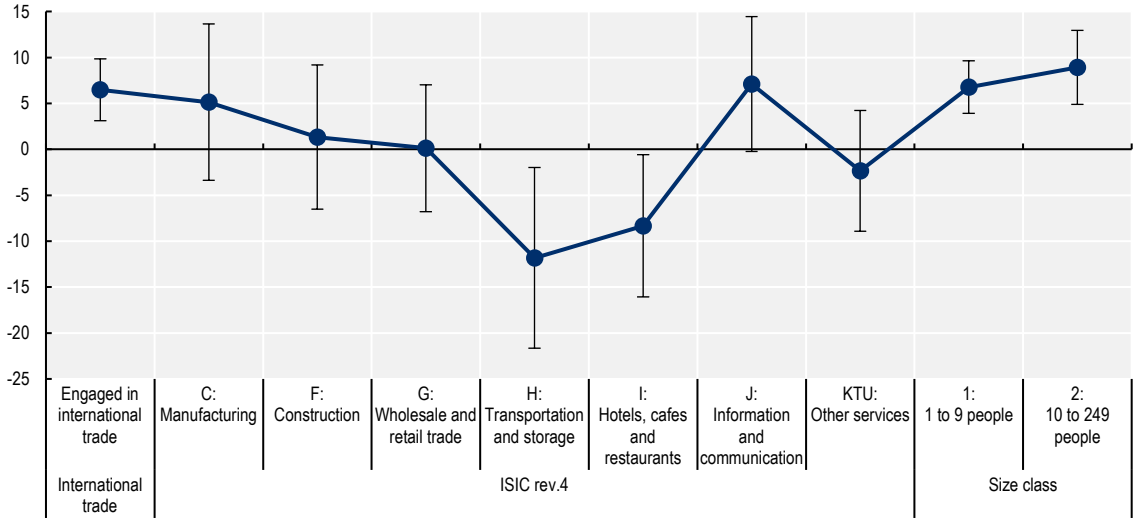
StatLink https://stat.link/dsivye

Analysis using the Future of Business Survey covering OECD countries suggests that firms with foreign customers were more likely to record an increase in sales in 2021 (Figure 1.11). Engaging in international trade is estimated to have increased an SME's probability of experiencing an increase in sales by 3 to 10 percentage points. Micro and small- and medium-sized firms were also found to have a higher probability to have increased sales than those with no employees. Firms in the "transportation and storage" and "hotel, cafe and restaurant" sectors were, by contrast, more likely to experience a decline in sales as compared with those operating in primary sectors, manufacturing or information and communication technology (ICT).

A higher engagement in online trade was found to reduce the probability for a firm to experience a reduction in sales in 2020 according to the last OECD SME&E Outlook (2021[12]). But only firms whose share of online sales was above a certain threshold – of around 75% - were more likely to increase sales in 2021 according to the new wave of the Future of Business Survey.

Figure 1.11. Determinants of the 2021 increase in sales

Marginal effect of engagement in international trade, sector affiliation and firm size on sales, percentage point



Note: Marginal effects are derived using a logit regression covering 33 OECD countries for the year 2021. Engaging in international trade increases an SME's probability of experiencing an increasing in sales by 3 to 10 percentage points. Effects are relative to the reference category "agriculture, mining, energy, water supply" regarding the sectoral dimension and relative to "firms with no employee" regarding firm size. Confidence bands are reported at 95% and are indicated by the whiskers in the chart. Effects are statistically significant when the confidence bands do not cross the zero-line.
Source: Using data from the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/2azp78

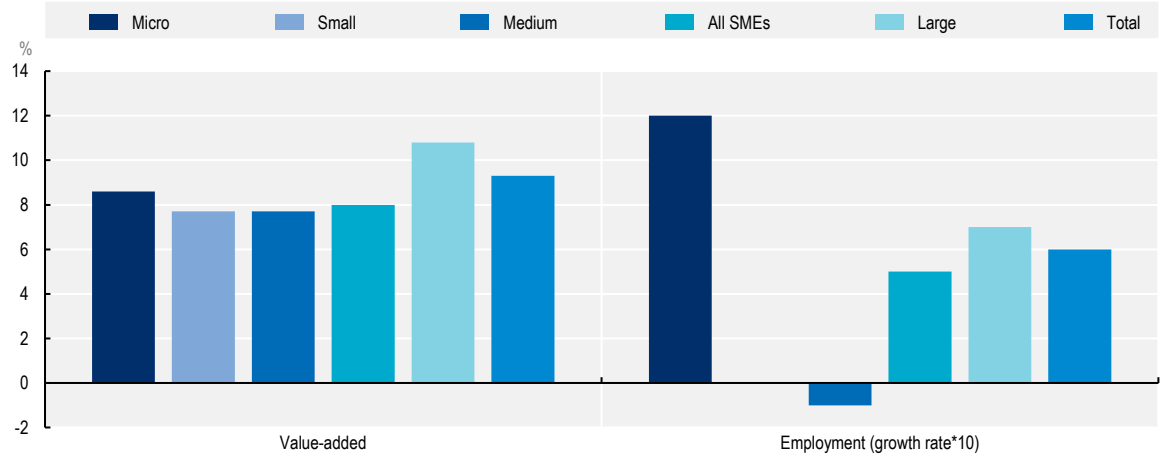
Value-added and employment

Large firms in Europe experienced a pronounced rise in value-added, with growth amounting to 10.8% in 2021, while micro and small firms' value-added grew at a healthy but lower rate of 7.7-8%, even though they were hit disproportionally by the crisis in 2020 (Figure 1.12). This points to increasing performance gaps across firm size classes, with possible consequences for investment in the future. Despite strong growth, the level of SME value-added in 2021 remained lower than in 2019 in "accommodation and food services", "transportation and storage", "wholesale and retail trade", which had to cope with lockdowns and measures put in place to limit the spread of the virus in 2020, some of which remained in place in 2021, and "administrative and support services" (EC, 2022[16]).

Micro firms outperformed larger firms in terms of employment in 2021. Employment in micro firms grew by 1.2% in 2021, compared to 0.6% for all firms in Europe, according to the 2021/22 Annual Report on European SMEs (EC, 2022[16]) (Figure 1.12). One potential explanation is that micro firms were less likely to have had access to furlough schemes and other measures put in place to help weather the crisis. Some of the stronger employment growth in 2021 could thus reflect a rebound from 2020 lows. Employment developments differed widely within the European Union. Employment fell in a number of Central and East European countries, while an increase was visible in other European Union (EU) countries such as Belgium or Portugal.

Figure 1.12. Employment and value-added annual growth by firm size in the European Union

2021



Source: EC (2022[16]), *Annual Report on European SMEs 2021/2022*, European Commission.

StatLink https://stat.link/ayme2r

SME employment performance did not depend on the initial level of productivity. According to the OECD Structural and Demographic Business Statistics (SDBS) database, 24% of industries with low levels of productivity in 2019 were also in the top 33% group with the strongest employment growth in 2020 (Table 1.1). Part of this could reflect the surge in employment in selected low-productivity sectors such as home care in 2020 (OECD, 2021[12]). At the same time, a number of high-productivity industries experienced a low or moderate increase in employment.

Table 1.1. Employment performance and initial level of productivity

		Employment growth, 2020 (%)		
		Top 33%	Medium range	Bottom 33%
Productivity level, 2019 (%)	Top 33%	38.0	35.1	26.9
	Medium range	28.8	41.8	29.4
	Bottom 33%	24.3	29.3	46.4

Note: Productivity is measured as value-added per person employed. The analysis covers 25 European countries and business sectors (excluding finance). The ranking is made by country. Only SMEs are considered.
Source: Calculation using OECD.Stat (n.d.[27]), OECD Structural and Demographic Business Statistics (SDBS) database, https://stats.oecd.org/Index.aspx?DataSetCode=SSIS_BSC_ISIC4.

Productivity and wages

A number of factors affected SME productivity during the crisis. Small firms were less able to weather the crisis than larger firms (D'Adamo, Bianchi and Granelli, 2021[28]) as they were less likely to receive government support (OECD, 2021[12]) and experienced larger declines in hours worked (ILO, 2021[29]).

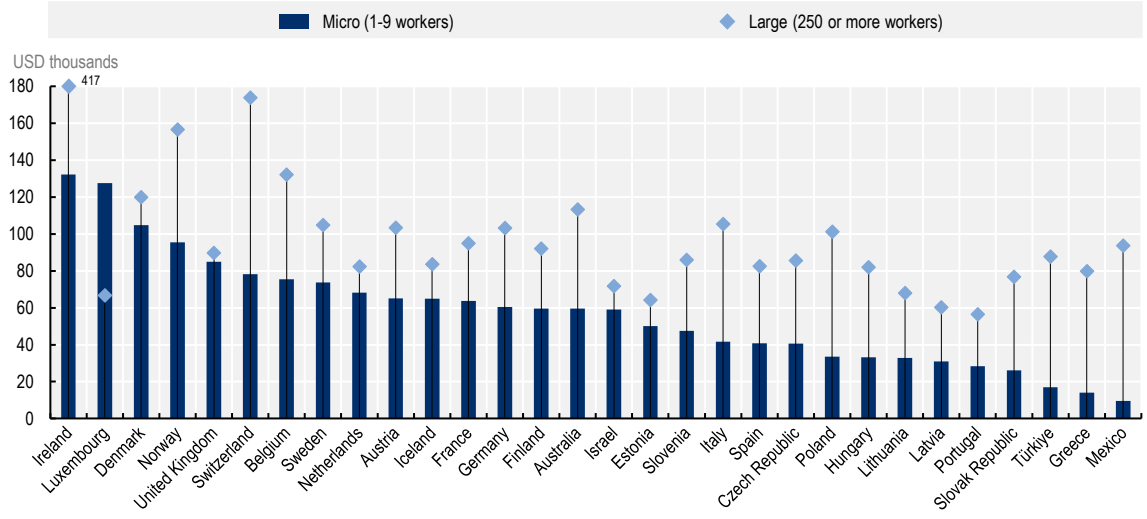
Although labour productivity data by size class are not available for the post-COVID period, pre-crisis data show that larger firms are on average more productive than micro firms (Figure 1.13). This typically reflects increasing returns to scale and capital-intensive production. In most countries, labour productivity gaps

between micro and large firms are relatively high, particularly in the manufacturing sector (OECD, 2021[30]). Differences in productivity across size classes are relatively smaller in business services. In some cases, smaller firms can outperform larger firms, particularly in the business services sector, reflecting competitive advantages in niche, high brand or high intellectual property content activities as well as the intensive use of affordable information and communications technologies.

The increasing share of micro firms in employment is likely to be concomitant with a decrease in productivity at the economy-wide level. Labour productivity in the OECD, measured as GDP per hour worked temporarily increased at the outbreak of the pandemic. It accelerated in the first year of the pandemic, with growth exceeding 3% in 2020, compared to less than 1.5% in 2019 and 1.2% on average from 2000 to 2019. The pattern in 2020 was due to hours worked contracting sharply in the first half of the year, which more than offset a contraction in output (OECD/APO, 2022[31]). During the second half of 2020, hours worked recovered in line with output and resulted in a small drop in labour productivity. OECD (2023[32]) suggests that most of these productivity developments can be explained by shifts in activities across sectors (Box 1.2).

Figure 1.13. Labour productivity in micro and large firms

Value-added per person employed, current purchasing power parity (PPP), 2020 or latest available year, business economy



Source: Calculation using OECD.Stat (n.d.[27]), OECD Structural and Demographic Business Statistics (SDBS) database, https://stats.oecd.org/Index.aspx?DataSetCode=SSIS_BSC_ISIC4.

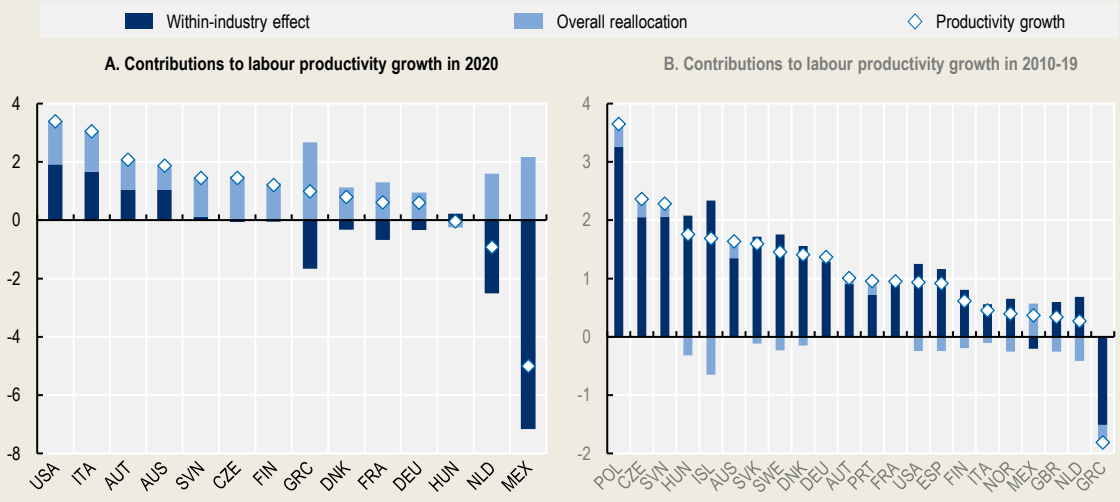
StatLink https://stat.link/o7xd1u

Box 1.2. Shift-share analysis of productivity

Using a shift-share analysis, Pionnier, Zinni and Luu (2023[33]) document unusually large movements in terms of productivity in 2020 in OECD countries, especially in countries which put in place stringent lockdown measures (Figure 1.14). Shifts of activity across sectors were found to be the main sources of economy-wide productivity growth. By contrast, the within-industry contributions to labour productivity growth in 2020 declined compared to the previous decade in most countries for which data are available. They even turned negative in the Czech Republic, Denmark, Finland, France, Germany, Greece, Mexico and the Netherlands. By contrast, these contributions were higher in 2020 than in 2010-19 in Austria, Italy and the United States. In most countries, "transport", "accommodation" and "personal services" contributed negatively to within-industry productivity growth in 2020, while "trade", "ICT", "finance and insurance" and "business services" contributed positively. Countries differed in the relative magnitude of these negative and positive contributions.

Shift-share analysis on the few countries for which detailed industry data are available for 2021 shows that these shifts were largely related to temporary disruptions. In most countries, the allocation of hours worked across sectors started to revert to its pre-pandemic level in 2021. In Austria, Italy and Slovenia, the overall reallocation effect went back to small values, while in the United States, it reached a low negative value that nearly cancelled the large positive effect that was observed in 2020.

Figure 1.14. Shift-share analysis of productivity



Note: The decomposition of economy-wide labour productivity growth includes two terms: a *within-industry effect*, where labour productivity growth in each industry is weighted by the industry share in total value-added in year t-1, and an *overall reallocation*. The latter is the sum of a *static reallocation effect* (accounting for changes between t-1 and t in the total hours worked share of industries with different productivity levels. Industries with an increasing share in total hours worked contribute positively to aggregate labour productivity growth if they have an above-average labour productivity level) and a *dynamic reallocation effect* (accounting for changes between t-1 and t in the total hours worked share of industries with different productivity growth rates. An increase in the total hours worked share of industries with positive productivity growth has a positive effect on aggregate labour productivity growth. This effect is all the more significant because the industry value-added is high).
Source: OECD (2023[32]), *OECD Compendium of Productivity Indicators 2023*, https://doi.org/10.1787/74623e5b-en.

StatLink https://stat.link/wr51ka

Source (box): Pionnier, P., B. Zinni and N. Luu (2023[33]), "Aggregate labour productivity growth during the pandemic: The role of industry reallocations", VoXEU.

Wages are highly correlated with productivity across size classes and wages in small and micro firms are generally lower than in larger firms. For instance, according to the U.S. Bureau of Economic Analysis (BEA) data, wages per head were on average about 20% lower in micro and small firms than in large firms in the United States in 2017. In other OECD countries for which data from the OECD Structural and Demographic Business Statistics (SDBS) database are available, wages per head in manufacturing activities were on average about 35% lower in micro and small firms compared to large firms in 2020.

SMEs face mounting short-term challenges

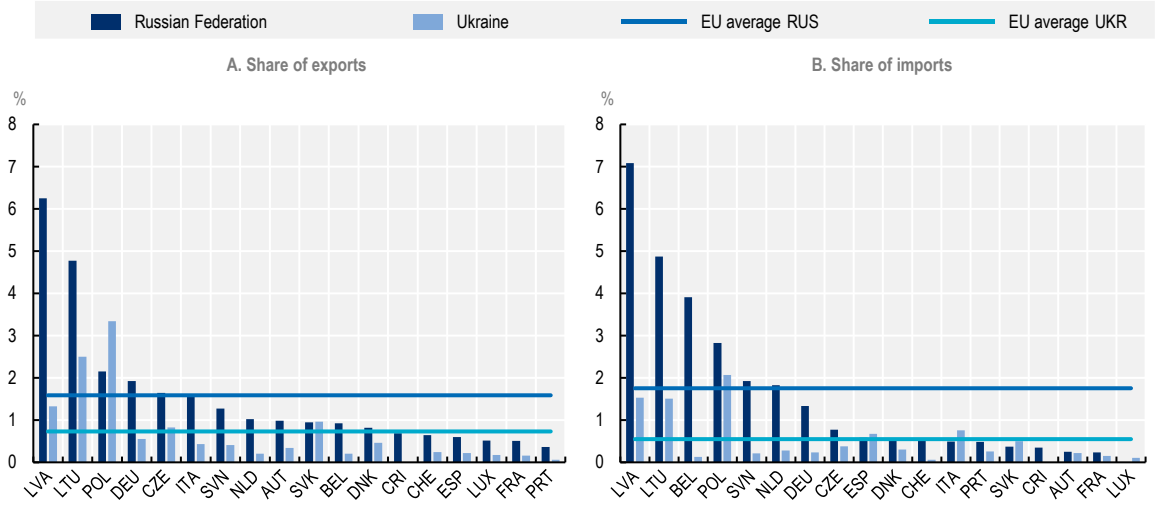
SMEs are facing many challenges in the coming years, including the fallout of the war in Ukraine and the energy crisis. While SMEs are in general only marginally directly exposed to the war in Ukraine, they have been significantly affected by the sharp increases in energy and commodity prices, tightening financial conditions and lesser monetary and fiscal support. Supply-chain disruptions, financial sector stress and labour shortages also add challenges.

SMEs direct exposure to Ukraine and Russia is limited

The direct international trade effects of the war in Ukraine on SMEs on average across countries and sectors are estimated to be limited, as they are generally little exposed to direct trade with Belarus and Russia (Figure 1.15). In 2020, the share of EU SME trade to/from Ukraine was generally below 3% of their total exports. SME exposure to Russia is higher but still limited, except in a few East European countries, such as Latvia, Lithuania and Poland. SMEs operating in tourist regions with traditionally high numbers of Russian visitors will also likely be hit severely.

Figure 1.15. Exposure of SMEs to trade with Russia and Ukraine

2020



Note: Share of exports (imports) is the percentage of the value of exports (imports) relative to the total exports (imports). For example, imports from Russia make up 7% of total imports of Latvia and imports from Ukraine make up 1.5% of total imports of Latvia.
Source: Calculations based on OECD.Stat (n.d.[34]), *I - TEC by Sector and Size Class*, http://stats.oecd.org/Index.aspx?DataSetCode=TEC1_REV4.

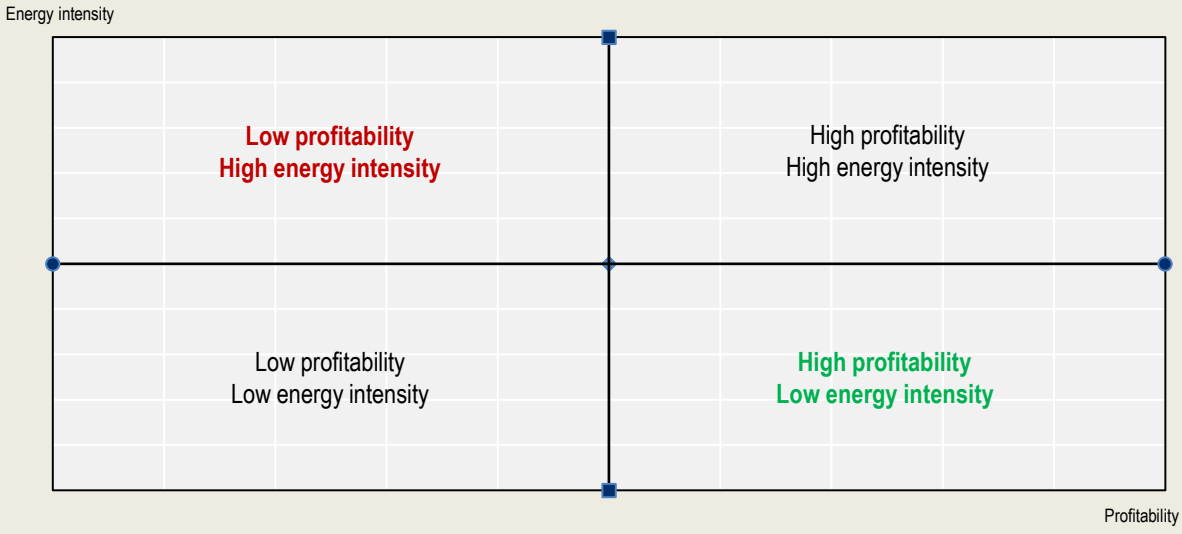
StatLink https://stat.link/7q9f0b

At the sectoral level, SMEs in the energy sector where Russia is a global player are expected to exhibit more vulnerability. Sectors, where SMEs account for the largest share of employment, are generally highly vulnerable to a rise in energy prices (Box 1.3).

Box 1.3. A snapshot of SME vulnerability to energy prices

This box examines the vulnerability of SMEs to a rise in energy prices looking at two dimensions of SMEs: financial health (proxied by profitability) and exposure to energy prices (proxied by use of energy in the production process – energy intensity). Firms located in the upward-left quadrant (high-risk sectors) will be in general more vulnerable to a rise in energy prices than those located in the bottom-right quadrant (low-risk sectors) (Figure 1.16).

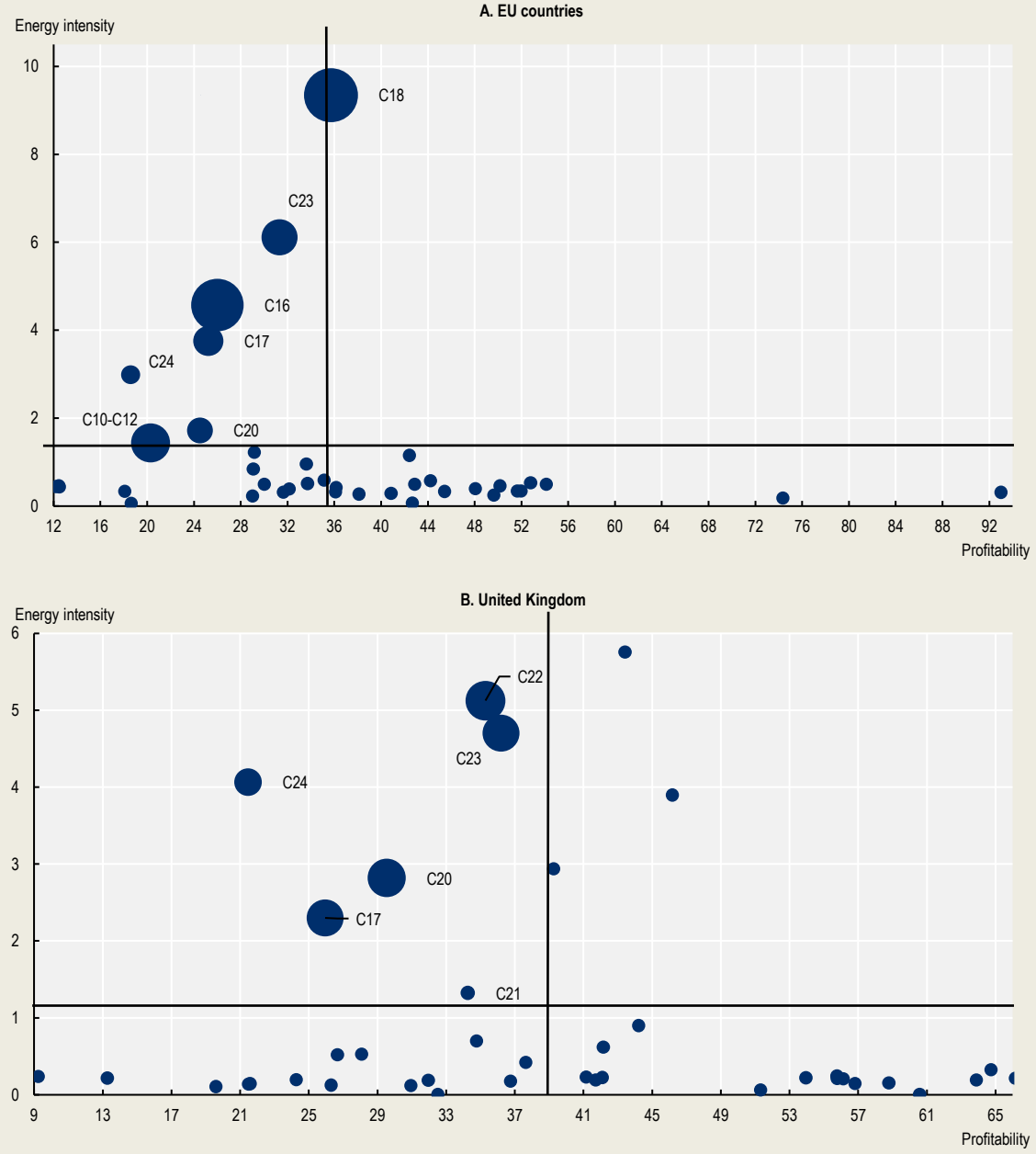
Figure 1.16. Framework to assess the vulnerability of SMEs to energy prices



The analysis is conducted at a two-digit sector level for the European Union and the United Kingdom in 2018. It covers enterprises of all sizes and uses Eurostat's complete energy balances and the OECD Structural and Demographic Business Statistics (SDBS) database. The size of the bubble indicates the share of SME employment in that specific sector.

The comparison between the European Union and the United Kingdom points to the following conclusions (Figure 1.17). First, sectors, where SMEs account for the largest share of employment, are generally in the high-risk quadrant. Second, some of these sectors are common between the two regions such as: manufacturing of paper and paper products (C17); manufacturing of chemicals and chemical products (C20); manufacturing of other non-metallic mineral products (C23). However, some vulnerable sectors are country/region specific, for instance, the manufacturing of rubber and plastic products (C22) for the United Kingdom, and printing and reproduction of recorded media (C18) for the European Union.

Figure 1.17. Vulnerability analysis, 2018



Note: C10-C12 - Manufacturing of food products; beverages and tobacco products; C13-C15 - Manufacturing of textiles, wearing apparel, leather; C16 - Manufacturing of wood and products of wood and cork; C17 - Manufacturing of paper and paper products; C18 - Printing and reproduction of recorded media; C20 - Manufacturing of chemicals and chemical products; C21 - Manufacturing of basic pharmaceutical products and pharmaceutical preparations; C22 - Manufacturing of rubber and plastic products; C23 - Manufacturing of other non-metallic mineral products; C24 - Manufacturing of basic metals; C33 - Repair and installation of machinery and equipment.
Source: OECD calculation using Eurostat data and OECD.Stat (n.d.[27]), *SDBS Structural Business Statistics (ISIC Rev. 4)*, https://stats.oecd.org/Index.aspx?DataSetCode=SSIS_BSC_ISIC4.

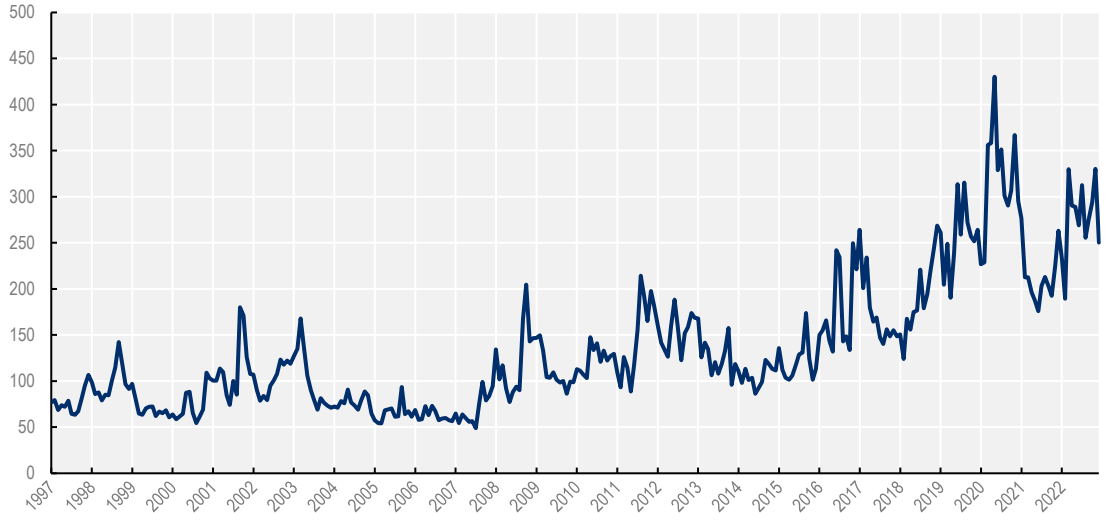
StatLink https://stat.link/pldof6

Elevated uncertainties and geopolitical tensions

Global economic and policy uncertainties have hovered around elevated levels, even though they remain below the peak observed in 2020 (Figure 1.18). Recent credit shocks have increased uncertainties related to financial developments and monetary policy reactions. This uncertain economic and political environment is likely to have several implications for SME performance. First, this, together with increased indebtedness as a result of the COVID-19 crisis, could lead to increased risk premia in loans and other forms of external financing. Second, this may depress demand and sales expectations everything else being equal. All these factors are likely to deter investment, in a context where digitalisation and decarbonisation are increasing investment needs.

Figure 1.18. Global economic and policy uncertainties

Index = 100 over the period 1997-2014



Note: The Global Economic and Policy Uncertainty (GEPU) Index is a GDP-weighted average of national EPU indices for 21 countries: Australia, Brazil, Canada, Chile, China, Colombia, France, Germany, Greece, India, Ireland, Italy, Japan, Mexico, the Netherlands, Russia, South Korea, Spain, Sweden, the United Kingdom and the United States.
Source: EPU (n.d.[35]), *Economic Policy Uncertainty Index*, https://www.policyuncertainty.com.

StatLink https://stat.link/nmi5w3

Inflation and rising costs

Inflation has become a major concern amongst SMEs. According to the U.S. Chamber of Commerce survey conducted between 29 April and 17 May 2022, inflation and related concerns are dominating small business leaders' thinking as COVID-19 concerns started to fade. Forty-four percent of the small businesses surveyed cited inflation as the biggest challenge facing small business owners, up from 33% the previous quarter. This is up significantly from 19% in the third quarter of 2021. Furthermore, 88% were concerned about the impact of inflation on their business, with 49% indicating they were very concerned, up from 44% in the first quarter of 2022 (U.S. Chamber of Commerce, 2022[36]).

Year-on-year consumer price index (CPI) inflation in the OECD reached a level in mid-2022 not recorded since the late 1980s. The rise started at the end of 2020, prior to the invasion of Ukraine, but the war has exacerbated inflationary pressures, through energy and commodity prices. Inflation has been falling since the end of 2022, as energy costs have dropped, but has remained at high levels in most OECD countries.

Core inflation (which strips out food and energy inflation) has remained at elevated levels, in line with high levels of labour shortages in some countries, tight labour markets and a slow adjustment of margins (OECD, 2023[1]).

Most SMEs increased the prices of their goods and services in the first 6 months of 2022, for most of them between 5-15% according to the Global State of Small Business Survey, fielded from 5-17 July 2022. This was particularly the case for firms operating in “hotel, cafe and restaurant”, “other services” and “wholesale and retail sales” sectors. Most small firms in the OECD reported an increase in the cost of their business input and labour, of between 25-50% of the cost of operating. Firms reporting such an increase were found in sectors such as “hotel, cafe and restaurant”, “agriculture, foresting, fishing and mining” and to a lesser extent “construction”. One of the leading factors in increasing costs was rising energy bills. Energy inflation recently decreased but has remained elevated. According to OECD estimates, a 10% rise in energy prices is estimated to Increase by 7.5% the number of firms exiting the market (Dechezleprêtre, Nachtigall and Stadler, 2020[37]).

Some of the factors affecting prices are likely to be of a short-term nature, including those driven by shipping costs and supply disruptions (Carriere-Swallow et al., 2022[38]; di Giovanni et al., 2022[39]), labour markets (Blanchard, 2022[40]) and aggregated demand (di Giovanni et al., 2022[39]). During the period 2019-21 for instance, sectoral labour shortages accounted for around one-half of inflation in the euro area and only one-third in the United States (di Giovanni et al., 2022[39]). The remaining part of inflation was explained by the demand side, with aggregate demand playing a larger role than sectoral demand shifts. International spillovers also drove inflation in the euro area. More generally, international connectedness, as measured by global value chains, is often reported as a reason for the increasing importance of global factors in explaining national inflation (Auer, Borio and Filardo, 2017[41]).

Ultimately, inflation developments over the medium term will depend on the extent to which Central Banks manage to keep inflation expectations anchored and whether the rise in price inflation will spiral into a surge in wages. Nominal wage growth has picked up in most economies but has not kept pace with inflation. With inflation expected to remain well above target over at least the next year, it is probable that many wage demands in 2023-24 will be considerably higher than previously anticipated (OECD, 2022[2]). While inflation could come down rapidly if supply-chain disruptions continue to ease and global policy tightening results in fast declines in energy and goods prices, the risk that high inflation becomes entrenched cannot be excluded. Inflation rates in services appear to be picking up from already elevated levels and they are likely to stay elevated for some time, together with cost pressures from tight labour markets. Finally, further geopolitical tensions can ignite a renewed surge in energy prices or compound existing disruptions keeping inflation high.

Heightening labour and skill shortages

Retaining and attracting staff has become a major issue for SMEs in OECD countries, despite recent signs of easing labour-market pressures in developed economies (OECD, 2023[1]). It is reported to be the second most pressing challenge SMEs with an online presence and older than two years faced in the first quarter of 2022 according to the Future of Business Survey. This is also 1 of the 2 top challenges that 60% of firms faced in the United States in the 12 months prior to October-November 2021, according to the 2022 SEBC employer firms survey.

The number of firms reporting labour shortages rose significantly in the second half of 2021 and early 2022, in many countries and industries. In OECD countries, increases in job vacancy rates and vacancy-to-unemployment ratios have been broad-based in the post-COVID period but particularly pronounced in “manufacturing”, “accommodation and food”, and “health and social work” (Causa et al., 2022[42]).

The Great Resignation – the rise in voluntary resignations – that followed the first lockdowns has resulted in pockets of labour shortages, adding to the labour-market tensions arising primarily from a strong global

demand and massive recovery plans which boosted labour demand (OECD, 2022[43]). Resignation rates have risen particularly – but not only – in the United States and originated to a large extent from young and less-educated workers in industries and occupations that were most adversely affected by the pandemic (Hobijn, 2022[44]). Resignations are estimated to have been triggered by a mix of tighter labour markets and an increase in workers' bargaining power (Bachmann et al., 2021[45]; Abendschein, Causa and Luu, 2022[46]) and potentially a change in workers' preferences, especially those in part-time or out of the labour force (Faberman, Mueller and Şahin, 2022[47]) or in low-pay, low-quality jobs often contact-intensive activities (IMF, 2022[48]; Parker and Horowitz, 2022[49]). Official statistics on resignation rates by industry in the United States provide further evidence of the importance of job quality: higher quit and vacancy rates have been generally found in industries with lower pre-pandemic earnings and worse working conditions, such as "retail trade", "food and hospitality" and "manufacturing".

Preliminary evidence suggests that the Great Resignation is unlikely to lead to long-lasting changes in labour markets (Pizzinelli and Shibata, 2023[50]). First, only a small share of job quitters in the United States seem to be changing the industry of employment or occupation (Hobijn, 2022[44]). Second, the decline in willingness to work is found to be, in the case of the United States, essentially for those out of the labour force (Faberman, Mueller and Şahin, 2022[47]). Third, while the pandemic caused a sizeable reduction in job searches for most of 2020, job search efforts rebounded strongly in 2021 (Faberman, Mueller and Şahin, 2022[47]). Industries and occupations with the biggest increase in their quits rate during the pandemic also saw the fastest job growth in 2021 (Hobijn, 2022[44]).

By contrast, changes in the working environment may have permanent impacts on labour markets. There are some emerging signs that the increase in teleworking is likely to persist over time, even though full teleworking is unlikely to become the norm. Survey data collected by the OECD Global Forum on Productivity suggest that managers and workers wish to increase substantially the share of regular teleworking from pre-crisis levels (Criscuolo et al., 2021[51]). Respondents, on average, find that the ideal amount of teleworking is around 2-3 days per week, in line with other recent evidence and with the idea that the benefits (e.g. less commuting) and costs (e.g. impaired communication and knowledge flows) need to be balanced at an intermediate level of teleworking intensity. Empirical analyses also point to an asymmetric reaction of the recourse of teleworking to restrictions, with a strong increase in teleworking after a tightening in restriction but no strong effect after an easing. This asymmetry implies that the increase in teleworking experienced at the start of the pandemic is likely to be only partially reverted (Adrjan et al., 2021[52]). One feature that is likely to influence the decision to telework is the quality and the ease of access to broadband as well as the housing market situation (Ahrend et al., 2022[53]).

The need to adapt to a new environment and cope with uncertainty has negatively affected the mental well-being of SMEs, entrepreneurs and employees. The mental health impact of the pandemic has been huge, with a prevalence of anxiety and depression more than double the levels observed pre-crisis in most countries with available data, most notably in Mexico, the United Kingdom and the United States (OECD, 2021[54]). Such a consideration needs to be accounted for when designing SME policies.

Beyond the economic shocks, digitalisation and the green transition are expected to lead to durable sectoral changes by altering business models and the way firms operate (OECD, 2019[13]) and put further pressure on labour markets. For instance, artificial intelligence is foreseen to extend the range of automatable tasks, including routine cognitive tasks that are typical of service activities, or business capacity for anticipation and differentiation (e.g. customer profiling) that are key to SME performance. The adoption of new technologies may disrupt temporarily existing production processes and operations, as SMEs will have to retrain employees or hire new ones. Adapting skills to emerging needs should also be an important component of the ecological transformation. Indeed, the transition to a low-carbon economy will only be possible if workers can flexibly adapt and transfer to greener jobs or industries. Estimates suggest that a little bit less than half of green-task jobs are currently located in micro and small firms (OECD, 2023[55]).

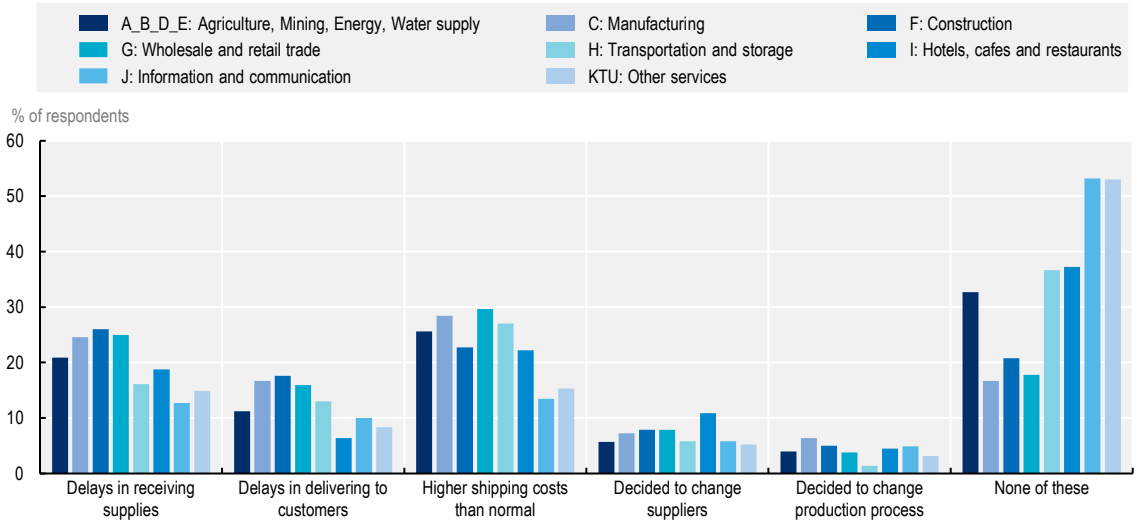
Overall, labour shortages (beyond the Great Resignation) and the competition for skills are likely to persist over time, placing SMEs at an even greater disadvantage. They are likely to accentuate SMEs' traditional difficulties in attracting and retaining skilled employees as they tend to offer less attractive remuneration and working conditions than large firms (OECD, 2019[13]) and lack the capacity and networks needed to identify and access talent (Chapter 4).

Supply-chain pressures

The many shocks faced by the world economy since the start of the pandemic have favoured the emergence of supply-chain disruptions. According to the Future of Business Survey, about 62% of SMEs, with a Facebook page, reported having faced supply-chain disruptions in 2021. Delays in receiving supplies and higher shipping costs than normal were the most common forms of disruption mentioned (Figure 1.19). This is consistent with the 2022 SEBC employer firms survey, fielded in October-November 2021 in the United States, according to which navigating supply-chain issues was 1 of the 2 top operational challenges that 60% of the firms faced in the prior 12 months.

Figure 1.19. Supply-chain disruptions in SMEs in 2021

OECD countries, by economic activities



Source: OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/ywmoq4

Despite transport bans, including airspace bans, that have followed the Russian invasion of Ukraine and the reintroduction of pandemic restrictions including China's zero-COVID policy in 2021-22, global supply-chain pressures decreased significantly in 2022. They have however remained well above the historical average (New York Fed, 2022[56]).

The reopening of China has disrupted supply chains in the short term, as the rapid spread of the virus has slowed down the world's major suppliers. This is estimated to have partially contributed to the pause in global supply-chain pressures' reversal toward its historical range over the last three months of 2022 (New York Fed, 2023[57]). China's reopening is likely to relieve some supply-chains pressures in the medium term, although it is unlikely to fully revert to the ongoing process of slowing down supply-chain expansion (Chapter 3).

The extent of disruptions varies widely across sectors. While the majority of small firms in "information and communications" and in "other services" reported no disruption, most SMEs experienced disruptions in "manufacturing", "retail and wholesale trade". Beyond those sectors, disruptions are likely to occur in sectors where Russia and Ukraine are major producers, such as wheat. Likewise, the disruption in fertiliser manufacturing risks putting agricultural supply under stress for the years to come. Small firms have also to cope with shortages of semi-conductors. Russia and Ukraine are leading global suppliers of metals and raw materials, mostly directed to the EU market, and important sources of intermediate inputs in several sectors across the OECD (Chapter 3).

Tightened credit conditions

The COVID-19 crisis has tested the financial resilience of firms, in particular small firms which have traditionally less access to finance than larger firms. According to some estimates, 25% of firms exhausted their liquidity buffers in the European Union by the end of 2021 (Archanskaia et al., 2022[58]). Further, 10% of pre-shock viable firms appear to have shifted into insolvency status as a result of the COVID-19 crisis. These results appear more prominent in sectors that were affected more by the pandemic and the associated containment measures. The rise in energy costs is likely to have enhanced those financial needs.

Monetary policy stances have tightened to counter inflation in both developed and some emerging-market economies. After years of very favourable financial conditions since 2020, financial markets around the world have also become more volatile, reflecting greater risk aversion and uncertainty. In 2021, SME interest rates increased in 16 out of 34 Financing SMEs and Entrepreneurs Scoreboard countries (OECD, 2023[10]). However, the increase in the cost of lending did not translate into tighter lending conditions for SMEs compared to large companies, as more than half of the countries registered narrower SME interest rate spreads in 2021 (OECD, 2022[59]) This is consistent with survey data in different regions. In the euro area, access to finance was one of the least important concerns of SMEs, despite an increasing share of SMEs reporting higher interest throughout 2021 (ECB, 2021[60]). Similarly, in the United States, credit conditions tightened following the end of the Paycheck Protection Program but SME credit quality increased in 2021 with particular improvements in the debt-to-income levels and the liquidity positions of SME borrowers (kcFED, 2022[61]). Improved liquidity positions might have also contributed to a decline in the demand and uptake of SME loans in 2021.

Looking forward, securing financial expansion is the second challenge put forward by firms with an online presence and younger than two years, according to the Future of Business Survey. Bank loans have remained the most common source of external financing, although most SMEs reported not having recourse to external financing and debt is not the most appropriate source for financing growth, especially for start-ups (OECD, 2022[62]). Higher interest rates are likely to impact the conditions for SME borrowing. Survey data suggest that tightening monetary stance in 2022 increased the cost of credit for SMEs in the United States, while loan demand started to rise to cope with supply-chains disruptions (kcFED, 2022[61]).

Difficulties in accessing finance have risen for firms that are highly indebted. The share of zombie firms – firms that are in distress but avoid default thanks to their continued access to cheap funding and forbearance from their lenders – in assets, capital and debt is much higher among SMEs than among large companies. In a sample of 14 advanced economies, around 6-7% of the assets, capital and debt of all listed firms are sunk in zombie firms but this proportion reaches about 40% for listed SMEs (Banerjee and Hofmann, 2020[63]). Evidence from Japan suggests a decline in the exit of unhealthy firms (weaker cleansing mechanism) and an increase in borrowing, especially in long-term debt (Ito, Saito and Hong, 2022[64]). The pockets of vulnerabilities are concentrated in Japanese sectors most affected by the pandemic, with a sharp increase in the number of zombie firms that would otherwise have been healthy without the pandemic. In Central Europe, around 20% to 25% of all firms are estimated to be financially vulnerable (ERBD, 2022[65]). Just over a quarter of those vulnerable firms – or around 5% of all firms by

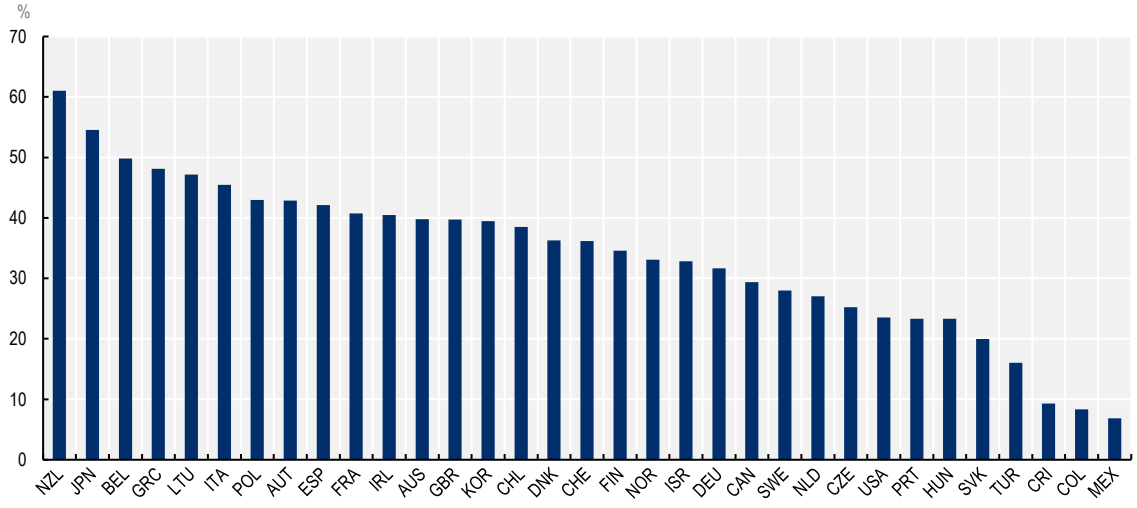
total assets – can be classified as true zombies (Acharya et al., 2022[66]). Zombie firms then create negative spillovers for healthy companies: strong firms see weaker growth in investment, revenue and employment when they operate in sectors with more zombie firms. Firms which are highly integrated in global value chains are particularly vulnerable to such negative spillovers. In addition, firms operating in countries with a high share of loans issued in foreign currency, are vulnerable to exchange-rate fluctuations.

Recent credit shocks have increased financial uncertainties and blurred signals on expected interest rates, in the context of still elevated core inflation. Financial conditions have tightened, which is likely to entail lower lending and activity if they persist (IMF, 2023[67]).

Change in the nature of direct fiscal support to SMEs

Since the beginning of the COVID-19 crisis, countries have supported small firms through various instruments. The most common forms of support were non-repayable grants or subsidies. The share of small firms that benefitted from this support varied widely across countries. More than half of small firms received support in Japan and New Zealand (Figure 1.20). Cross-country differences appear to be unrelated to the magnitude of the economic shock and existing fiscal space (OECD, 2021[12]). The extent of support varied also depending on the sectors of the firm. In OECD countries, the proportion of small firms which reported having received support is higher in the "hotel, cafe, restaurant", "energy", "transport and storage" and "water supply and waste management" sectors. By contrast, there is no difference depending on whether the firm is engaged in international trade or not, or on the age or the gender of the owner. Firms older than five years reported more often to have received support than younger firms.

Figure 1.20. Proportion of SMEs with a Facebook page receiving government support since the start of the pandemic



Source: Calculations, based on OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/kbwp74

Since June 2020 and in particular in the first half of 2021, governments have increasingly focused on supporting the recovery (OECD, 2021[68]), changing the nature and the extent of fiscal support. Compared to rescue measures implemented to respond to the COVID-19 crisis, support to firms in recovery packages included fewer measures specifically targeted to SMEs (OECD, 2022[59]). Within the group of SMEs, rescue packages appeared to have a stronger focus on start-ups and high-growth firms.

The type of support and design of instruments vary widely across countries (Box 1.4) but the policy focus appears to be primarily on greening the economy and digitalisation and to a lesser extent skills and innovation. While SMEs can benefit from generic measures in recovery packages, the limited explicit emphasis on SMEs in this central policy area calls for further action to ensure in particular that SMEs are equipped to finance actions or introduce non-finance instruments related to reducing their carbon footprint and contributing to sustainability objectives.

Fiscal measures have been implemented to shield households and companies from surging energy and food prices in almost all countries in the second half of 2022 (OECD, 2022[69]). Especially in Europe, where energy prices have risen the most, many governments announced new policy packages or extended existing ones, with budget costs approaching or exceeding 2% of GDP in some large economies (OECD, 2022[2]). In Europe, measures include energy price regulation through price caps and through a reduction in network and distribution costs, together with some tax relief and compensation for the increase in energy-related costs and in several countries a substantial increase in the statutory minimum wage (EC, 2022[70]). Fiscal energy-related support is expected to be gradually phased out in 2024 (OECD, 2023[1]).

Box 1.4. Financing instruments in rescue packages

This box draws on the report *Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard* (OECD, 2022[59]) and details the main characteristics of financing instruments introduced in the recovery packages, which do not include the most recent policy response to the energy crisis. The use and design of debt instruments for SME liquidity support in recovery packages varies across countries. While some loan schemes target viable firms, others aim to reach underserved companies owned by vulnerable groups. Similarly, although a large number of SME guarantee schemes were extended until the end of 2021 and beyond, their coverage varies.

The decreased attention to SMEs in the recovery packages is also evident in liquidity support. Efforts to boost liquidity through debt, grants and deferral instruments carry less weight in the recovery packages compared to crisis measures in terms of the number of policies.

In general, and in particular, at the outset of the crisis, rescue measures did not mobilise alternative sources and instruments of finance for SMEs. This is also the case during the recovery, contrasting with the pre-COVID period when alternative financing for SMEs gained significant ground. Despite their limited use alternative finance instruments that are present in the recovery packages for SMEs include factoring, leasing and hire purchases, trade finance and equity and quasi-equity tools. The recovery strategies also include regulatory changes to foster the use of such instruments.

Banks continue to be important partners in the deployment of recovery packages, along with digital platforms, given their existing presence and effectiveness in reaching a broader range of beneficiaries.

Source: OECD (2022[59]), *Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard*, https://doi.org/10.1787/e9073a0f-en.

The pace of digitalisation is rapid but still brings challenges to SMEs

Most SMEs, including micro firms, have access to basic broadband connections but are not engaged with the most advanced technologies. SMEs tend to start their digital journey with basic applications for general administration and marketing. As technologies become more sophisticated, they tend to lose ground compared to larger firms. Indeed, digitalisation is multi-faceted and involves the use and applications of different technologies for different purposes. Digital applications and combinations offer strong

complementarity, as technology supports further technology adoption. This also means that SME lag in the digital transition is likely to weigh down on their capacity to engage in future digital transformations.

Cloud computing for instance provides access to digital services over the Internet and can help SMEs leapfrog to new and more advanced digital solutions, by enabling smaller businesses to access on-demand offers that fit their needs (flexibility and scalability), without incurring (sunk) investment costs in hardware and software upfront, and supporting maintenance costs (OECD, 2021[71]). The percentage of small firms buying cloud computing services increased by 13.6 percentage points between 2018 and 2021 on average in 24 OECD countries but by 16.1 percentage points for medium-sized firms and 16.8 percentage points for large firms, according to OECD data on ICT access by business (Figure 1.21). In 2021, the gap between small and large firms remains significant in the 24 OECD countries covered.

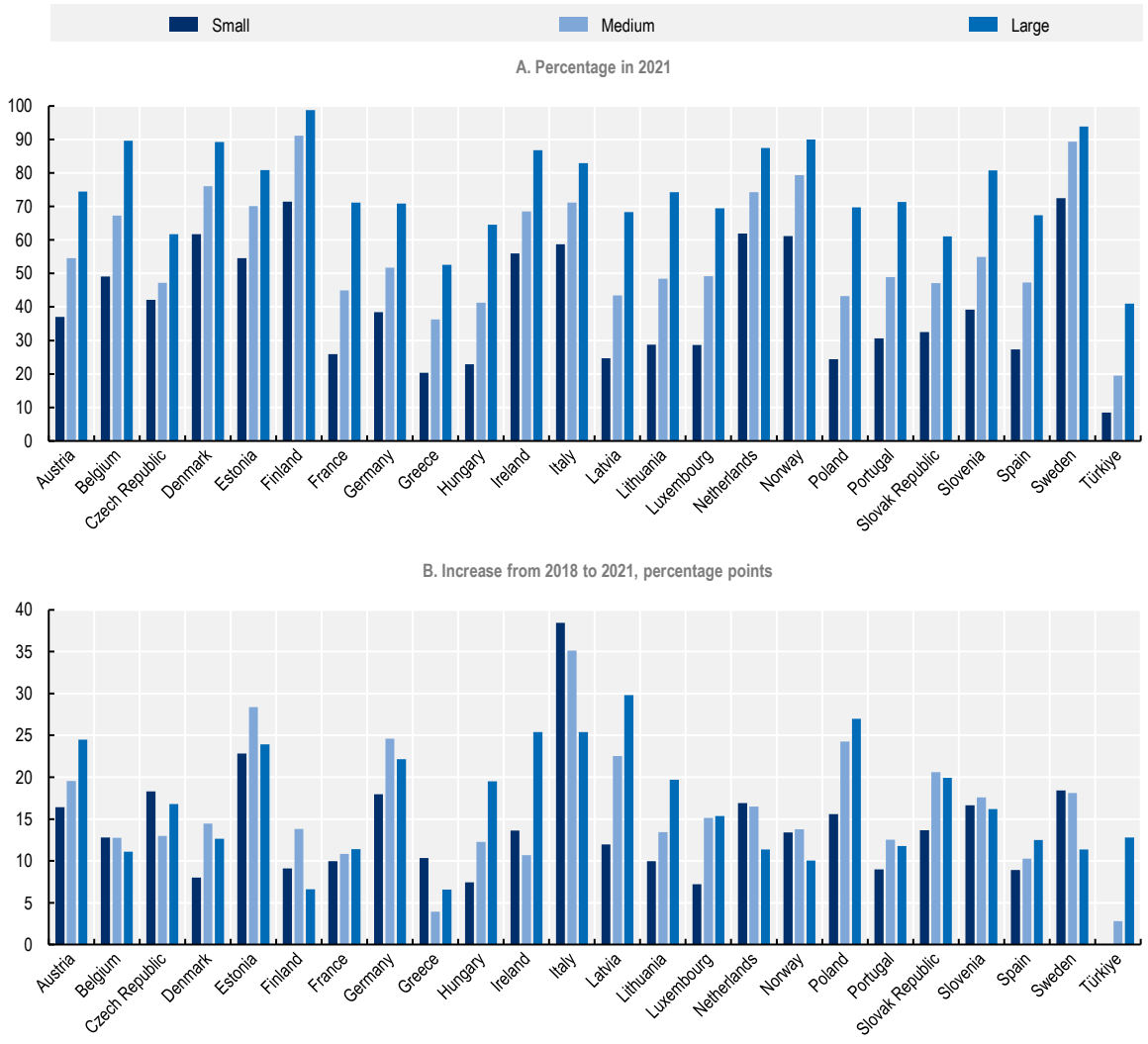
Another example is online trading that is likely to improve the resilience of firms to future shocks. There is now widespread evidence that digitalisation and engagement in online trade have helped cushion the downturn (OECD, 2021[71]; 2021[12]). SMEs are increasingly into "hybrid" business models, as in the case of "hybrid retail", where activities through physical stores and online sales are more and more integrated (OECD, forthcoming[72]). Furthermore, survey evidence on retail SMEs from selected OECD countries shows that operational complexity can increase substantially when multiple sales channels are used. Most small businesses task existing employees to manage online sales, with little or no investment in training.

According to some estimates, 70% of SMEs have intensified their use of digital technologies due to the pandemic (OECD, 2021[71]). Further development of communication technologies can increase possibilities to outsource service tasks (Gal et al., 2019[73]) and access skills externally, or leapfrog to more advanced technologies, such as data analytics (OECD, 2021[71]), and turn data into an economic asset (OECD, 2022[62]). This suggests that digitalisation is likely to continue for some time, even though its pace could slow as compared to the high rates observed during the pandemic. At the same time, recent evidence suggests an increase in the digital gaps between small and larger firms.

According to the March 2022 Future of Business Survey, 62% of SMEs with a Facebook page reckon that the COVID-19 crisis has changed the use of digital technology for their business permanently. This share is higher for the firms which have invested in technology (Internet or computer) training. But there are significant differences across sectors. The percentage of SMEs which viewed the changes as permanent was lower in "primary sectors" (agriculture, energy), "construction and water management", but higher in "hotel, cafe and restaurant", "ICT", "retail and wholesale trade". Younger firms, which were created less than a year before they answered the survey, had a higher probability to view the change as temporary.

Despite recent progress, a number of factors continue to hamper the digital transformation of SMEs, including their lack of information and awareness, skills gaps at the working and management levels and insufficient capital (OECD, 2019[13]). According to the Future of Business Survey, the most prevalent challenges reported by small firms, and in particular micro firms, are the lack of technical skills and knowledge. This is true in all sectors but the issue is particularly acute in "manufacturing". Smaller businesses also often face more difficulties in adapting to changing regulatory frameworks, dealing with digital security and privacy issues or simply accessing quality digital infrastructure. One key barrier to cloud computing adoption is related to uncertainty about the location of data and the competent jurisdiction in case of dispute (OECD, 2021[71]). The COVID-19 crisis has also revealed the vulnerability of SMEs to cyberattacks, which have intensified in recent years (OECD, 2021[71]). SMEs were ill-prepared to move rapidly on line and have become weak nodes within complex business networks, offering an entry door to supply chains.

Figure 1.21. Firms purchasing cloud computing services



Source: OECD (n.d.[74]), *ICT Access and Usage by Businesses*, https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS.

StatLink https://stat.link/efw5pv

OECD countries have focused on accelerating digital innovation diffusion to SMEs and ensuring they keep pace with the digital transformation (OECD, 2021[71]). Government interventions range from subsidising investments in digital technologies (e.g. Japan, Lithuania), to offering technical assistance or training (e.g. Australia, Portugal), to raising their digital security profile and capacity to protect data (e.g. Chile, European Union), to help them connect to digital platforms and business networks (e.g. Colombia, France) (Table 1.2). Public-private partnerships are a means for pooling resources and knowledge and are increasingly used (e.g. the Netherlands). Efforts also focus on expanding and securing the broadband and digital infrastructure (e.g. Denmark, Iceland). Regulators have paid attention to the risks of competition distortion and abusive behaviours, especially for SMEs operating on digital platforms and start-ups in digital markets. The public administration can play a role model in diffusion through its own transformation, e.g. e-government services and one-stop-shops for service delivery to SMEs (OECD, forthcoming[75]). Higher education institutions also have an important role in SMEs' uptake of digital skills, and their ability to adapt to constantly changing technologies (Chapter 5).

Table 1.2. Selected examples of programmes to help SMEs go digital in OECD countries

	Typologies of policy instruments	Targeted/ Generic	Country initiatives	Timing
Creating a supportive business environment				
Institutional and regulatory framework	Regulation	Generic	**EU General Data Protection Regulation (GDPR) and translation into national legislation (EU countries)** – Data privacy and security law imposing obligations to organisations worldwide, when they target or collect data related to people in the European Union.	2018-...
	Non-financial support	Targeted (SMEs)	**Digital Ethics Compass (Denmark)** – A toolbox to teach SMEs how to work with data and digital design in a responsible and ethical way, and avoid legal issues. Aimed at technological and data-driven SMEs in financial technology (fintech), health technology and mobility technology as well as design consulting.	2021-…
	Platforms and networking infrastructure	Generic	**AuroraAI programme (Finland)** – AI solutions that help link central government's services together and also interact with services in other sectors, to provide centralised services for citizens and companies in a timely, co-ordinated and ethical manner.	2020-22
Market conditions	Regulation	Generic	**GWB Digitalisation Act (Germany)** – Extends the scope of German antitrust law to tackle the abuse of a dominant position of platforms on multi-sided markets by prohibiting these firms from engaging in anti-competitive practices including self-preferencing or leveraging data to create market entry barriers, among others.	2021-…
	Financial support	Targeted (SMEs)	**Digital Export Bonus (Italy)** – Non-repayable grant of EUR 4 000 for the purchase of at least EUR 5 000 of digital solutions useful for internationalisation, such as the creation of e-commerce sites and/or mobile applications, promotion strategy to amplify the online presence through digital marketing activities (e-commerce, campaigns, social presence) suitable for the sector of competency.	2022-…
	Platforms and networking infrastructure	Targeted (SMEs)	**Connecting Services (Austria)** – Matching services for innovation, co-operation, investments and internationalisation. Connects Austrian SMEs and start-ups with international investors, multinationals and innovative, established companies.	2019-…
Infrastructure	Platforms and networking infrastructure	Generic	**Computer Security Incident Response Team (Denmark)** – Preventing and responding to information technology (IT) security incidents, i.e. vulnerability scanning and developing educational/information materials, also operating the Data Protection Officer service to help research and education institutions comply with the EU GDPR.	2022-…
	Platforms and networking infrastructure	Targeted (firms)	**X-tee (Estonia)** – Data exchange layer (technological and organisational environment) enabling a secure Internet-based data exchange between information systems to help businesses improve their processes. Developed by Estonia, Finland and Iceland, through the MTÜ Nordic Institute for Interoperability Solutions.	2018-…
	Platforms and networking infrastructure	Targeted (industry)	**Made Smarter Technology Accelerator (United Kingdom)** – Involving both large United Kingdom (UK) manufacturers and technology start-ups to develop innovative solutions to UK manufacturing challenges.	2020-21
	Non-financial support	Targeted (SMEs)	**Digital Route (Chile)** – Training to facilitate SME use of technology in the management of their businesses, e.g. online training courses on cybersecurity challenges and related tools.	2022-…
Improving access to strategic resources				
Finance	Financial support	Targeted (women)	**Female Digital Entrepreneurs (Spain)** – Match funding for women entrepreneurs to support digital investments in the form of loans (maximum of EUR 1.5 million over 9 years and minimum contribution of EUR 25 000). Up to EUR 51 million is available for companies to apply in this period.	2021-23
	Financial support	Targeted (SMEs)	**IT Utilisation Promotion Fund (Japan)** – A fund that supports SME adoption of IT through long-term capital and working capital to acquire computers, software, communication devices, advanced numerical control processing equipment and other equipment.	2001-…

	Typologies of policy instruments	Targeted/ Generic	Country initiatives	Timing
	Financial support	Targeted (private financial sector)	**Walloon Invests Loans (Belgium)** – Funding provided to companies through a mix of public and private capital in order to offer SMEs diversified and flexible financing solutions in the form of loans that respond to the needs of their digital transformation. Walloon Invests act as a complementary actor to the private financial sector. The programme forms part of the Digital Wallonia strategy.	2022-…
Skills	Financial support	Targeted (SMEs)	**Voucher for Raising Digital Competencies (Slovenia)** – Encourages SMEs to provide adequate skills for employees and management staff in key areas of digitalisation and co-financing eligible training costs (group, individual) for raising digital competencies (outsourcing costs).	2022
	Non-financial support	Generic	**Digital Training (Portugal)** – Online training courses to support companies and individuals in their digital transition. The courses cover a range of topics, e.g. disruptive technologies, cybersecurity, cloud technology, data analysis and digital marketing.	2022-…
	Governance arrangement	Generic	**DigKomp: Digital Competence Framework (Hungary)** – A reference framework operating as a unified system that enables the definition, development, measurement and evaluation of digital competencies, skills gaps and training needs.	2013-…
Innovation assets (e.g. data, networks, technology etc.)	Financial support	Generic	**Corporate Profit Tax Incentives for Investment in New Technologies (Lithuania)** – Corporate tax relief on taxable profits by up to 50% of investments in new technologies.	2008-…
	Non-financial support	Targeted (SMEs)	**Digital Solutions programme (Australia)** – Offers broad advice on how digital tools can help SMEs, including social media, business software and data security.	2023
	Mix of financial and non-financial support	Targeted (SMEs)	**Digital Israel (Israel)** – Training, awareness campaigns, grants and financing solutions for the diffusion of data-driven innovation and technological infrastructure and tools, especially among SMEs.	2014-…
	Platforms and networking infrastructure	Targeted (SMEs and industry)	**Business Digital Transformation Centres (Colombia)** – Support manufacturing SMEs in the appropriation of technologies and developing long-term business strategies.	2015-…
	Platforms and networking infrastructure	Targeted (SMEs)	**France Num (France)** – Online platform to connect SMEs with a network of specialised consultants to create a digital strategy, increase online presence, sell online, enhance internal processes, train and recruit, better use data, find financing options, etc.	2022-23
	Platforms and networking infrastructure (based on public-private partnership)	Generic	**Commit2Data (Netherlands)** – Multi-year research and innovation programme based on a public-private partnership to explore new business models and opportunities around big data (e.g. smart industry, energy and logistics). Includes six data innovation hubs providing companies, particularly SMEs that are late adaptors, with up-to-date knowledge, tools and training modules for the responsible use of AI and data.	2017-…
Improving SME&E policy governance				
Policy co-ordination and monitoring	National strategies and action plans	Generic	**Digital Switzerland Strategy 2023 (Switzerland)** – Creates a clear overview of sovereign activities and introduces measures of progress for each domain (education and skills, security and trust, framework, infrastructure, digital public services).	2023-…
	Other guiding documents	Generic	**Integrated Review of Security, Defence, Development and Foreign Policy (United Kingdom)** – Integrated vision for the United Kingdom to embrace innovation and boost national prosperity and strategic advantage. Provides the strategic framework of the National Cyber Strategy.	2021-…
	Government settings, agencies	Targeted (SMEs)	**SME Taskforce (Ireland)** – Bringing together a broad range of business leaders with expertise in a range of sectors, SME representative groups and other individuals uniquely positioned to contribute to the government's long-term vision for the SME sector. It aims to equip SMEs for the rapidly accelerating transition to digital ways of working.	2021-…

Source: Based on (OECD, 2023[76]) , OECD Data Lake on SMEs and Entrepreneurship.

While some countries have sought to mainstream SME policy considerations in other policy agendas, others specifically target SMEs with tailor-made instruments, often combined with place-based or sector-wide policy mixes. The diversity of barriers SMEs face calls for government interventions that span across a large range of policy domains and require policy co-ordination across the board. A policy mapping was conducted between June 2021 and February 2022 across OECD countries to identify institutions and policies intending to help SMEs turn data into business, either through better infrastructure or improving SMEs' access, use and protection (i.e. governance) of data (OECD, 2022[62]). Among the 209 institutions identified, only 26% had SMEs and entrepreneurship in their core mandate. Among the 487 policy initiatives in place, less than 20% target SMEs or entrepreneurs explicitly. Most initiatives in this relatively new policy field remain generic reflecting efforts to primarily build the data policy system.

The transition to a decarbonised economy requires rethinking industrial systems and business models

The environmental urgency requires tapping into all possible areas of improvement and, although SMEs are on average less energy- and resource-intensive than large firms, on aggregate, they have a substantial environmental footprint. At the EU level, SMEs in the business sector are estimated to have accounted for between 37% and 45% of greenhouse gas emissions in 2018 (OECD, 2023[77]). The circular economy carries a high-profit potential for a broad range of industries, including those where SMEs are in the majority (OECD, 2019[13]). Improving energy efficiency could bring multiple benefits to SMEs, beyond a cut in their intermediary costs, including raising product quality and visibility, improving operations and workplace environment, gaining access to new markets, reducing vulnerability to energy price volatility or ensuring compliance with environmental standards (UNEP, 2010[78]; Eurostat, 2018[79]; OECD, 2019[13]). However, fewer SMEs have taken steps to improve their environmental performance as compared to large firms (OECD, 2021[80]).

The consolidation of renewable markets gives SMEs alternatives for diversifying their energy portfolio (OECD, 2019[13]). Combined with digital technologies, off-grid energy solutions (e.g. solar photovoltaics) and enhanced storage technologies (e.g. new batteries) improve flexibility and market opportunities. Substitution could be even easier for small than large firms, as lower energy intensity allows SMEs to use a greater range of technology mixes. Among the smart solutions suitable for SMEs are microgrids that incorporate renewable sources of energy into conventional electricity grids with the help of ICT for management and control purposes and enable small-scale energy production and management. The benefits of energy efficiency improvement may however differ across industries and value-chain configurations (IEA, 2014[81]).

In addition, data-enabling technologies and better data governance can help SMEs introduce more energy-, resource- and waste-efficient business models and practices. The combination of sensors and the Internet of Things (IoT), the use of AI and data analytics and more efficient and systematic monitoring and data collection can help SMEs improve input and product traceability, reduce loss and waste, or identify the most resource-efficient low-carbon processes. At the same time, digital technologies can also emit greenhouse gases and require energy, water and natural resources like critical minerals, throughout their lifecycle (OECD, 2022[82]).

Barriers still prevent SMEs from investing in emission reductions, including energy efficiency improvements, or in the deployment of renewable technologies. Traditional barriers to SME innovation are usually regarded as the main bottlenecks, i.e. limited awareness, lack of skills and expertise for identifying and implementing energy projects as well as difficulties in financing them, especially the initial costs of technology integration, or lack of standardisation and regulation for the deployment of microgrids (IEA, 2015[83]; Andrenelli et al., 2019[84]; Wouters, 2014[85]). SMEs may also be subject to the tenant/landlord dilemma whereby firms and government would benefit from improving the energy efficiency of the

production process but none wishes to bear the short-term costs of financing the investment. Overall, energy savings are often not a top investment priority for small firms (OECD, 2019[13]; 2021[80]) (Chapter 3).

References

Abendschein, M., O. Causa and N. Luu (2022), "Getting on the job ladder - The policy drivers of hiring dynamics", VoXEU. [46]

Acharya, V. et al. (2022), "Zombie lending: Theoretical, international and historical perspectives", *Annual Review of Financial Economics*, Vol. 14, pp. 21-38. [66]

Adrjan, P. et al. (2021), "Will it stay or will it go? Analysing developments in telework during COVID-19 using online job postings data", *OECD Productivity Working Papers*, No. 30, OECD Publishing, Paris, https://doi.org/10.1787/aed3816e-en. [52]

Agresti, S. et al. (2022), "Tracking business dynamism during COVID-19 pandemic", VoxEU, https://voxeu.org/article/tracking-business-dynamism-during-covid-19-pandemic. [3]

Ahrend, R. et al. (2022), "Changes in the geography housing demand after the onset of COVID-19: First results from large metropolitan areas in 13 OECD countries", *OECD Economics Department Working Papers*, No. 1713, OECD Publishing, Paris, https://doi.org/10.1787/9a99131f-en. [53]

André, C. and L. Demmou (2022), "Enhancing insolvency frameworks to support economic renewal", *OECD Economics Department Working Papers*, No. 1738, OECD Publishing, Paris, https://doi.org/10.1787/8ef45b50-en. [9]

Andrenelli, A. et al. (2019), *Micro-Evidence on Corporate Relationships in Global Value Chains: The Role of Trade, FDI and Strategic Partnerships*, OECD Publishing, Paris, https://doi.org/10.1787/f6225ffb-en. [84]

Andrews, D., A. Charlton and A. Moore (2021), "COVID-19, productivity and reallocation: Timely evidence from three OECD countries", *OECD Economics Department Working Papers*, No. 1676, OECD Publishing, Paris, https://doi.org/10.1787/d2c4b89c-en. [15]

Archanskaia, L. et al. (2022), "The sectoral nature of the COVID-19 shock: A novel approach to quantifying its economic impact", No. 162, Discussion Paper, European Commission. [58]

Ascari, G., A. Colciago and R. Silvestrini (2021), "Business dynamism, sectoral reallocation and productivity in a pandemic", *Center for European Studies Paper Series*, No. 482, Center for European Studies. [14]

Auer, R., C. Borio and A. Filardo (2017), "The globalisation of inflation: The growing importance of global value chains", No. 11905, Discussion Paper, Center for Economic and Policy Research. [41]

Bachmann, R. et al. (2021), "Worker churn in the cross section and over time: New evidence from Germany", *Journal of Monetary Economics*, Vol. 117, pp. 781-797, https://doi.org/10.1016/j.jmoneco.2020.05.003. [45]

Banerjee, R. and B. Hofmann (2020), "Corporate zombies: Anatomy and life cycle", No. 882, Bank for International Settlements. [63]

Benedetti-Fasil, C., P. Sedlácek and V. Sterk (2021), "Startups and employment following the COVID-19 pandemic: A calculator", *Economic Policy*, Vol. 10. [21]

Blanchard, O. (2022), "Why I worry about inflation, interest rates, and unemployment", *PIIE blog*, Peterson Institute for International Economics, https://www.piie.com/blogs/realtime-economic-issues-watch/why-i-worry-about-inflation-interest-rates-and-unemployment (accessed on 2 September 2022). [40]

Carriere-Swallow, Y. et al. (2022), "Shipping costs and inflation", No. 2022/061, International Monetary Fund. [38]

Causa, O. et al. (2022), "The post-COVID-19 rise in labour shortages", *OECD Economics Department Working Papers*, No. 1721, OECD Publishing, Paris, https://doi.org/10.1787/e60c2d1c-en. [42]

Crane, L. et al. (2022), "Business exit during the COVID-19 pandemic: Non-traditional measures in historical context", *Journal of Macroeconomics*, Vol. 72, p. 103419, https://doi.org/10.1016/j.jmacro.2022.103419. [4]

Criscuolo, C. et al. (2021), "The role of telework for productivity during and post-COVID-19: Results from an OECD survey among managers and workers", *OECD Productivity Working Papers*, No. 31, OECD Publishing, Paris, https://doi.org/10.1787/7fe47de2-en. [51]

Criscuolo, C., P. Gal and C. Menon (2016), "Do micro start-ups fuel job creation? Cross-country evidence from the DynEmp Express database", *Small Business Economics*, Vol. 48/2, pp. 393-412, https://doi.org/10.1007/s11187-016-9778-x. [24]

D'Adamo, G., M. Bianchi and L. Granelli (2021), "Digitalisation and beyond: The COVID-19 pandemic and productivity growth in G20 countries", No. 67, Economic Brief, European Commission. [28]

Dechezleprêtre, A., D. Nachtigall and B. Stadler (2020), "The effect of energy prices and environmental policy stringency on manufacturing employment in OECD countries: Sector- and firm-level evidence", *OECD Economics Department Working Papers*, No. 1625, OECD Publishing, Paris, https://doi.org/10.1787/899eb13f-en. [37]

Deutsche Bundesbank (2022), "Productivity effects of reallocation in the corporate sector during the COVID-19 crisis", *Monthly Report*, Vol. 64/9. [22]

di Giovanni, J. et al. (2022), "Global supply chain pressures, international trade, and inflation", No. DP17449, Center for Economic and Policy Research. [39]

EC (2022), *Annual Report on European SMEs 2021/2022*, European Commission. [16]

EC (2022), *Labour Market and Wage Developments in Europe*, European Commission. [70]

ECB (2021), *Survey on the Access to Finance of Enterprises - April to September 2021*, European Central Bank, https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/ecb.safe202111~0380b0c0a2.en.html#toc12. [60]

Elgin, C. et al. (2021), "Understanding informality", No. 16497, Centre for Economic Policy Research. [18]

EPU (n.d.), *Economic Policy Uncertainty Index*, Economic Policy Uncertainty, https://www.policyuncertainty.com. [35]

ERBD (2022), *Transition Report 2022-23: Business Unusual*, European Bank for Reconstruction and Development. [65]

Eurostat (2018), *Community Innovation Survey 2018*, https://ec.europa.eu/eurostat/cache/metadata/en/inn_cis11_esms.htm. [79]

Faberman, R., A. Mueller and A. Şahin (2022), "Has the willingness to work fallen during the Covid pandemic?", National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w29784. [47]

Fairlie, R. et al. (2022), "Were small businesses more likely to permanently close in the pandemic?", National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w30285. [5]

Gal, P. et al. (2019), "Digitalisation and productivity: In search of the holy grail – Firm-level empirical evidence from EU countries", *OECD Economics Department Working Papers*, No. 1533, OECD Publishing, Paris, https://doi.org/10.1787/5080f4b6-en. [73]

Greenwood, R., B. Iverson and D. Thesmar (2020), "Sizing up corporate restructuring in the COVID-19 crisis", *Brookings Papers on Economic Activity*, Vol. 2020/3, pp. 391-441, https://doi.org/10.1353/eca.2020.0029. [8]

Hobijn, B. (2022), ""Great resignations" are common during fast recoveries", *FRBSF Economic Letter*. [44]

Hong, G. et al. (2020), "Structural changes in Japanese firms: Business dynamism in an aging society", No. WP/20/182, International Monetary Fund. [6]

IEA (2015), *Accelerating Energy Efficiency in Small and Medium-Sized Enterprises: Powering SMEs to Catalyse Economic Growth*, OECD/International Energy Agency, https://www.iea.org/publications/freepublications/publication/SME_2015.pdf. [83]

IEA (2014), *Capturing the Multiple Benefits of Energy Efficiency*, http://www.iea.org/publications/freepublications/publication/Multiple_Benefits_of_Energy_Efficiency.pdf. [81]

ILO (2021), "Eight edition Updated estimates and analysis", *ILO Monitor: COVID-19 and the World of Work*, International Labour Organization, https://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/briefingnote/wcms_824092.pdf (accessed on 24 August 2022). [29]

IMF (2023), *Global Financial Stability Report*, International Monetary Fund. [67]

IMF (2022), "Labor market tightness in advanced economies", *Discussion Paper*, No. 2022/001, International Monetary Fund. [48]

Ito, A., Y. Saito and G. Hong (2022), "COVID-19 created more zombie firms in Japan", VoXEU. [64]

kcFED (2022), *Small Business Lending Survey*, Federal Reserve Bank of Kansas City, https://www.kansascityfed.org/Research/documents/8864/Kansas-City-Fed-Small-Business-Lending-Survey-Quarter-1-2022.pdf. [61]

Kolev, J. et al. (2022), "Of academics and creative destruction: Startup advantage in the process of innovation", National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w30362. [23]

New York Fed (2023), "Global Supply Chain Pressure Index: The China factor", Federal Reserve Bank of New York, https://libertystreeteconomics.newyorkfed.org/2023/01/global-supply-chain-pressure-index-the-china-factor/ (accessed on 24 January 2023). [57]

New York Fed (2022), *Global Supply Chain Pressure Index (GSCPI)*, Federal Reserve Bank of New York, https://www.newyorkfed.org/research/policy/gscpi#/overview. [56]

OECD (2023), *Job Creation and Local Economic Development 2023: Bridging the Great Green Divide*, OECD Publishing, Paris, https://doi.org/10.1787/21db61c1-en. [55]

OECD (2023), *OECD Compendium of Productivity Indicators 2023*, OECD Publishing, Paris, https://doi.org/10.1787/74623e5b-en. [32]

OECD (2023), "OECD Data Lake on SMEs and Entrepreneurship", https://www.oecd.org/cfe/datalake.htm. [76]

OECD (2023), *OECD Economic Outlook, Volume 2023 Issue 1: Preliminary version*, OECD Publishing, Paris, https://doi.org/10.1787/ce188438-en. [1]

OECD (2023), "OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights", *OECD SME and Entrepreneurship Papers*, No. 36, OECD Publishing, Paris, https://doi.org/10.1787/a8d13e55-en. [10]

OECD (2023), "Towards a pilot dashboard of SME greening and green entrepreneurship indicators: Concept note", OECD, Paris. [77]

OECD (2022), "Building better societies through digital policy: Background paper for the CDEP Ministerial meeting", *OECD Digital Economy Papers*, No. 338, OECD Publishing, Paris, https://doi.org/10.1787/07c3eb90-en. [82]

OECD (2022), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/81c738f0-en. [62]

OECD (2022), *Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard*, OECD Publishing, Paris, https://doi.org/10.1787/e9073a0f-en. [59]

OECD (2022), *OECD Economic Outlook, Interim Report September 2022: Paying the Price of War*, OECD Publishing, Paris, https://doi.org/10.1787/ae8c39ec-en. [69]

OECD (2022), *OECD Economic Outlook, Volume 2022 Issue 2*, OECD Publishing, Paris, https://doi.org/10.1787/f6da2159-en. [2]

OECD (2022), *OECD Employment Outlook 2022: Building Back More Inclusive Labour Markets*, OECD Publishing, Paris, https://doi.org/10.1787/1bb305a6-en. [43]

OECD (2021), "An in-depth analysis of one year of SME and entrepreneurship policy responses to COVID-19: Lessons learned for the path to recovery", *OECD SME and Entrepreneurship Papers*, No. 25, OECD Publishing, Paris, https://doi.org/10.1787/6407deee-en. [68]

OECD (2021), *Health at a Glance 2021: OECD Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/ae3016b9-en. [54]

OECD (2021), "No net zero without SMEs: Exploring the key issues for greening SMEs and green entrepreneurship", *OECD SME and Entrepreneurship Papers*, No. 30, OECD Publishing, Paris, https://doi.org/10.1787/bab63915-en. [80]

OECD (2021), *OECD Compendium of Productivity Indicators*, OECD Publishing, Paris, https://doi.org/10.1787/f25cdb25-en. [30]

OECD (2021), *OECD SME and Entrepreneurship Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/97a5bbfe-en. [12]

OECD (2021), *The Digital Transformation of SMEs*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/bdb9256a-en. [71]

OECD (2021), *Understanding Firm Growth: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/fc60b04c-en. [25]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [13]

OECD (n.d.), *ICT Access and Usage by Businesses*, OECD, Paris, https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS. [74]

OECD (forthcoming), "Improving government to business services through digitalisation: One stop shop platforms and single digital portals for SMEs", *OECD SME and Entrepreneurship Papers*, OECD Publishing, Paris. [75]

OECD (forthcoming), "SMEs in hybrid retail", OECD Publishing, Paris. [72]

OECD.Stat (n.d.), *I - TEC by Sector and Size Class*, OECD, Paris, http://stats.oecd.org/Index.aspx?DataSetCode=TEC1_REV4. [34]

OECD.Stat (n.d.), *SDBS Structural Business Statistics (ISIC Rev. 4)*, https://stats.oecd.org/Index.aspx?DataSetCode=SSIS_BSC_ISIC4. [27]

OECD.Stat (n.d.), *Timely Indicators of Entrepreneurship by Enterprise Characteristics*, OECD, Paris, https://stats.oecd.org/Index.aspx?DataSetCode=TIMELY_IE. [7]

OECD/APO (2022), *Identifying the Main Drivers of Productivity Growth: A Literature Review*, OECD Publishing, Paris, https://doi.org/10.1787/00435b80-en. [31]

Ohnsorge, F. and S. Yu (2022), *The Long Shadow of Informality: Challenges and Policies*, World Bank, Washington. [19]

Parker, K. and J. Horowitz (2022), "The Great Resignation: Why workers say they quit jobs in 2021", Pew Research Center. [49]

Pionnier, P., B. Zinni and N. Luu (2023), "Aggregate labour productivity growth during the pandemic: The role of industry reallocations", VoXEU. [33]

Pizzinelli, C. and I. Shibata (2023), "Has COVID-19 induced labor market mismatch? Evidence from the US and the UK", *Labour Economics*, Vol. 81, p. 102329, https://doi.org/10.1016/j.labeco.2023.102329. [50]

Qiang, C. and R. Kuo (2020), "Supporting informal businesses amid COVID-19 without formalization", World Bank blog, https://blogs.worldbank.org/psd/supporting-informal-businesses-amid-covid-19-without-formalization (accessed on 21 December 2022). [20]

Schneider, J. (2020), *Future of Business Survey Methodology Note*, mimeo. [26]

U.S. BLS (n.d.), *Business Employment Dynamics*, United States Bureau of Labor Statistics, https://www.bls.gov/bdm/business-employment-dynamics-data-by-age-and-size.htm. [17]

U.S. Chamber of Commerce (2022), *Index Reaches Pandemic-Era High, but Inflation Concerns Dominate*, https://www.uschamber.com/sbindex/summary (accessed on 5 August 2022). [36]

UK Insolvency Services (2022), *Commentary - Individual Insolvency Statistics April to June 2022*, https://www.gov.uk/government/statistics/individual-insolvency-statistics-april-to-june-2022/commentary-individual-insolvency-statistics-april-to-june-2022. [11]

UNEP (2010), *PRE-SME - Promoting Resource Efficiency in Small & Medium Sized Enterprises*, United Nations Environment Programme, https://www.unep.org/resources/report/promoting-resource-efficiency-small-and-medium-sized-enterprises-industrial. [78]

Wouters, C. (2014), "Towards a regulatory framework for microgrids - The Singapore experience", *Sustainable Cities and Society*, pp. 22-32. [85]

Part I Thematic chapters

2 The role of networks for SME innovation, resilience and sustainability

Small and medium-sized enterprises (SMEs) are particularly dependent from external networks to access strategic resources, such as knowledge, technology, finance or skills, and to innovate and grow. Networks are also a source of resilience and sustainability. They can take different forms beyond buyer-supplier relationships, reflecting the linkages SMEs develop with their ecosystem through exchanges of products, services, assets, or through open innovation and collaboration. Such networks encompass production networks, knowledge and innovation networks (involving universities and providers of knowledge-intensive business service), and strategic partnerships. Clusters are often needed to create proximity and agglomeration benefits. Digital platforms and technologies are instrumental for knowledge transfer and network effects. This chapter discusses SMEs' ability to join innovation and growth networks and to take advantage of them. It presents an overview of the wide range of policy measures to support SME network expansion, and it introduces the following thematic chapters of the report.

In Brief

- Relative to their larger counterparts, small- and medium-sized enterprises (SMEs) typically underperform across a range of performance indicators, reflecting, in large part, difficulties in accessing new technologies, finance, data and skills, which, in turn, hamper innovation.
- Networks are strategic assets to ease access, capture and leverage knowledge spillovers, and achieve external economies of scale.
- Networks are also a source of resilience to better manage interdependencies and cope with uncertainty and disruptions. They can help SMEs accelerate the adoption of new environmental standards and due diligence requirements. Indeed, greater compliance with more sustainable and responsible practices is increasingly required for their integration into these same networks.
- The importance of networks has been heightened by the growing volume of specialised knowledge required to remain at the knowledge frontier. The providers of knowledge-intensive business services (KIBS), including universities, increasingly act as co-producers of innovation, with SMEs using them to compensate for limited internal capacities. And for networks to deliver their full benefits, a certain degree of proximity and agglomeration between actors, notably through clusters, is often needed.
- Open innovation has become a means for accelerating innovation processes and market diffusion (e.g. SME digital transformation during COVID-19). Indeed, collaborative firms – even smaller ones – tend to be more innovative than non-collaborative firms.
- Digital platforms and information and communication technology (ICT) are also instrumental, enhancing knowledge and technology transfer possibilities and enabling external economies of scale through network effects.
- Yet, SMEs' ability to join different networks and take advantage of them remains limited and varies by network type and firm characteristics. For instance, between 29-41% of SMEs with a Facebook page indicate not being a member of any formal professional network. Those numbers are higher for women-led SMEs. And even if they can engage, size also affects the scope for capturing spillovers or conducting in-house innovation.
- There is a large range of policy measures in place to reinforce SME integration across different networks. A mapping of 601 policy initiatives across OECD countries shows around half target stronger SME integration into production/supply chain networks with a third targeting knowledge and innovation networks, albeit with significant variations across countries.

SMEs need to transform and their networks can enable them to leapfrog

As countries and regions navigate between post-COVID-19 recovery and multiple global crises, rebuilding economies and making them stronger, greener and fairer is crucial. This will require more innovation, achieving greater resilience and sustainability and, in turn, stronger economic and productivity growth (OECD, 2021[1]). Because they account for 99% of the business population, SMEs and entrepreneurs can be critical drivers of these goals but they will need to transform and adapt to new business conditions (Chapter 1).

SMEs' performance and adaptative and scale-up capacity are closely related to their ability to connect and expand their networks, tap into external pools of resources and achieve external economies of scale (OECD, 2019[2]; 2022[3]). Through networks, SMEs can overcome many size-related barriers to accessing resources (such as technology, data and skills), finding new business partners, new markets and more diversified sources of finance, and capturing knowledge spillovers. In fact, SMEs, due to their more limited internal capacities, tend to be more dependent on external sources of knowledge, so their integration into local, national and global innovation and knowledge networks is critical for their transformation and scaling up. Strong networks are also a key attribute of successful entrepreneurial ecosystems and critical in stimulating and growing start-ups.

Recent years have seen SME networks significantly disrupted, with growing magnitude and frequency, raising concerns about their capacity to adapt and steer future growth. Most recently, shocks such as the COVID-19 crisis and Russia's war of aggression against Ukraine have both had cascading effects on global supply chains. But natural disasters, as well as an upsurge of cyberattacks, have also had strong repercussions on SME networks. More than ever, innovation systems are shaped by geopolitics and global economic interests. Multinationals through their optimisation and supply chain due diligence strategies are playing a leading role in the reorganisation of global industrial and innovation systems and the transformation of SMEs.

Preparedness and capacity to be reliable and resilient nodes in these emerging networks is critical, for SMEs, the networks and all actors within them. Yet, their ability to integrate and take advantage of these connections remains limited. The density and diversity of external linkages they can create are lower and the scope for network engagement to influence in-house innovation processes or create spillovers is more limited than for larger firms.

SMEs are part of a complex network of networks

In general terms, networks designate a set of nodes, links (or connectors/arcs) and transfer mechanisms that enable flows, for instance of data and codified information in the case of information technology (IT) networks or of products, services and assets in the case of business networks. The interactions of network actors over time can also lead to the sharing of common objectives, information or costs. Networks can be materialised with infrastructure, formalised through contracts and agreements, or remain informal (Annex 2.B).

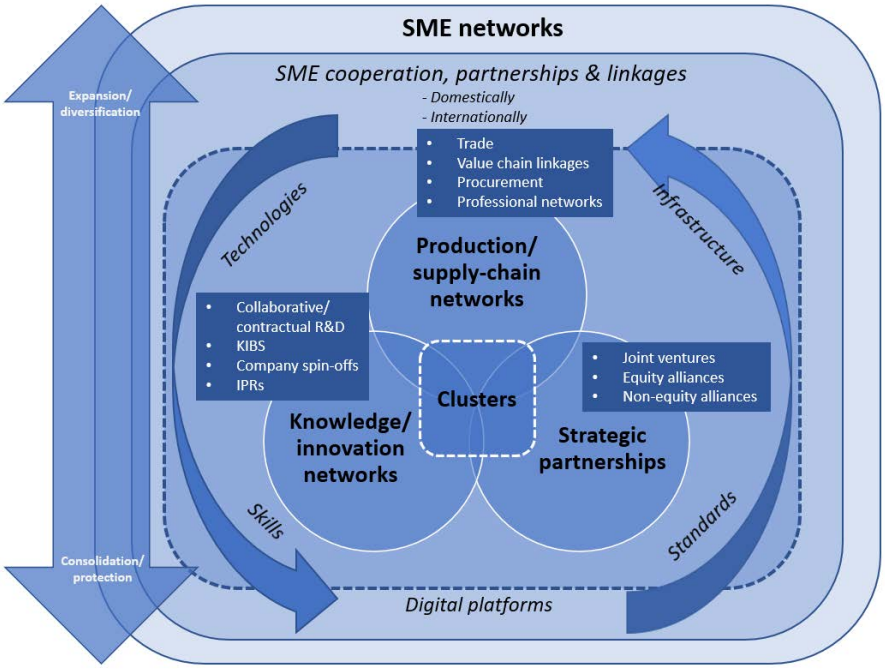
SME networks can take different forms and go beyond buyer-supplier relationships. They reflect the wide range of ties SMEs develop with the multitude of actors that make up their ecosystem and with whom they exchange products and services, knowledge and assets. They include formal or informal arrangements that enable access to resources (Ahuja, 2000[4]). Four key types of SME networks are considered in this report (Figure 2.1):

- **Production/supply chain networks** are a "nexus of interconnected functions, operations, and transactions through which a specific product or service is produced, distributed and consumed" (Coe, Dicken and Hess, 2008[5]). They link business actors engaged in the production process,

from pre-production (e.g. research and development [R&D], design, etc.) to production (e.g. sourcing, assembly, etc.) and post-production (e.g. marketing, distribution, etc.). Production networks are designed for cost efficiency, lean management or just-in-time requirements, with a strong focus on optimising the interfaces between participating companies (Nilsson, Magnusson and Enquist, 2003[6]). Of particular focus in this work are production networks that generate knowledge and innovation spillovers for the SMEs engaged.

- **Knowledge/innovation networks** connect institutions and businesses within global, national and regional innovation systems, across organisational, spatial and disciplinary boundaries, to develop and share knowledge, pool innovation resources and support skills transfer. They include co-operation on R&D, applications, technology transfer and commercialisation (OECD, 1999[7]).
- **Strategic partnerships** refer to formal agreements between a set of firms, even competitors, or public and private actors (e.g. industry, universities, public research/technology institutions) that pool resources and/or share costs, with a main motivation of innovation and/or commercialisation (OECD, 2023[8]; 2016[9]). These forms of co-operation are relevant for enabling SMEs to access strategic resources and have distinct but also common characteristics with production and innovation networks. They include licensing agreements, franchising, integrated product offering, joint ventures, equity sharing, R&D consortia, centres of excellence, etc. In a strategic partnership, a company exerts some influence over the activities of another (Andrenelli et al., 2019[10]).
- **Clusters** are networks of interdependent firms, knowledge-producing institutions (higher education institutions [HEIs], research institutes and technology-providing firms), bridging institutions (e.g. providers of technical or consultancy services, technology transfer offices) and customers, linked in a production chain, sector-specialisation or geographical area.

Figure 2.1. A typology of SME networks: Stylised view



Source: EC/OECD (2023[11]), *Unleashing SME Potential to Scale Up*, https://www.oecd.org/cfe/smes/sme-scale-up.htm, Phase II on Network expansion; EC/OECD (2023[12]), *Fostering FDI-SME Ecosystems to Boost Productivity and Innovation*, https://www.oecd.org/industry/smes/fdi-sme.htm, Phase II on FDI-SME linkages and ecosystems.

KIBS form a particular set of networks embedded in SME innovation networks and encompass professional and science and technology (S&T) services, including legal, accounting and management services, engineering, R&D and computer systems services, design and advertising services, etc. They are increasingly used to compensate for a lack of internal capacity in SMEs, to develop innovation-related skills, or outsource knowledge and R&D, and to complement the capacities of universities and public research institutions (PRIs) (Cervantes and Meissner, 2014[13]). KIBS may act as co-producers of innovation thanks to their close relationship with client firms (Den Hertog, 2000[14]). They form part of knowledge markets that also include searchable repositories that facilitate the transfer of existing knowledge, platforms for (crowd)sourcing solutions, intellectual property (IP) marketplaces (e.g. IP brokers, patent pools) or standard-setting and accreditation organisations (Kergroach, 2020[15]; OECD, 2013[16]).

Table 2.1. SMEs networks: Typologies, partners, linkages and benefits

SME networks	Actors and partners (nodes)	Linkages (connectors)	Flows	Benefits
Production/supply chain networks	Equipment and component suppliers – Users and competitors - Multinationals	Trade, value chain relationships, foreign direct investment (FDI), intra-group exchanges, public procurement, professional networks (industry-based), digital platforms and networking facilities	Products, services, finance, technology and innovation spillovers, intangibles (intellectual property rights or IPRs)	Cost efficiency, increased quality and traceability, lean management and just-in-time process, proximity to and feedback from the market, applied solutions
Knowledge / innovation networks	SMEs – actors in the knowledge triangle including other R&D and innovative enterprises (multinationals-MNE-labs), HEIs and PRIs, government and intermediaries (technology transfer offices)	Contractual R&D, collaborative R&D, consultancy, KIBS, training, labour mobility, patenting and licensing, spin-off, digital platforms and networking facilities	Codified and tacit knowledge, R&D, data (research results and experiments), skills, technology, financing, intangibles (IPRs)	Reducing the costs of R&D, reducing time to market, reducing uncertainty, increasing ability to deal with complexity
Strategic partnerships	All types of enterprises, start-ups and multinationals, SMEs, all actors of the innovation systems	Agreements - strategic technology alliances (such as R&D joint ventures, research consortium, joint R&D agreements and minority holdings), licensing, franchising	Codified and tacit knowledge, R&D, data (research results and experiments), skills, technology, financing, intangibles (IPRs), infrastructure (transport, production), etc.	Knowledge and asset sharing (IPRs, finance), reduced costs for accessing resources and markets
Clusters	All of the above, cluster management organisations	Market-based relationships	All of the above	All of the above, agglomeration and specialisation benefits, e.g. reduced costs for accessing local infrastructure and services, lower transaction costs (contracts), easier access to specialised skills, input and suppliers, enhanced knowledge transfer, etc.

Note: See (Rosenfeld, 2001[17]) for a discussion on differences between networks and clusters. The knowledge triangle is a policy framework that stresses the need for an integrated approach towards research, innovation and education policies, especially those directed towards HEIs which fulfil several important roles in national innovation systems (OECD, 2016[9]).

Source: Based on OECD (1999[7]), *Managing National Innovation Systems*, https://doi.org/10.1787/9789264189416-en; OECD (2004[18]), *Networks, Partnerships, Clusters and Intellectual Property Rights: An Opportunity and Challenges for Innovative SMEs in a Global Economy*, https://www.oecd.org/cfe/smes/31919244.pdf; OECD (2013[16]), *Commercialising Public Research: New Trends and Strategies*, https://doi.org/10.1787/9789264193321-en; Kergroach, S., D. Meissner and N. Vonortas (2017[19]), "Technology transfer and commercialisation by universities and PRIs: Benchmarking OECD country policy approaches", https://doi.org/10.1080/10438599.2017.1376167; OECD (2023[8]), *Policy Toolkit for Strengthening FDI and SME Linkages*https://doi.org/10.1787/688bde9a-en.

Digital platforms and ICT are instrumental for knowledge and production networks, serving as connectors, offering enhanced transfer possibilities and enabling external economies of scale through network effects (OECD, 2019[2]; 2021[20]). They are of particular relevance for smaller businesses. ICT has substantially reduced the cost of copying, storing and sharing data and enabled new models of knowledge sourcing. Digital platforms have allowed the centralisation of software, technology or databases (e.g. through cloud computing services), ideas and solutions (e.g. through crowdsourcing and collaborative platforms on specialised software solutions), and user and client data (e.g. through e-commerce platforms), giving the firm greater access to a larger portfolio of innovation assets at a reduced cost. In addition, beyond famous platform leaders (e.g. Apple, Alphabet, Google YouTube, Google Search, Twitter, Meta Facebook, etc.),[1] platform developments are also conducted by smaller actors in sectors such as the sharing economy (Sanasi et al., 2020[21]), healthcare (Fürstenau et al., 2018[22]) or fashion (Schmidt et al., 2020[23]), and a number of agricultural industry or business-to-business (B2B) services (Box 2.1). These industry platforms rely heavily on complementary innovations to succeed and orchestrate innovation in their own innovation ecosystems around a specific technological core (Gawer and Cusumano, 2013[24]; Thomas et al., 2020[25]).

Box 2.1. Collaborative platforms for opening digital innovation to SMEs: Selected examples

- **SME AgrodatAi (Colombia)** is a technological platform that connects actors in agricultural value chains, from producers to insurance entities, and provides them information on supply and demand for agricultural and livestock products, inputs, technology, credit and insurance through tools, such as a web platform, mobile application and chatbot. Launched in 2019, the platform also has plans to connect producers with members from the agrifood value chain through a marketplace associated with the commercialisation of agricultural products and the purchase of inputs.
- **Tre-e consortium (Italy)** is a B2B technology provider founded by 18 SMEs in the lift sector. The platform enables traditional SMEs operating in the sector to enhance productivity through more efficient monitoring. Technologies using the Internet of Things (IoT) allow them to co-ordinate logistics along the supply chain and share administrative and historical data for improvements in service efficiency. Blockchain and artificial intelligence (AI) are being integrated into the platform for further efficiency, e.g. predictive maintenance.
- **DIGITAL SME Alliance (Europe)** is Europe's largest association of digital small firms and entrepreneurs. The alliance launched a platform for traditional and non-technological SMEs to access a catalogue of digital solutions, from smart working or video conferencing tools to 3D printing, e-learning and AI-modelling technologies. The platform was designed to promote small suppliers of digital services and solutions to compete with larger technology firms.

Source: OECD (2022[26]), *OECD Digital for SMEs Global Initiative (D4SME)*, OECD, Paris, https://www.oecd.org/digital/sme/; conversations with small business owners.

Networks are critical for SME transitions towards higher productivity, resilience and sustainability

The importance of domestic and international linkages for SME performance is widely documented (see below and OECD (2019[2])). Indeed, competing requires SMEs to access strategic resources (i.e. finance, skills and innovation assets) that are more often found externally, since their size limits the scope for pooling and internalising. The spread and quality of linkages is also a determinant for creating external economies of scale. In fact, recent evidence shows that SMEs that experience high growth and succeed

in maintaining their new size over time, i.e. reaching a higher scale of performance and productivity durably, have developed strategies of innovation, investment or network expansion, often combining these different drivers in different ways and at different stages of their transformation (OECD, 2022[3]).

Networks can enable SMEs to leapfrog

Firms that lag in the innovation process can compensate by actively networking for resources and capabilities (Hilmersson and Hilmersson, 2021[27]), as seen for example in the case of the digital transformation of SMEs (OECD, 2021[20]), especially during the COVID-19 pandemic (OECD, 2021[1]).

Production networks have increasingly been a channel for accessing finance, skills and innovation assets. Within production networks, SMEs, as buyers or suppliers – and in particular through strategic relationships (Box 2.2) – can access know-how and technology embedded in business transactions and capitalise on diverse supply chain finance mechanisms (OECD, 2023[8]; 2019[2]; 2008[28]).

The importance of networks for innovating has been heightened by the growing volume of specialised knowledge required to remain at the knowledge frontier. Firms seldom innovate in isolation and networks of innovation involving multiple actors are the rule rather than the exception (DeBresson, 1996[29]). As a consequence, networks are increasingly recognised as an innovation asset (Corrado et al., 2005[30]; OECD/Eurostat, 2018[31]).

Collaborative firms tend to be more innovative than non-collaborative ones and, vice-versa, the most innovative ones tend to collaborate more (OECD, 2004[18]; Eurostat, 2022[32]). Innovation survey data show that there are more firms co-operating on business activities with other enterprises or organisations among innovative firms than among non-innovative ones (Figure 2.2). Whilst there may be some differences across sectors (but where data are not available), this finding holds across all firm size classes, with even small innovative firms engaging more in co-operation than large non-innovative ones. Open innovation has increasingly been seen as a means of accelerating internal innovation and market diffusion (Chesbrough, 2003[33]). And the shift towards “open innovation” has considerably reduced the investments needed, making the innovation endeavour more accessible to SMEs (OECD, 2010[34]; 2019[2]).

Box 2.2. Productivity spillovers between multinationals and domestic SMEs

The conditions of productivity spillovers between multinationals and domestic SMEs

Beyond its direct contribution to capital and job creation, foreign direct investment (FDI) can benefit host economies through knowledge and technology spillovers (Chapter 3). This is due to a productivity gap between foreign-owned affiliates and SMEs in the same economy, which often arises because of the larger size, better processes and higher capital or technological intensity of the former compared to the latter.

But FDI spillovers only occur if domestic SMEs are exposed to the activities of foreign firms and have the absorptive capacities to capture them. SMEs are exposed directly through value chain linkages and strategic partnerships, or indirectly, through market mechanisms or the influence that foreign firms may exert on their ecosystem (e.g. competition, imitation, labour mobility).

The magnitude of spillovers also depends on the FDI (e.g. greenfield versus brownfield investments). A greenfield investment is more likely to involve the direct transfer of knowledge and technology from the parent firm to the new affiliate in the host country (Farole and Winkler, 2013[35]). The strategy of the lead firm in the global value chain (GVC) and its willingness to share knowledge with the members of the chain can also determine the nature and intensity of spillovers.

Strategic partnerships – The example of Niaga-DSM (Netherlands)

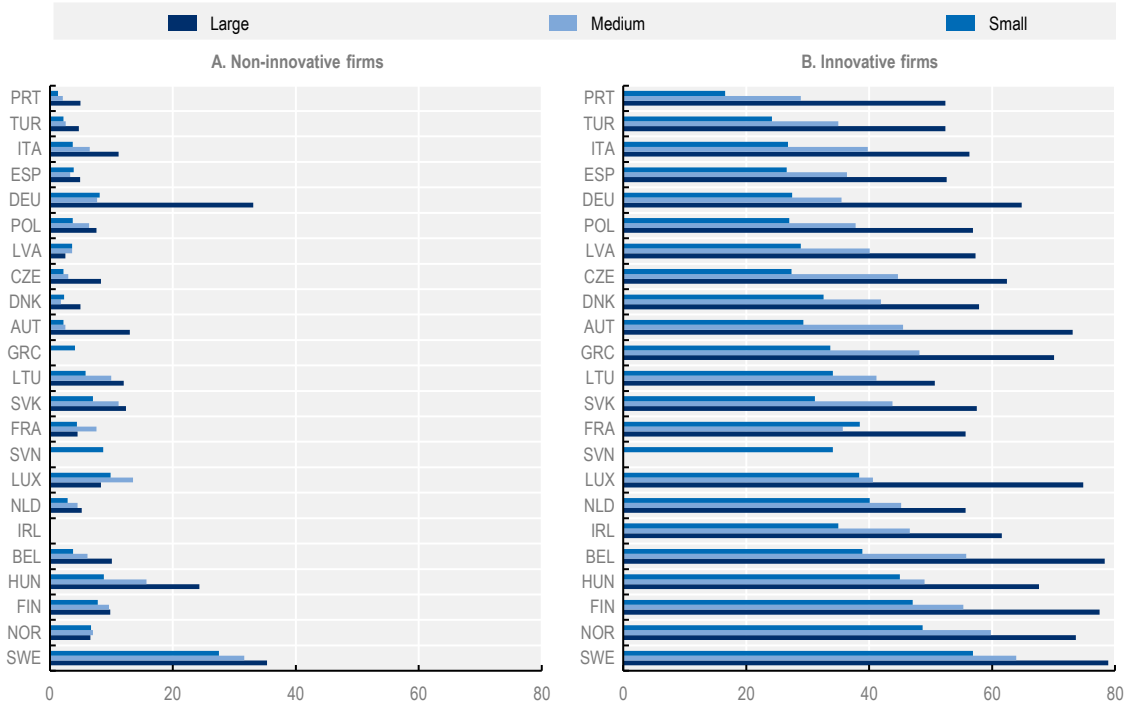
Niaga ("again" in reverse), a Dutch start-up, was founded in 2010 to develop a carpet material that can be fully recycled. While the company had developed the fibre-binding technology necessary to produce the carpets, it lacked a proper adhesive that would allow for the different materials to be easily taken apart after use.

In 2012, the two founders of Niaga approached Royal DSM, a Dutch multinational corporation working in the fields of health, nutrition and materials, which expressed interest in developing a sustainable solution for the materials industry. In turn, the start-up needed access to DSM adhesive technology, along with capital and scientific know-how, to scale up its product to a commercially viable stage. The companies initiated a joint venture. The partnership allowed Niaga to commercialise its innovation in 2015. Together, Niaga and DSM have developed over seven patent families since their collaboration began.

Source: OECD (2023[8]), *Policy Toolkit for Strengthening FDI and SME Linkages*, https://doi.org/10.1787/688bde9a-en; WEF (2015[36]), *Collaborative Innovation: Transforming Business, Driving Growth*, https://www3.weforum.org/docs/WEF_Collaborative_Innovation_report_2015.pdf; Ellen MacArthur Foundation (2023[37]), *Redesigning Medium-life Bulky Products from Scratch: Niaga*, https://ellenmacarthurfoundation.org/circular-examples/redesigning-medium-life-bulky-products-from-scratch.

Figure 2.2. Innovative firms (even smaller ones) co-operate more than non-innovative ones (even the larger)

Share of innovative versus non-innovative firms that co-operate on business activities with other enterprises or organisations by size class, 2020



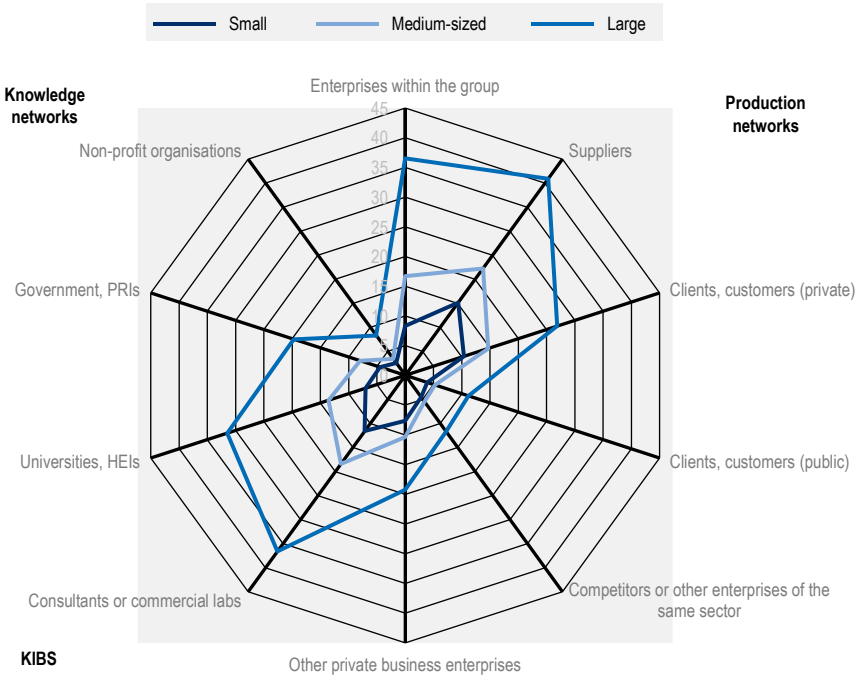
Source: Eurostat (2022[32]), *Community Innovation Survey 2020 (CIS2020) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database.

StatLink https://stat.link/bfu3qg

Universities and other PRIs are key actors in SME innovation networks, by generating positive spillovers to local firms and workers (Kantor and Whalley, 2014[38]) and contributing to knowledge co-creation, i.e. a joint production of innovation between industry, research and civil society (Kreiling and Paunov, 2021[39]). Universities and HEIs are important partners for co-operation on R&D and innovation for enterprises of all size classes (Figure 2.3). Beyond the immediate economic returns from academic research that are not always easy to demonstrate (OECD, 2015[40]), universities also play a key role in upskilling and reskilling SMEs (Chapter 5), in developing applied solutions to their needs (sometimes through collaborative research with SMEs) or in providing them with consultancy services or access to advanced facilities. In turn, start-ups and SMEs are prime users of academic research. In its 2021 report on academic technology transfer, the United States (US) Association of University Technology Managers reported that 68% of university licenses are awarded to start-ups and small companies and two-thirds of the new businesses set up from academic research are headquartered in their institution's home state (AUTM, 2021[41]), further consolidating university-SME networks.

Figure 2.3. Co-operation more often takes place within production and knowledge networks but with substantial gaps between small and large firms

Enterprises that co-operate on R&D and innovation by co-operation partner and size class, as a percentage of innovative enterprises, European Union (EU) average, 2020



Note: EU average based on countries for which data are available. Refers to firm responses to the question: "Did your enterprise co-operate with other enterprises or organisations (Yes/No)? And what type of innovation co-operation partner?".
Source: Based on Eurostat (2022[32]), *Community Innovation Survey 2020 (CIS2020) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database.

StatLink https://stat.link/gxrjzt

For networks to shape and deliver their full benefits, a certain degree of geographical, social and technological proximity between actors is needed. Proximity facilitates not only knowledge transfer, especially of tacit knowledge, but also fosters trust between actors (Box 2.3). Relational constructs play an important role in shaping network structure (Camanzi and Giua, 2020[42]). Likewise, technological proximity can facilitate knowledge flows. Knowledge transfer to domestic firms is greater when technology gaps between MNEs and domestic firms are smaller (OECD, 2023[8]).

Agglomeration benefits provide a strong rationale for clusters to form, and efficient business networks are at the core of successful clusters. Economic drivers of cluster formation include proximity to markets and suppliers, higher level of specialisation, availability of sector-relevant assets and infrastructures, and easier access to information and knowledge. The frequency of interactions among the cluster members tends to lower transaction costs, e.g. in contract negotiation and enforcement. Social norms prevailing in the networks can also increase trust (OECD, 2004[18]).

Box 2.3. Agglomeration benefits in innovation and production networks

Agglomeration economies occur when the spatial proximity of firms, workers and customers provides scope to reduce production costs through both external "supply-side" economies of scale (e.g. reduced transaction costs in accessing information or supplying skills and input from local concentrated markets and partners) and network effects (i.e. "demand-side" economies of scale whereby the value and utility of a good or service increase with the number of users) (OECD, 2019[2]; Arzaghi and Henderson, 2008[43]).

Domestic firms which are located near foreign firms in the same region are more likely to benefit from knowledge spillovers than other firms (Lembcke and Wildnerova, 2020[44]). Knowledge spillovers from MNEs have been found to be the strongest up to 10 km from the lead firm and progressively decrease between 10 and 50 km, partly reflecting production linkages but also other channels such as the mobility of managers.

KIBS are disproportionately concentrated in larger cities, where a larger pool of potential clients allows for increasingly specialised services (OECD, forthcoming[45]).

Geographical proximity to HEIs can increase knowledge transfer to the business sector, through university-industry linkages and co-operation but also through the important contribution HEIs make to developing human capital, creativity and skills in their ecosystems. A 10% increase in distance between a university and a firm decreases the proportion of total R&D paid to the university by 1.4% (for enterprises that do not report any codified transfer of knowledge) and by half as much (for enterprises that do report codified knowledge flows) (Rosa and Mohnen, 2007[46]).

Proximity can also affect SME financing capacities. The British Business Bank found that in 82% of equity investment stakes, investors had an office within two hours of travel time of the company that they were backing. In 61% of stakes, the proximity was even closer: 1 hour or less (British Business Bank, 2021[47]).

Source: OECD (2019[2]), *OECD SME and Entrepreneurship Outlook 2019*, https://doi.org/10.1787/34907e9c-en; Arzaghi, M. and J. Henderson (2008[43]), "Networking off Madison Avenue", https://doi.org/10.1111/j.1467-937X.2008.00499.x; Lembcke, A. and L. Wildnerova (2020[44]), "Does FDI benefit incumbent SMEs?: FDI spillovers and competition effects at the local level", https://doi.org/10.1787/47763241-en; OECD (forthcoming[45]), *Identifying Challenges in Regional Innovation Diffusion*, OECD, Paris; Rosa, J. and P. Mohnen (2007[46]), "Knowledge transfers between Canadian business enterprises and universities: Does distance matter?", https://about.jstor.org/terms; British Business Bank (2021[47]), *Regions and Nations Tracker 2021*.

SMEs can achieve greater resilience through their networks

Networks are a cornerstone for SME strategies of resilience, for anticipation, i.e. preparedness to avoid and face potential crises/disruption (*ex ante*), for mitigation, i.e. the ability to reduce the economic and social costs of shocks and disruptions, and for adaptation, i.e. the ability to bounce back after disruption (*ex post*) and innovate and scale up (Table 2.2).

Networks can be an asset for resilience (Table 2.2) but they can equally be a source of vulnerability. In stable environments, it may be sufficient for firms to engage in exclusive relationships with only a few partners. Firms in dynamic environments, such as international markets or innovation systems, need however to explore continuously multiple contacts and even accept a certain degree of redundancy in their external linkages, to cope with uncertainty and evolving and unpredictable knowledge needs (OECD, 2004[18]). A key measure that increases the resilience of individual businesses against disruptive shocks is business continuity planning, which includes backup suppliers and redundancy measures in supply chains (McKinnon, 2014[48]). Networks that provide flexibility and reduce interdependencies permit a wider range of solutions to emerge and be shared quickly among participants (Brende and Sternfels, 2022[49]). Firms that export and depend on downstream demand, market conditions and logistics abroad, can build resilience by diversifying market prospects and locations, especially in a closer neighbourhood, and by diversifying their supply (e.g. products or services in related sectors or segments). Likewise, firms that import and have access to markets abroad can build resilience through a broader supplier base that creates a certain degree of redundancy, as well as by diversifying sourcing and production locations (OECD, 2023[8]) (Chapter 3). Other strategic approaches include diversifying products, shortening production chains, creating inventory buffers or promoting a risk management culture in the firm.

Table 2.2. Achieving resilience through networks

SME strategies	Objectives	Means	Strategic assets
Anticipation (*ex ante*)	Reduce exposure to risks	Relocate, reduce interdependencies, create redundancy and diversify products, markets and suppliers, shorten both production chains and inventory buffers, promote a risk management culture	Networks, data, managerial skills
Mitigation	Reduce economic, reputational and social damages due to shocks/disruptions	Corporate governance (business continuity planning), insurance, financial buffers, risk sharing and transfer mechanisms	Finance, processes, networks, managerial skills
Adaptation (*ex post*)	Bounced back faster and better after stress (also able to endure greater stresses)	Agility, reactivity, innovation, co-operation and information sharing	Skills, data, technology, networks, finance

Source: Based on McKinnon, A. (2014[48]), "Building Supply Chain Resilience: A Review of Challenges and Strategies", https://doi.org/10.1787/5jrw2z6nnxlq-en; OECD (2021[20]), *The Digital Transformation of SMEs*, https://doi.org/10.1787/bdb9256a-en; OECD (2014[50]), *Boosting Resilience through Innovative Risk Governance*, https://doi.org/10.1787/9789264209114-en.

Greater sustainability for networking and networks for greater sustainability

Complying with environmental, social and governance (ESG) criteria or adopting more responsible business conduct (RBC) is increasingly a prerequisite for integrating production and innovation networks or engaging in strategic partnerships (see annex definitions). To address growing consumer concerns around sustainability and new related regulatory requirements, enterprises of all sizes have been implementing sustainable practices in their production strategies. This not only involves adapting own production processes but also making sourcing and contracting arrangements more sustainable (Kumar, Prakash and Kumar, 2021[51]). MNEs in particular have been taking steps to mitigate the environmental and social risks associated with their activities. Accordingly, they have been implementing due diligence

principles in order to ensure that their supply chains adhere to RBC standards and to identify and address areas of concern (OECD, 2022[52]).

Integrating into more sustainable GVCs and production networks can result in knowledge spillovers for SMEs able to upgrade to new sustainability standards (OECD, 2023[8]). SME participation in more sustainable GVCs can also contribute to the wider diffusion of green and ecotechnology innovation (WTO, 2021[53]), which in turn could bring new business prospects for SMEs that would boost their reputation among customers, investors and professional networks. Adopting sustainable practices could also facilitate SME access to finance, in particular green financing (OECD, 2022[3]).

SMEs' ability to integrate networks and take advantage of them remains limited

Despite evidence that the benefits of network integration can accrue to all of the participating firms, the density and diversity of external linkages tend to be lower in smaller firms. Smaller businesses are less likely to engage in international trade and connect to global markets (OECD, 2019[2]; 2023[8]), they have a more limited number of business partners, suppliers and customers, are less likely to co-operate on R&D and innovation activities with external partners and are less likely to use digital platforms and digital tools that could support networking (OECD, 2021[20]).

Even if they seem to follow similar knowledge-sourcing strategies, SMEs rely less on external sources of knowledge than large firms overall. The largest differences (20 percentage points, or more, across EU countries on average in 2018) can be observed in the use of highly technical or standardised sources and the sourcing of information from professional or industry associations (EC, 2022[54]). Non-innovative small firms also make relatively little use of conferences, trade fairs or exhibitions to inform their business decisions.

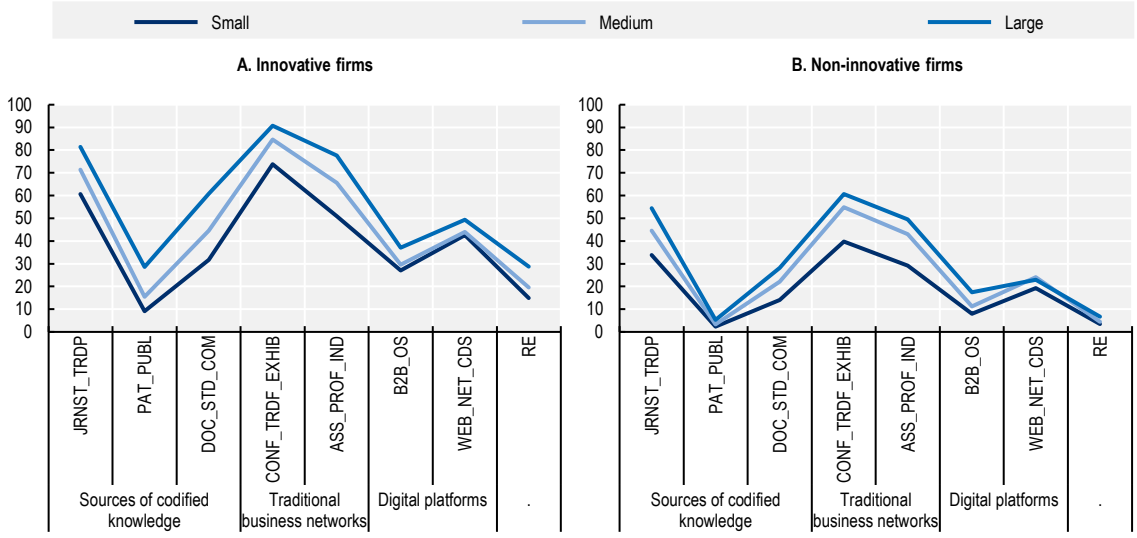
The smallest differences between small and large enterprises are seen in the use of digital platforms, such as social web-based networks or crowdsourcing and open B2B platforms or open-source software. Indeed, the typical business model of digital platforms revolves around their ability to attract as many users as possible by lowering costs of entry (in terms of finance, time and skills) in order to unlock network effects. This makes such platforms particularly attractive for resource-constrained SMEs (Gawer, 2021[55]; OECD, 2021[20]).

In fact, many SMEs do not belong to any formal network and membership varies across sectors. Between 29-41% of SMEs with a Facebook page indicate not being a member of any network. They are more likely to be involved in a professional network when they operate in knowledge-intensive information and communication services. Chambers of commerce seem to play a greater role in SME networking in wholesale and retail trade. SMEs are more often engaged in industry groups when they are in transportation and storage services or agriculture and mining.

In addition, SMEs also have a more limited capacity to take advantage of integration. Firm size affects the scope for collaboration and network engagement to influence in-house innovation processes or for business linkages to create spillovers (OECD, 2004[18]). Whereas for larger firms, collaboration leads to increased spending on innovation, for smaller innovative firms, collaboration is often a substitute for internal spending rather than a trigger for internal activities. In fact, a key challenge for them is to develop the necessary skills and management practices for co-ordinating and integrating external knowledge in in-house practices and innovation processes (OECD, 2015[56]).

Figure 2.4. Despite similar sourcing strategies, SMEs rely less on external sources of knowledge than large firms overall, especially highly technical sources and professional networks

Percentage of innovative versus non-innovative firms that acquire information relevant for innovation, by channel of information and by size class, 2018



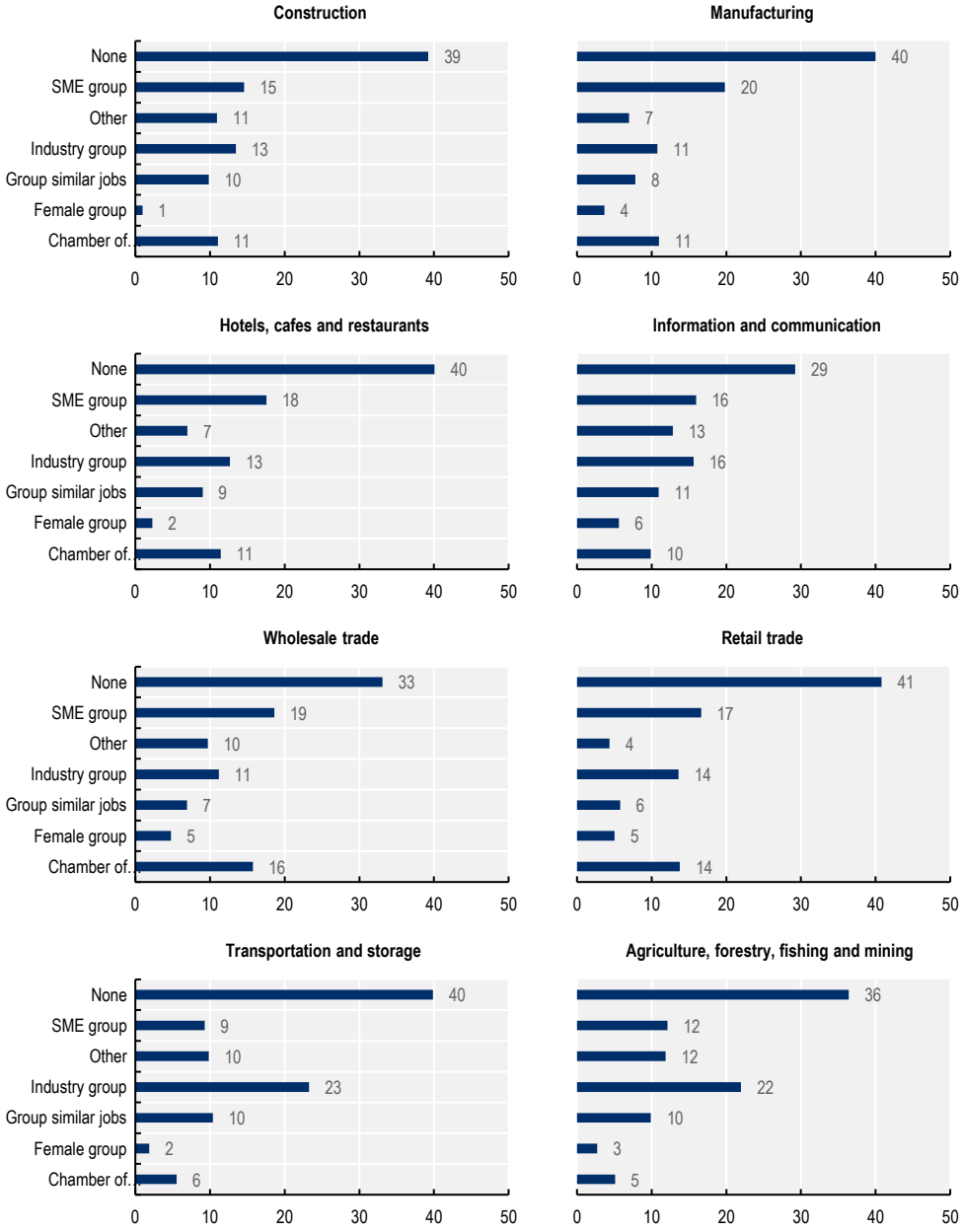
Note: [JRNST_TRDP] Scientific/technical journals or trade publications; [PAT_PUBL] Published patents; [DOC_STD_COM] Standardisation documents or committees; [CONF_TRDF_EXHIB] Conferences, trade fairs or exhibitions; [ASS_PROF_IND] Professional or industry associations; [B2B_OS] Open business-to-business platforms or open-source software; [WEB_NET_CDS] Social web-based networks or crowdsourcing; [RE] Reverse engineering.

Source: Based on Eurostat (2022[32]), *Community Innovation Survey 2020 (CIS2020) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database.

StatLink https://stat.link/1gaw48

Figure 2.5. Many SMEs do not belong to any formal network and membership varies across sectors

SME membership in professional groups by sector, as a percentage of respondents, OECD countries, 2022



Note: Share of firms by professional group. Shares were obtained using the question: "Which of these kinds of professional groups, if any, are you a part of?". SMEs – firms with up to 250 employees – operating in 33 OECD countries (excludes Estonia, Iceland, Latvia, Luxembourg and Slovenia) are the subpopulation of analysis.
Source: Based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/7ntkw6

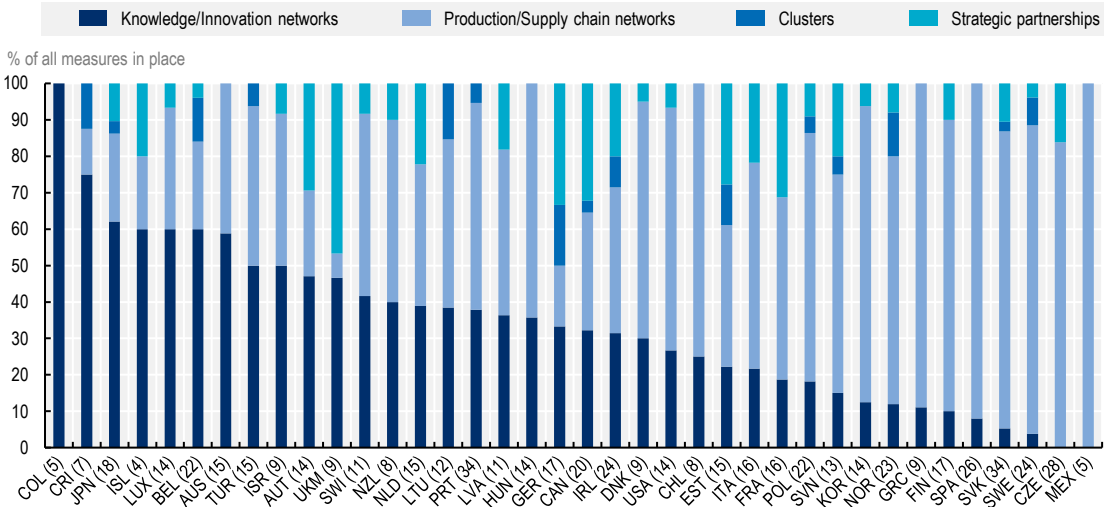
There is a large range of policy measures to support SME network expansion

Governments deploy a broad range of measures – some targeted directly at SMEs, others more generic – to support SME network expansion. A cross-country analysis of national policy mixes in place across OECD countries, carried out as part of a multiannual EC/OECD project Unleashing SME Potential to Scale Up, provides an overview of the character and intensity of government efforts (OECD, 2023[57]). The analysis, based on 601 policy initiatives identified across OECD countries, shows that priority is given to expanding SME connections through (global) trade networks (Figure 2.6), with 52% of total measures dedicated to strengthening SME integration into production/supply chain networks and one-third of public efforts dedicated to fostering linkages within knowledge/innovation networks. Lower focus is given to the development of strategic partnerships and SME integration into clusters, accounting for on average only 12% and 3% respectively, of all policies mapped.

Table 2.3 below provides an overview of selected policy initiatives across the four main network categories identified for this edition of the OECD SME and Entrepreneurship (SME&E) Outlook, with further analysis provided in the following chapters.

Figure 2.6. Most OECD governments place the strongest focus on integrating SMEs into production and supply chain networks

Distribution of national policies for SME network expansion by network type



Note: Figures in parenthesis indicate the number of policies mapped for each country.
Source: Calculations based on an international mapping of national policies and institutions supporting SME network expansion (OECD, 2023[57]), EC/OECD project on Helping SMEs Scale Up (data extracted on 21 April 2023). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[58]).

StatLink https://stat.link/smtn8p

Table 2.3. Policies in support of SME network expansion: selected OECD country examples

	Typologies of policy instruments	Targeted/ Generic	Timing	Country initiatives	KIN	PSCN	SP	C
Creating a supportive business environment								
Institutional & regulatory framework	Regulation	Generic (with focus on SMEs)	2020	**Solidarity network contracts (ITA)** Law No. 77 of 17 July 2020 amends the law establishing business networks, creating a type of network company "with reason of solidarity". The intention is to encourage the establishment of networks of supply chain companies, to maintain the level of employment, resorting to the institutions of secondment and co- ownership.		✓	✓	
	Regulation	Generic	1993 -	**National Cooperative Research and production Act (USA) -** A federal law that establishes certain protections for any joint research, development, or production venture.	✓	✓	✓	
	Non-financial support	Generic	n/a	**Toolkit for national R&D collaborations (LUX) –** The toolkit provides companies with practical information for cooperation with research organisations including IP law, forms of cooperation and contracts	✓			
Market conditions	Non-financial support	Targeted (SMEs)	2017 -	**SESAM (POL)** – In line with Directive 2014/24/EU, the initiative aims to facilitate SME participation in domestic and cross-border procurement, with a focus on France, Germany, Italy and Poland, by providing relevant knowledge and support, in particular through seminars, trainings, factsheets and guidelines, networking events and advisory services.			✓	
	Financial support	Targeted (SMEs)	2022 -	**Consortia for internationalization (ITA)** – A non-refundable grant for promoting the international dissemination of products and services of SMEs, as well as support for their presence on foreign markets, incl. through collaboration and partnerships with foreign companies.		✓		
Infrastructure	Platforms and networking infrastructure	Generic	2014 -	**Switzerland Innovation (CHE)** - the innovation park consists of six sites nationwide, which together form an ecosystem that aims to facilitate collaboration between domestic and international companies, start-ups, and universities to accelerate the transformation of research results into marketable products and services.	✓			✓
	Platforms and networking infrastructure	Targeted (Start-ups)	2015 -	**Start-up Hub (PRT)** - an online platform that allows to identify and geolocate start-ups, incubators, and tech hubs, and which provides information on the various support mechanisms available in Portugal. It also serves as a tool for matchmaking, networking and to further nourish the start-tup scene in Portugal.			✓	
	Mix of financial and non-financial support	Targeted (Start-ups)	2018 -	**Strategic Global Partners and Networks (LVA)** – the initiative seeks to secure strategic partnerships with the most known startup ecosystems and networks around the globe, including e.g., a partnership with San Francisco's WE WORK, a government-to-government Memorandum of Understanding with Gyeonggi province (South Korea), as well as a partnership with the Google Cloud for Startups Program.			✓	
Improving access to strategic resources								
Finance	Financial support	Generic	2008 -	**SIB Subsidy (NLD)** - Businesses can use the subsidy to participate in a trade mission or fair in a specific country to promote products or services to potential customers and connect with possible trading partners and investors.		✓		
	Financial support	Targeted (SMEs, entrepre-neurs)	n/a	**R&D&I grants in an international consortium (BEL) -** By participating in international networks, Flemish project partners can receive direct subsidies from Flanders for their international cooperation on research, development, and innovation (R&D&I) activities.	✓			

Skills	Financial support	Generic (with focus on SMEs)	2007 -	**Impulse Training Networks (AUT)** – a grant to support companies in providing cost-efficient and work-relevant training, with a focus on promoting joint training and learning in SMEs. Company networks need to be composed of at least three companies, with at least 50% of them being SMEs to be eligible for the grant. Funding is provided for building and operating the network, identifying training needs and designing training plans, advising on the development of HRD programs, organising trainings, etc.			✓	
	Non-financial support	Generic (with focus on SMEs)	2013 -	**Education for international business (SVN)** - The aim of the programme is to prepare Slovenian companies for accessing international markets through various online tools for self-assessment, export education and consulting services, and provision of information related to overseas expansion.		✓		
Innovation assets (e.g., data, networks, tech etc.)	Financial support	Targeted (SMEs)	2016 -	**KMU-NetC (GER)** – a non-repayable grant that supports networks and clusters in Germany who can initiate new application-oriented innovation activities with SMEs. The cooperation should be geared to both the needs of SMEs and the innovation strategies of the networks and clusters.	✓			✓
	Non-financial support	Targeted (women entrepre-neurs)	2008 -	**National Women's Enterprise Day (IRL)** - Ireland's largest female enterprise event, organised by the Local Enterprise Office along with Enterprise Ireland. The all-day event opens the prospect of entrepreneurship to women who may not have considered it before and highlights what support is available, including financial incentives, training, and development programmes. It also provides networking opportunities and connections with industry experts.			✓	
	Financial support	Generic	2018 -	**SAYEM - Industrial Innovation Networks (TUR**) – a grant to support the development of high value-added products or product groups by creating innovation networks in cooperation with the private sector (with a particular focus on firms that operate an R&D and product design centre), universities and the public in line with national high / medium-high technology targets. Actors in the network have the opportunity to co-create high value-added products and technologies for market commercialisation.	✓			
	Platforms and networking infrastructure	Generic	2001 -	**Kea Connect (NZL)** - A free service of the Kea agency that connects NZL businesses with an extensive, international community of national experts and industry professionals who are ready to provide market intelligence, connections, and mentorship.		✓	✓	
Improving SME&E policy governance								
Policy coordination and monitoring	National strategies and action plans	Generic	2016-2025	**Open Innovation Strategy (AUT)** - Addresses the goals, measures and methods of open innovation in Austria. One of these measures refers to further developing and providing open innovation methods and instruments specifically for SMEs.	✓			
	National strategies and action plans	Generic (with focus on SMEs)	2017 -	**Britain Open for Business (GBR) -** The UK Department for International Trade's five-year strategy outlines ways to encourage and support more SMEs to enter international markets. It raises awareness of the benefits of exports through the web and social media, as well as through programmes and regional events on opportunities in high growth and emerging markets.		✓		
	Government settings, agencies	Generic	2015-	**Business France (FRA)** - a national agency that supports companies in their export and international expansion projects. It prepares companies and puts them in contact with commercial partners in target markets to promote the creation of business flows and to sustain exports.		✓	✓	

Note: KIN - Knowledge/ innovation networks; PSCN - Production/ supply-chain networks; SP - Strategic partnerships, C – Clusters.
Source: Based on an international mapping of national policies and institutions supporting SME network expansion (OECD, 2023[57]), EC/OECD project on Helping SMEs Scale Up (data extracted on 21 April 2023). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[58]).

Annex 2.A. Definitions

Circular economy (CE)

CE is built on three principles: i) to reduce waste and pollution; ii) to optimise resource use and productivity, and reduce consumption of new primary materials; and iii) to improve the preservation of natural resources and their regeneration (Ellen MacArthur Foundation, 2023[59]; OECD, 2019[2]). In economies of "take, make and dispose", most of the value created is "lost" in landfills and products, components and materials are under-utilised. In addition to driving a sub-optimal factor productivity, this linear system increases firms' exposure to risks, notably related to higher and less predictable resource prices and supply disruptions. The circular economy, whereby the value of products, materials and resources is maintained in the economy for as long as possible and the generation of waste minimised, has emerged as a new paradigm for further decoupling economic growth from resource use.

Circular trade

Circular trade could be understood as any international transaction, either material or immaterial, that contributes to circular economy activities at the local, national and global levels. This includes trade in circularity-enabling goods, services and IP, as well as trade in end-of-life products (e.g. second-hand or refurbished and remanufactured goods, secondary raw materials and waste, scraps, and residues) (Tamminen et al., 2020[60]). In fact, if circular industrial systems aim to create "local value loops", there is also growing awareness of the strong linkages these production systems can have with international trade due to the interconnectedness of global value chains (GVCs) (Moïsé and Rubínová, 2023[61]) (Yamaguchi, 2018[62]). Notwithstanding, very little is currently known about how supply chains can align with circular economy principles.

Corporate social responsibility (CSR)

CSR means different things to different groups but there is general agreement that in a global economy, businesses are often playing a greater role beyond job and wealth creation (OECD, 2001[63]). Consequently, corporate behaviour must not only ensure returns to shareholders, wages to employees and products and services to consumers but they must respond to societal and environmental concerns and values. The European Commission has defined CSR as "a concept whereby companies integrate social and environmental concerns in their business operations and in their interaction with their stakeholders on a voluntary basis". CSR and RBC are often used interchangeably (EC, 2022[64]).

Environmental, social and governance (ESG)

ESG criteria focus mainly on the assessment of business performance and are adopted for informing sustainable and responsible or social impact investment strategies (Boffo and Patalano, 2020[65]). ESG investing responds to growing demand by institutional and retail investors, as well as certain public sector authorities, to incorporate long-term financial risks into decision making and improve risk management while improving portfolio returns (Boffo and Patalano, 2020[65]). It also reflects a growing awareness among firms of the potential ESG approaches could bring to boost efficiency-driven productivity and profits.

Growth

SME growth is measured in different ways and different studies have used different criteria. Growth is most commonly measured in terms of employment (number of employees) or turnover (sales) (Coad et al., 2014[66]). Of these, employment-based metrics are more commonly used as employee headcount is more often available in administrative datasets on enterprises. Metrics of growth (absolute or relative), the period over which growth is measured and the process of growth (organic-internal versus acquired-external) vary (Monteiro, 2019[67]; Schreyer, 2000[68]; Delmar and Davidsson, 2020[69]; OECD, 2021[70]).

Scale-ups or, more explicitly, high-growth firms (HGFs) are defined in the *Eurostat-OECD Manual on Business Demography Statistics* as enterprises with at least 10 employees at the beginning of a 3-year period that saw average annual growth of over 10% (or 20%) in employment or turnover (OECD, 2007, p. 61[71]). Recent OECD work documents the heterogeneity of firms that scale up and the very diverse trajectories they go through. The work calls for broader measures and notions of scaling up in order to account for the social and/or environmental benefits that a larger set of firms, which are rarely captured by traditional economic performance and high-growth indicators, can bring (OECD, 2021[70]; 2022[72]).

Innovation

The OECD/Eurostat Oslo Manual defines innovation as “a new or improved product or process (or a combination thereof) that differs significantly from the unit’s previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)” (OECD/Eurostat, 2005[73]). The term “innovation” refers to both an activity and the (successful) outcome of this activity. It is a broad concept that encompasses a wide range of diverse activities. R&D, for instance, is one of the activities that can generate innovations, or through which useful knowledge for innovation can be acquired or created. The diffusion of new technology is also central to the process of innovation and its diffusion. In that sense, innovation is both a channel for improving SME performance and a measure of its performance (OECD, 2022[72]). Innovation, together with investments and network expansion, can drive SMEs to scale up (high growth) and triggers their transformation in a durable manner.

Open innovation

Open innovation denotes the flow of innovation-relevant knowledge across the boundaries of individual organisations (OECD/Eurostat, 2018[31]). Networking with other companies, R&D facilities, interacting with start-up ventures, public research institutions (PRIs), universities and external suppliers and sharing and accessing outside information and technology is central to the approach. To note, the notion of “openness” does not imply that knowledge is free of charge (“gratis”) or exempt from use restrictions (“libre”). On the contrary, pricing and use restrictions are often key conditions for access to knowledge (OECD/Eurostat, 2018[31]). While “open source” refers to royalty-free technologies, open innovation refers to collaborative networking, and may still involve the (significant) payment of license fees for intellectual property (IP).

Essential components of open innovation include: i) networking, building contacts, meeting colleagues and creating opportunities; ii) collaboration, working synergistically with partners; iii) entrepreneurship, thinking creatively to find solutions; iv) IP management, maximising value; v) global vision, recognising that the 21st-century marketplace is planet earth; vi) knowledge, the key asset in the global knowledge-based economy; vii) access to finance, learning how to be a magnet for investment; and viii) access to information, which is the key driver of innovation (Kowalski, n.d.[74]).

Resilience

The OECD Recommendation on the Governance of Critical Risks defines resilience as "the ability to resist, absorb, recover from or successfully adapt to adversity or a change in conditions" (OECD, 2014[75]), so for a system to absorb disturbance and reorganise itself so as to still retain essentially the same function, structure, identity and feedbacks (OECD, 2014[50]). While traditionally used in an information technology (IT) context – i.e. ensuring that applications and data remain available and secure during a disruptive event such as a cyberattack - the term has increasingly referred to an organisation's ability to adapt operations and continue to thrive. More recently, the concept has also been broadened to social and environmental improvements for increasing well-being (OECD, 2020[76]).

There is a general trend among enterprises towards acknowledging the need for an engagement vis-à-vis civil society and greater awareness of social, societal and environmental concerns. The latter could be integrated into corporate decision making, be at the core of a firm's objectives, its business and its governance model, and constitutes its "social purpose", regardless of size or legal form. Increasingly, firm performance is therefore evaluated on sustainability criteria, being for stock valuation, investment, certification or business and partnership purposes, etc.

On this front, SMEs may however have less capacity than large firms to engage the organisational, monitoring and accountability changes needed, or to comply with standards, reporting requirements and a growing legislative demand for coherent and robust circularity metrics (Barrie et al., 2022[77]).

Responsible business conduct (RBC)

RBC is a foundation of sustainable economic development, whereby a company takes responsibility for its value chain in dialogue with stakeholders and intends to minimise the adverse impacts of its operations and other business relationships (e.g. with suppliers, franchisees, licensees, joint ventures, investors, clients, contractors, customers, consultants, advisers and any other non-state or state entities linked to its business operations, products or services) (OECD, 2021[78]). RBC issues include human rights abuses, financial crime, corruption or environmental degradation, etc.

Sustainability

Sustainability refers to the use of the biosphere by present generations while maintaining its potential yield (benefit) for future generations; and/or non-declining trends of economic growth and development that might be impaired by natural resource depletion and environmental degradation (OECD, 2022[79]). The United Nations (UN) Sustainable Development Goals (SDGs) provide a framework for monitoring public action towards achieving a better and more sustainable future for all and the implementation of the 2030 Agenda for Sustainable Development (UN, 2015[80]). The SDGs recognise that ending poverty and deprivation must go hand-in-hand with strategies to improve health and education, reduce inequality and spur economic growth – all while tackling climate change and preserving oceans and forests.

Annex 2.B. Networks and their impact on SME performance: Insights from the literature

The organisation of networks depends on a number of features: e.g. of their **nodes** (i.e. firms, institutions, people, within the same industry/territory or across industries/territories etc.), the types of **connections that link them** (i.e. formal or informal, vertical or horizontal, their frequency) and the nature of the **flows and benefits the networks enable** (i.e. products, services, knowledge, technology, spillovers, etc.). As a result, networks are dynamic constructs that can transform and evolve over time, as the interests and strategies of their members evolve, e.g. via expansion, contraction, extension and consolidation (Leminen, Nyström and Westerlund, 2020[81]).

Annex Table 2.B.1. below presents a stylised taxonomy of structural features and approaches that may characterise SME and entrepreneurship networks. Horizontal networks refer to firms in the same market, sharing capacities to jointly (or as a consortium) develop new markets, improve products and present product innovations. Vertical networks on the other hand denote co-operation along the supply chain and include suppliers (upstream) and/or customers/marketing (downstream).

Yet most of the time, the network systems around SMEs tend to be multidirectional, as illustrated by a recent study on export performance in the Spanish wine industry, which analyses how competing small- and medium-sized wineries located within the same region collaborate across a horizontal network for commercial purposes, while conjunctively also forming part of a vertical network, whereby they supply wine to larger wine-exporting firms, highlighting how firms can benefit from both the positive effects of horizontal collaboration with competitors, as well as those of downstream vertical marketing networks (Ferrer, Abella-Garcés and Serrano, 2021[82]).

Annex Table 2.B.1. Structures and approaches of SME and entrepreneurship networks

	Description	Examples/involved actors	Expected impact on SME business operations
Direction	**Vertical networks**		• This can entail the development of a new product or service or the accumulation of knowledge and innovation. • Vertical networks can provide benefits such as marketing or R&D activities. • Horizontal networks allow firms involved in consortia to benefit from information exchange, social benefits and informal relationships.
	Vertical networks typically denote co-operation along the supply chain, often also including some sense of hierarchy.	Collaborations between buyers, suppliers and customers but also between manufacturers and research institutions, governmental institutions or communication agencies (…).	
	Horizontal networks		
	Horizontal networks refer to firms in the same market, sharing capacities to jointly (or as a consortium) develop new markets, improve products and present product innovations.	Co-operatives, industrial and R&D clusters, (…).	
Relational nature of interactions	**Formal networks**		• Both formal and informal networks can allow businesses to implement co-operative strategies. • Informal networks are important as they allow the establishment of efficient communication channels that rest on “soft aspects”.
	Formal networks typically refer to contractual relationships among organisations but there are also networks that take a formal yet not binding nature.	Strategic alliances, buyer-supplier contracts, joint ventures but also affiliations to innovation associations or shared committee memberships.	

	Description	Examples/involved actors	Expected impact on SME business operations
	Informal networks		
	Informal networks involve looser structures, where members interact on a more personal level. Social capital is usually central to informal networks, where collaborative business transactions depend strongly on the underlying trust between individual actors.	Inter-organisational relationships, executive clubs and personal relationships.	
Social distance	**Low social distance**		• Knowledge transfer within networks is influenced by both the social and cognitive distance between firms – or put differently by the depth of personal relationships, as well as by differences in technology and innovation levels • Social proximity can act as a substitute for cognitive proximity when it comes to knowledge transfer. If a firm wants to imitate a better-performing competitor that is cognitively distant, it can do so through social proximity.
	The firms in question are highly connected within a (social) network.	Firms that have (often frequent) interactions or an established relationship with each other.	
	High social distance		
	The firms in question are not well connected within a (social) network.	Firms do not share direct ties within a network but are rather connected through loose relationships via one or several other actors (e.g., social networks or business organisations).	
Scope	**Within the same industry (specialised)**		• Specialised networks allow for collaboration and sharing of resources within the same field, leading to increased efficiency and innovation. • Generic networks allow for cross-industry collaboration and knowledge sharing, leading to new business opportunities and potential partnerships • Both collaboration within the same industry and across different industries can lead to improved resource and knowledge sharing, while also fostering new innovations and technologies.
	Proximate firms, sometimes within a same industrial district, typically focused on a specific industry or production process.	Businesses specialised in the same production process, i.e., Detroit's auto concentration industry or a network formed by pharmaceutical companies.	
	Across different industries (generic)		
	Collaboration across different industries or fields of expertise. Need for common ground build-up.	Collaboration of different field experts, i.e., smart clothing or business networks where members of various industries come together to lobby for common interests and goals (e.g., chambers of commerce).	

Source: Building on Behne, A., J. Heinrich Beinke and F. Teuteberg (2021[83]), "A framework for cross-industry innovation: Transferring technologies between industries", https://doi.org/10.1142/S0219877021500115; den Hamer, P. and K. Frenken (2021[84]), "A network-based model of exploration and exploitation", https://doi.org/10.1016/j.jbusres.2019.12.040; Prusak, L. and D. Cohen (2021[85]), "How to invest in social capital", https://hbr.org/2001/06/how-to-invest-in-social-capital (accessed on 20 September 2022); O'Donnell, A. et al. (2001[86]), "The network construct in entrepreneurship research: A review and critique", https://doi.org/10.1108/EUM0000000006220; OECD (2001[87]), *Innovative Networks: Co-operation in National Innovation Systems*, https://doi.org/10.1787/9789264195660-en.

Annex 2.C. Agglomeration benefits in innovation and production networks

Agglomeration economies occur when the spatial proximity of firms, workers and customers allows for reducing production costs through both external economies of scale and network effects. Proximate location amongst firms of the same network or industry can lead to greater rents and productivity in urban industries (Arzaghi and Henderson, 2008[43]).

The capability of MNE affiliates or subsidiaries to contribute to innovation diffusion depends on the extent to which the foreign venture is embedded in the local environment (OECD, 2023[8]; Crescenzi and Harman, 2022[88]). Domestic firms which are located near foreign firms in the same region are more likely to benefit from knowledge spillovers than other firms. Knowledge spillovers from MNEs have been found to be the strongest up to 10 km from the lead firm and progressively decrease between 10 and 50 km, partly reflecting production linkages but also through other channels such as the mobility of managers.

KIBS are disproportionately concentrated in larger cities, where a larger pool of potential clients allows for increasingly specialised services (OECD, forthcoming[45]).

Geographical proximity from HEIs may increase knowledge transfer to the business sector, through university-industry linkages and co-operation, but also through the important contribution HEIs make to developing human capital, creativity and skills in their ecosystem. A 10% increase in distance between a university and a firm decreases the proportion of total R&D paid to the university by 1.4% (for enterprises that do not report any codified transfer of knowledge) and by half as much (for enterprises that do report codified knowledge flows) (Rosa and Mohnen, 2007[46]).

Proximity can also affect SME financing capacities. The British Business Bank found that in 82% of equity investment stakes, investors had an office within 2 hours of travel time of the company that they were backing. In 61% of stakes, the proximity was even closer: one hour or less (British Business Bank, 2021[47]).

References

Ahuja, G. (2000), "The duality of collaboration: Inducements and opportunities in the formation of interfirm linkages", *Strategic Management Journal*, Vol. 21/3, pp. 317-343, https://doi.org/10.1002/(SICI)1097-0266(200003)21:3<317::AID-SMJ90>3.0.CO;2-B. [4]

Andrenelli, A. et al. (2019), "Micro-evidence on corporate relationships in global value chains: The role of trade, FDI and strategic partnerships", https://www.wita.org/wp-content/uploads/2019/05/OECD-micro.pdf. [10]

Arzaghi, M. and J. Henderson (2008), "Networking off Madison Avenue", *Review of Economic Studies*, Vol. 75/4, https://doi.org/10.1111/j.1467-937X.2008.00499.x. [43]

AUTM (2021), *AUTM Licensing Activity Survey*, https://autm.net/surveys-and-tools/surveys/licensing-survey/2021-licensing-survey. [41]

Barrie, J. et al. (2022), "The role of international trade in realizing an inclusive circular economy", Royal Institute of International Affairs, https://doi.org/10.55317/9781784135393. [77]

Behne, A., J. Heinrich Beinke and F. Teuteberg (2021), "A framework for cross-industry innovation: Transferring technologies between industries", *International Journal of Innovation and Technology Management*, Vol. 18/3, https://doi.org/10.1142/S0219877021500115. [83]

Boffo, R. and R. Patalano (2020), *ESG Investing: Practices, Progress and Challenges*. [65]

Brende, B. and B. Sternfels (2022), "Resilience for sustainable, inclusive growth", McKinsey & Company, https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/resilience-for-sustainable-inclusive-growth (accessed on 24 January 2023). [49]

British Business Bank (2021), *Regions and Nations Tracker 2021*. [47]

Camanzi, L. and C. Giua (2020), "SME network relationships and competitive strategies in the agri-food sector: Some empirical evidence and a provisional conceptual framework", *European Business Review*, Vol. 32/3, pp. 405-424, https://doi.org/10.1108/EBR-08-2019-0150/FULL/PDF. [42]

Cervantes, M. and D. Meissner (2014), "Commercialising public research under the open innovation model: new trends", *Foresight-Russia*, Vol. 8/3, https://doi.org/10.17323/1995-459x.2014.3.70.81. [13]

Chesbrough, H. (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press, Boston, MA. [33]

Coad, A. et al. (2014), "High-growth firms: Introduction to the special section", *Industrial and Corporate Change*, Vol. 23/1, pp. 91-112, https://doi.org/10.1093/icc/dtt052. [66]

Coe, N., P. Dicken and M. Hess (2008), "Global production networks: Realizing the potential", *Journal of Economic Geography*, Vol. 8/3, pp. 271-295, https://doi.org/10.1093/jeg/lbn002. [5]

Corrado, C. et al. (2005), *Measuring Capital in the New Economy*, University of Chicago Press, https://www.nber.org/books-and-chapters/measuring-capital-new-economy (accessed on 7 February 2023). [30]

Crescenzi, R. and O. Harman (2022), "How to upgrade through regional policy, FDI and trade", in *Harnessing Global Value Chains for Regional Development*, https://doi.org/10.1080/2578711X.2022.2099169. [88]

DeBresson, C. (1996), *Economic Interdependence and Innovative Activity*, Edward Elgar. [29]

Delmar, F. and P. Davidsson (2020), "Where do they come from? Prevalence and characteristics of nascent entrepreneurs", *Entrepreneurship & Regional Development*, Vol. 12/1, pp. 1-23. [69]

den Hamer, P. and K. Frenken (2021), "A network-based model of exploration and exploitation", *Journal of Business Research*, Vol. 129, pp. 589-599, https://doi.org/10.1016/j.jbusres.2019.12.040. [84]

Den Hertog, P. (2000), "Knowledge intensive business services as co-producers of innovation", *International Journal of Innovation Management*. [14]

EC (2022), *Annual Report on European SMEs 2021/2022*, European Commission, https://ec.europa.eu/docsroom/documents/50654/attachments/1/translations/en/renditions/native. [54]

EC (2022), *Corporate Social Responsibility & Responsible Business Conduct*, European Commission, https://ec.europa.eu/growth/industry/sustainability/corporate-social-responsibility-responsible-business-conduct_en (accessed on 24 June 2022). [64]

EC/OECD (2023), *Fostering FDI-SME Ecosystems to Boost Productivity and Innovation*, European Commission/OECD, https://www.oecd.org/industry/smes/fdi-sme.htm. [12]

EC/OECD (2023), *Unleashing SME Potential to Scale Up*, OECD/European Commission, https://www.oecd.org/cfe/smes/sme-scale-up.htm. [11]

Ellen MacArthur Foundation (2023), *Circular Economy Growth Potential by Sector*, https://ellenmacarthurfoundation.org/topics/finance/sector-insights. [59]

Ellen MacArthur Foundation (2023), *Redesigning Medium-life Bulky Products from Scratch: Niaga*, https://ellenmacarthurfoundation.org/circular-examples/redesigning-medium-life-bulky-products-from-scratch. [37]

Eurostat (2022), *Community Innovation Survey 2020 (CIS2020) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database. [32]

Farole, T. and D. Winkler (2013), "Firm location and the determinants of exporting in low- and middle-income countries", *Journal of Economic Geography*, Vol. 14/2, pp. 395-420, https://doi.org/10.1093/jeg/lbs060. [35]

Ferrer, J., S. Abella-Garcés and R. Serrano (2021), "Vertical and horizontal networks and export performance in the Spanish wine industry", *Journal of Wine Economics*, Vol. 16/4, https://doi.org/10.1017/jwe.2021.35. [82]

Fürstenau, D. et al. (2018), "A process perspective on platform design and management: Evidence from a digital platform in health care", *Electronic Markets*, Vol. 29/4, pp. 581-596, https://doi.org/10.1007/s12525-018-0323-4. [22]

Gawer, A. (2021), "Digital platforms' boundaries: The interplay of firm scope, platform sides, and digital interfaces", *Long Range Planning*, Vol. 54/5, p. 102045, https://doi.org/10.1016/j.lrp.2020.102045. [55]

Gawer, A. and M. Cusumano (2013), "Industry platforms and ecosystem innovation", *Journal of Product Innovation Management*, Vol. 31/3, pp. 417-433, https://doi.org/10.1111/jpim.12105. [24]

Hilmersson, F. and M. Hilmersson (2021), "Networking to accelerate the pace of SME innovations", *Journal of Innovation and Knowledge*, Vol. 6/1, pp. 43-49, https://doi.org/10.1016/j.jik.2020.10.001. [27]

Kantor, S. and A. Whalley (2014), "Knowledge spillovers from research universities: Evidence from endowment value shocks", *The Review of Economics and Statistics*, Vol. 96/1, pp. 171-188. [38]

Kergroach, S. (2020), *Benchmarking National Innovation Policy Mixes for Technology Diffusion*. [15]

Kergroach, S., D. Meissner and N. Vonortas (2017), "Technology transfer and commercialisation by universities and PRIs: Benchmarking OECD country policy approaches", *Economics of Innovation and New Technology*, Vol. 27/5-6, pp. 510-530, https://doi.org/10.1080/10438599.2017.1376167. [19]

Kowalski, S. (n.d.), "SMES, open innovation and IP management: Advancing global development", https://www.wipo.int/edocs/mdocs/sme/en/wipo_smes_rom_09/wipo_smes_rom_09_b_theme02_2-related1.pdf. [74]

Kreiling, L. and C. Paunov (2021), "Knowledge co-creation in the 21st century: A cross-country experience-based policy report", *OECD Science, Technology and Industry Policy Papers*, No. 115, OECD Publishing, Paris, https://doi.org/10.1787/c067606f-en. [39]

Kumar, A., G. Prakash and G. Kumar (2021), "Does environmentally responsible purchase intention matter for consumers? A predictive sustainable model developed through an empirical study", *Journal of Retailing and Consumer Services*, Vol. 58, p. 102270, https://doi.org/10.1016/j.jretconser.2020.102270. [51]

Lembcke, A. and L. Wildnerova (2020), "Does FDI benefit incumbent SMEs?: FDI spillovers and competition effects at the local level", *OECD Regional Development Working Papers*, No. 2020/02, OECD Publishing, Paris, https://doi.org/10.1787/47763241-en. [44]

Leminen, S., A. Nyström and M. Westerlund (2020), "Change processes in open innovation networks – Exploring living labs", *Industrial Marketing Management*, Vol. 91, pp. 701-718, https://doi.org/10.1016/J.INDMARMAN.2019.01.013. [81]

McKinnon, A. (2014), "Building Supply Chain Resilience: A Review of Challenges and Strategies", *International Transport Forum Discussion Papers*, No. 2014/6, OECD Publishing, Paris, https://doi.org/10.1787/5jrw2z6nnxlq-en. [48]

Moïsé, E. and S. Rubínová (2023), "Trade policies to promote the circular economy: A case study of lithium-ion batteries", *OECD Trade and Environment Working Papers*, No. 2023/01, OECD Publishing, Paris, https://doi.org/10.1787/d75a7f46-en. [61]

Monteiro, G. (2019), "High-growth firms and scale-ups: A review and research agenda", *RAUSP Management Journal*, Vol. 54/1, pp. 96-111, https://doi.org/10.1108/rausp-03-2018-0004. [67]

Nilsson, A., J. Magnusson and H. Enquist (2003), "SME network practice: A qualitative study of network management practice and design implications for ICT-support", Proceedings of the 11th European Conference on Information Systems, ECIS 2003, Naples, Italy 16-21 June 2003, https://www.researchgate.net/publication/221408025_SME_network_practice_a_qualitative_study_of_network_management_practice_and_design_implications_for_ICT-support (accessed on 6 September 2022). [6]

O'Donnell, A. et al. (2001), "The network construct in entrepreneurship research: A review and critique", *Management Decision*, Vol. 39/9, pp. 749-760, https://doi.org/10.1108/EUM0000000006220. [86]

OECD (2023), *OECD Data Lake on SMEs and Entrepeneurship*, https://www.oecd.org/cfe/datalake.htm (accessed 21 April 2023). [58]

OECD (2023), *Policy Toolkit for Strengthening FDI and SME Linkages*, OECD Publishing, Paris, https://doi.org/10.1787/688bde9a-en. [8]

OECD (2023), *Unleashing SME potential to scale up*, https://www.oecd.org/cfe/smes/sme-scale-up.htm (accessed on 21 June 2023). [57]

OECD (2022), "Financing growth", in *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Publishing, Paris, https://doi.org/10.1787/6962c7a9-en (accessed on 11 October 2022). [72]

OECD (2022), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/81c738f0-en. [3]

OECD (2022), *Glossary of Statistical Terms*, OECD, Paris, https://stats.oecd.org/glossary/detail.asp?ID=2625. [79]

OECD (2022), *OECD Digital for SMEs Global Initiative (D4SME)*, OECD, Paris, https://www.oecd.org/digital/sme/. [26]

OECD (2022), *Translating a Risk-based Due Diligence Approach into Law: Background Note on Regulatory Developments concerning Due Diligence for Responsible Business Conduct*, OECD, Paris, https://mneguidelines.oecd.org/translating-a-risk-based-due-diligence-approach-into-law.pdf. [52]

OECD (2021), *Middle East and North Africa Investment Policy Perspectives*, OECD Publishing, Paris, https://doi.org/10.1787/6d84ee94-en. [78]

OECD (2021), *OECD SME and Entrepreneurship Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/97a5bbfe-en. [1]

OECD (2021), *The Digital Transformation of SMEs*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/bdb9256a-en. [20]

OECD (2021), *Understanding Firm Growth: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/fc60b04c-en. [70]

OECD (2020), "Building back better: A sustainable, resilient recovery after COVID-19", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://read.oecd-ilibrary.org/view/?ref=133_133639-s08q2ridhf&title=Building-back-better-_A-sustainable-resilient-recovery-after-Covid-19 (accessed on 4 November 2022). [76]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [2]

OECD (2016), *OECD High-level event on the Knowledge Triangle: Enhancing the Contributions of Higher Education and Research Institutions to Innovation*, Background document, OECD, Paris, https://www.oecd.org/sti/Case%20studies%20-%20KT%20Event_FINAL2.pdf. [9]

OECD (2015), "Knowledge creation, diffusion and commercialisation", in *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*, OECD Publishing, Paris, https://doi.org/10.1787/9789264239814-7-en. [40]

OECD (2015), *Skills and Learning Strategies for Innovation in SMEs*, Working Party on SMEs and Entrepreneurship (WPSMEE), OECD, Paris, https://one.oecd.org/document/CFE/SME(2014)3/REV2/en/pdf (accessed on 6 June 2018). [56]

OECD (2014), *Boosting Resilience through Innovative Risk Governance*, OECD Reviews of Risk Management Policies, OECD Publishing, Paris, https://doi.org/10.1787/9789264209114-en. [50]

OECD (2014), *OECD Recommendation on the Governance of Critical Risks*, OECD, Paris, https://www.oecd.org/gov/risk/recommendation-on-governance-of-critical-risks.htm (accessed on 7 February 2023). [75]

OECD (2013), *Commercialising Public Research: New Trends and Strategies*, OECD Publishing, Paris, https://doi.org/10.1787/9789264193321-en. [16]

OECD (2010), *SMEs, Entrepreneurship and Innovation*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/9789264080355-en. [34]

OECD (2008), *Enhancing the Role of SMEs in Global Value Chains*, OECD Publishing, Paris, https://doi.org/10.1787/9789264051034-en. [28]

OECD (2007), "6.1 Survival of newly born enterprises Typology of survival", in *Eurostat-OECD Manual on Business Demography Statistics*, OECD, Paris. [71]

OECD (2004), *Networks, Partnerships, Clusters and Intellectual Property Rights: An Opportunity and Challenges for Innovative SMEs in a Global Economy*, OECD, Paris, https://www.oecd.org/cfe/smes/31919244.pdf. [18]

OECD (2001), *Corporate Social Responsibility: Partners for Progress*, Local Economic and Employment Development (LEED), OECD Publishing, Paris, https://doi.org/10.1787/9789264194854-en. [63]

OECD (2001), *Innovative Networks: Co-operation in National Innovation Systems*, OECD Publishing, Paris, https://doi.org/10.1787/9789264195660-en. [87]

OECD (1999), *Managing National Innovation Systems*, OECD Publishing, Paris, https://doi.org/10.1787/9789264189416-en. [7]

OECD (forthcoming), *Identifying Challenges in Regional Innovation Diffusion*, OECD, Paris. [45]

OECD/Eurostat (2018), *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition*, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg, https://doi.org/10.1787/9789264304604-en. [31]

OECD/Eurostat (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition*, The Measurement of Scientific and Technological Activities, OECD Publishing, Paris, https://doi.org/10.1787/9789264013100-en. [73]

Prusak, L. and D. Cohen (2021), "How to invest in social capital", https://hbr.org/2001/06/how-to-invest-in-social-capital (accessed on 20 September 2022). [85]

Rosa, J. and P. Mohnen (2007), "Knowledge transfers between Canadian business enterprises and universities: Does distance matter?", *Annales d'Économie et de Statistique*, Vol. 88/87, pp. 303-323, https://about.jstor.org/terms. [46]

Rosenfeld, S. (2001), "Networks and Clusters: The Yin and Yang of Rural Development", *Proceedings of the Rural and Agricultural Conferences (no. Sep, pp. 103-120) - Federal Reserve Bank of Kansas City*. [17]

Sanasi, S. et al. (2020), "Making sense of the sharing economy: A business model innovation perspective", *Technology Analysis and Strategic Management*, Vol. 32/8, pp. 895-909, https://doi.org/10.1080/09537325.2020.1719058. [21]

Schmidt, A. et al. (2020), "Growing with others: A longitudinal study of an evolving multi-sided disruptive platform", *Creativity and Innovation Management*, Vol. 30/1, pp. 12-30, https://doi.org/10.1111/caim.12401. [23]

Schreyer, P. (2000), "High-Growth Firms and Employment", *OECD Science, Technology and Industry Working Papers*, No. 2000/3, OECD Publishing, Paris, https://doi.org/10.1787/861275538813. [68]

Tamminen, S. et al. (2020), *Trading Services for a Circular Economy*, Ministry for Foreign Affairs of Finland and the International Institute for Sustainable Development, https://www.iisd.org/system/files/2020-10/trading-services-circular-economy.pdf. [60]

Thomas, M. et al. (2020), "The future of digital platforms: Conditions of platform overthrow", *Creativity and Innovation Management*, Vol. 30/1, pp. 80-95, https://doi.org/10.1111/caim.12422. [25]

UN (2015), *Do You Know All 17 SDGs?*, United Nations, https://sdgs.un.org/fr/goals. [80]

WEF (2015), *Collaborative Innovation: Transforming Business, Driving Growth*, World Economic Forum, https://www3.weforum.org/docs/WEF_Collaborative_Innovation_report_2015.pdf (accessed on 18 January 2023). [36]

WTO (2021), *Global Value Chain Development Report: Beyond Production*, World Trade Organization, Geneva/Asian Development Bank, Manila/University of International Business and Economics, Beijing/IDE-JETRO/China Development Research Foundation, Beijing, https://doi.org/10.30875/7eb92281-en. [53]

Yamaguchi, S. (2018), "International Trade and the Transition to a More Resource Efficient and Circular Economy: A Concept Paper", *OECD Trade and Environment Working Papers*, No. 2018/03, OECD Publishing, Paris, https://doi.org/10.1787/847feb24-en. [62]

Notes

[1] Interestingly, the European Union Digital Services Act (DSA) required companies to provide their monthly average users by 17 February 2024. The rule defines companies with more than 45 million users and those under. This only covers European countries.

Rough estimates: Apple store - more than 45 million (exact number unknown) (source: https://www.apple.com/befr/legal/more-resources/dsa/befr/); Twitter - 100.9 million average monthly users in the European Union; Google - 332 million for Google Search, 74.9 million for Shopping, 401.7 million for YouTube; Meta Platforms - 255 million average monthly active users on Facebook and Instagram (source: https://edition.cnn.com/2023/02/17/tech/tiktok-data-centers-europe/index.html).

3 Women-led firms in international trade

Businesses led by women are less likely to export to foreign markets than those led by men. This gender export gap has distributive implications as women-led SMEs are not able to take equal advantage of the scale and productivity benefits of international trade. This chapter examines this phenomenon using data from almost 10.000 firms surveyed on Facebook. The results show that both sector and firm size contribute to the gender export gap but cannot fully explain it, and also reveal other gendered variation in export behaviour. The chapter further examines the challenges that women entrepreneurs face when exporting and explores some of the policy levers and programmes governments can use to support women in trade.

In Brief

- International trade is a major driver of economic growth. Firms that trade tend to be more productive since exporting leads to market expansion and sales growth, while importing can help reduce costs and improve technology. However, small- and medium-sized enterprises (SMEs) export less than large firms, due in part to fixed costs, lack of knowledge and risks associated with accessing international markets.
- According to a survey of firms in OECD countries with a presence on Facebook, only 11% of women-led SMEs export, compared to 19% of men-led firms in 2022. Women-led firms are generally smaller than those led by men and are more likely to produce services, which are less traded than goods. These two characteristics mean that women-led firms export less than those led by men. However, about one-third of the gender export gap is unexplained by the sector and size of firms and suggests part of the gap can be attributed to gender-related differences, such as unconscious bias and societal norms.
- Although women-led SMEs generally export less, once they start exporting, they do so at a similar level as men in terms of the share of their sales occurring internationally. There may be gender differences in initiating participation in international markets so policies that help women-led firms become export-ready, such as market information, branding, customer relations and business partners and navigating foreign and domestic customs regulations, may help close the gender exporting gap.
- Gender differences are also present when it comes to importing. Fifteen percent of men-led firms import, compared to 11% of those led by women, with size and industry explaining only part of the gap. The greater likelihood of importing means that men-led firms gain more of the cost-lowering or technology-enhancing benefits of trade, although it also makes them more vulnerable to sudden supply chain shocks on domestic and global markets such as those they experienced during the COVID-19 pandemic.
- The COVID-19 pandemic revealed the importance of e-commerce, including digital cross-border trade. Women-led firms adopted new technologies to a greater extent than men-led firms at the onset of the pandemic: while in 2019 a similar percentage of women- and men-led businesses made at least a quarter of their sales on line (43% and 40% of them respectively), by 2022, these shares had shifted to 53% and 44% respectively. Also, more women business leaders indicated that they would continue their online engagement. Given the importance of online sales and engagement for international trade, one way to facilitate trade is by ensuring easy and affordable Internet access, including in remote and rural areas.
- A well-known challenge for women business leaders is accessing finance, including trade finance. Among the businesses surveyed, 12% of women-led firms currently had a bank loan compared to 20% of men-led firms. Complementary research finds that women-owned firms face 50% more rejections in applications for traditional trade finance than men-owned businesses; as such, women are more likely to seek out alternative finance than male-led businesses (41% versus 35%). Some countries have earmarked investment funds and loan facilities for women-led firms. Others provide loan guarantees that are easier to access for women business leaders. Still, others provide training in investment pitches or financial and accounting skills.
- Since SMEs tend to trade less due to the fixed costs of entering global markets, trade facilitation reforms benefit them more. Many OECD countries have come a long way in easing procedures

and reducing delays at borders. These especially benefit women-led firms that tend to be smaller. Moreover, automation of border procedures reduces opportunities for unequal treatment of women exporters, in cases where presence is required at border crossings, and can expedite customs procedures, which is particularly important for women who have less time given their unpaid work responsibilities.

- Since women-led firms tend to export less, even when accounting for firm size and sector of activity, trade promotion agencies can contribute to closing gender gaps by catering specifically to the needs of women-led firms that tend to be smaller and less well-financed. New Zealand Trade and Enterprise is one example of an export promotion agency that has undertaken a wide-ranging set of reforms to better serve women business leaders.
- Some recent trade agreements have included comprehensive gender chapters or gender provisions that reaffirm commitments to international standards of gender equality and implement joint activities between trading partners that aim to reduce gender inequalities. One example is the Global Trade and Gender Arrangement (GTAGA), a comprehensive co-operation agreement.
- Many public entities aim to close gender gaps in exporting by putting in place targeted programmes. As these programmes mature, it will be important to measure their effects on women-led firms, as has been done in Ireland and Türkiye. These programmes provide a potential vehicle for data collection on the benefits of actions taken and the challenges women continue to face in engaging in trade.
- Gender-differentiated data on international trade are missing in several countries. Closing data gaps is key for monitoring developments and designing policies for women in trade, for instance, by exploring linking various existing data sources (e.g. business registers and trade data).

Issue

Across OECD countries, international trade is a major driver of economic growth. Exporting firms earn higher profits, pay higher wages and grow faster than non-exporting firms.[1] SMEs and entrepreneurs engage less in international trade than larger firms. Indeed, around 80% of micro firms do not engage directly in international trade according to the OECD-World Bank-Meta Future of Business Survey (hereafter the Future of Business Survey). A stronger engagement would help support the recovery and ensure that small firms are not left behind. Particularly important in emerging markets, firms that trade are substantially less likely to be in the informal sector (World Bank/WTO, 2020[1]; IFC, 2011[2]).

Women entrepreneurs are less likely to engage in international trade, and, as a consequence, are less able to seize the opportunities for increasing competitiveness and other spillover effects trade could offer. Ensuring that businesses led by women entrepreneurs are able to take advantage of these opportunities will support greater gender equality and help to close gender gaps that increased during the COVID-19 pandemic, in addition to contributing to higher and inclusive economic growth. Focusing on this specific category of firms can also help better tailor policies.

This chapter examines the presence and challenges of business leaders in trade, focusing on women leaders for which little information is currently available and some of the policies that countries have implemented to support them. It relies extensively on the Future of Business Survey, which was specifically designed to examine these questions. First, it explores to what extent women-led and men-led businesses in OECD countries differ in their engagement with international markets. Second, it examines the extent to which those differences have changed, if at all, in the aftermath of the COVID-19 crisis. Third, it identifies the challenges that women-led businesses face when starting and expanding their export operations. Last, it showcases a number of policy initiatives that countries have pursued in order to boost women's ability to reap the benefits of exporting. The chapter builds on the policy mappings conducted as part of the EC/OECD Scale up Project on network expansion for SME growth.[2]

Exporting by entrepreneurs and gender export gaps[3]

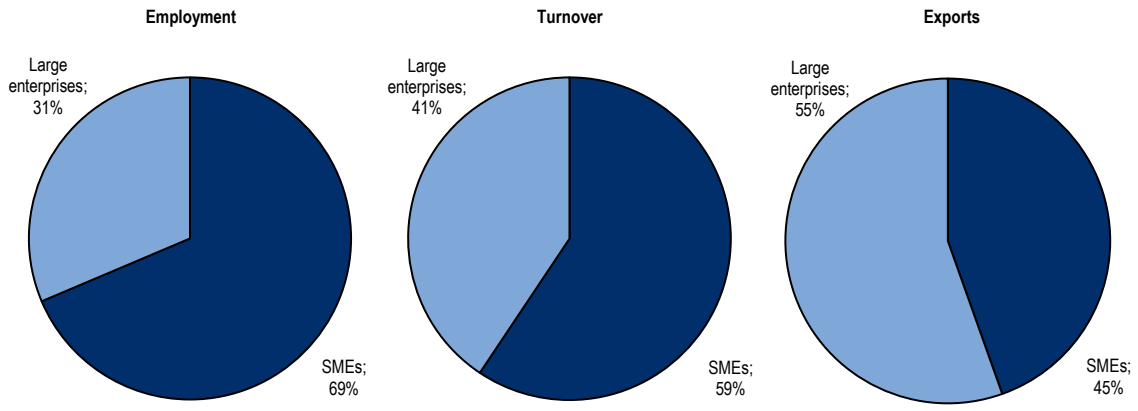
Firms involved in international trade tend to be more productive than those which do not trade and engaging in international trade also improves performance. Indeed, exporting leads to market expansion and sales growth, induces competition and innovation and generates knowledge spillovers, while importing can help reduce costs and access better technologies (Máñez, Rochina-Barrachina and Sanchis, 2020[3]). SMEs tend to be underrepresented in international trade, accounting for a small proportion of exports relative to their share of turnover and employment (Figure 3.1), as they often have less capacity and knowledge regarding markets and regulations together with the insufficient financial capacity to access foreign markets. Since SMEs are more sensitive to trade barriers than large firms, removing obstacles to trade benefits SMEs disproportionately (WTO, 2016[4]).

Engagement in international trade varies across sectors, with SME importers being concentrated in wholesale trade and exporters in manufacturing, according to the Future of Business Survey (Box 3.1). Most exporting SMEs covered by this survey export to 2-5 countries, while larger firms typically export to 11 or more countries. Internationalisation of SMEs mostly takes place through indirect international channels and SME integration in global value chains (Chapter 4).

Women-led SMEs are substantially less likely to sell their products and services internationally than those led by men.[4] Only 11% of women-led firms in OECD countries export, compared to 19% of men-led and 13% of equal-led firms, according to the Future of Business Survey.[5] Women-led firms are less likely to export in most countries, economic sectors and firm-size categories (Figure 3.2).

Figure 3.1. SME share of employment, turnover and export

Average of 26 OECD economies, 2020



Note: Turnover is the total value of invoices corresponding to market sales of goods or services.
Source: OECD Structural and Demographic Business Statistics (SDBS) database and Trade by Enterprise Characteristics (TEC).

StatLink https://stat.link/5gmcqz

Box 3.1. The Future of Business Survey

This chapter makes use of data from the OECD-World Bank-Meta Future of Business Survey of firms with an online presence on Facebook. The analysis drawn from the survey should be considered relevant to this type of business.

A questionnaire on firm characteristics and economic activity was distributed among a random sample of businesses in March 2022. This resulted in information on almost 10 000 businesses in OECD countries, including whether or not they engage in trade, the gender make-up of their leadership and other business characteristics such as size and sector of activity.

In the analysis of the survey data, firms are weighted in order to ensure the random sample resembles the population of Facebook page administrators. Since this group is not identical to the wider business population, the survey should be regarded as representative of firms with an online Facebook presence rather than businesses generally.

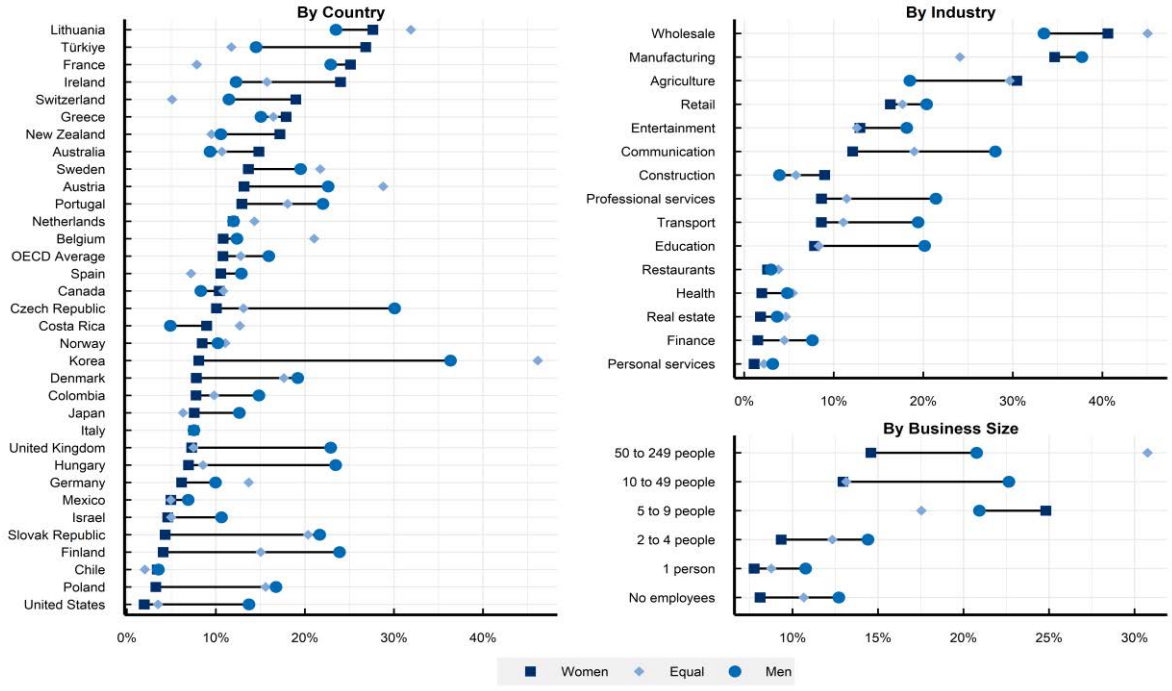
Firms are defined in this analysis as women-led if they report that the majority of their leadership is women, with the reverse for men, while equal-led businesses are those with a 50-50 division at the time of the survey. Among the surveyed firms, 31% indicated they were women-led, 29% were equal-led and 40% were men-led.

Gender-differentiated, harmonised data on the total population of businesses by size and sector in OECD countries do not exist so this survey is one of few data sources that is comparable across countries. Participation in the survey may be skewed towards SMEs although weights are applied to reflect the general population of Facebook business pages. The data used in this analysis refer to micro, small- and medium-sized firms, i.e. those with fewer than 250 employees.

A detailed breakdown of the distribution of the survey sample can be found in Annex 3.A. For more information on the survey methodology, see Schneider (2020[5]).

The firms that are undoubtedly underrepresented in this survey are those that do not have an online presence. Since Facebook is the most prevalent online platform for businesses and the vast majority of businesses that trade have an online presence, it reflects particularly well the firms targeted by this analysis, i.e. SMEs that trade or are trade-ready.

Figure 3.2. Variation in the gender export gap in firms with a Facebook page, March 2022



Note: The y-axis displays the share of firms in a given group that indicate they engage in either "just exporting" or "both importing and exporting". Based on a sample of 10 000 SMEs (i.e. with fewer than 250 employees) from 34 OECD countries.
Source: Based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/805vi7

This exporting gap is due to several factors, including attitudes towards entrepreneurship and barriers such as access to finance and a perceived lack of entrepreneurship skills (GEM, 2021[6]). Over the period 2016-20, less than 9% of women in OECD countries created a business or managed a new business relative to about 13% of men (OECD/EC, 2021[7]).

The gender differences in the likelihood to export are also due in part to differences in the characteristics of women-led and men-led businesses such as the sectors in which they operate. Women are more likely to lead firms in services sectors (93% of women-led versus 75% of men-led businesses among those surveyed) and services are generally less likely to be traded internationally.[6] Moreover, women often work in services that are less traded like health, education and public administration.[7] Evidence shows that services are more costly to provide across borders (Ariu, 2012[8]) and policy barriers to services trade are typically higher than barriers to trade in goods such as tariffs (Benz and Jaax, 2020[9]).

Women-led firms are also generally smaller and younger than those led by men while exporting is done more by firms that are larger and more established. Only 18% of women-led firms that responded to the survey have over 50 employees while 76% have fewer than 5, compared to 30% and 66% respectively for men-led businesses in OECD countries. Consistent with this, between 2016 and 2020, fewer than 11% of

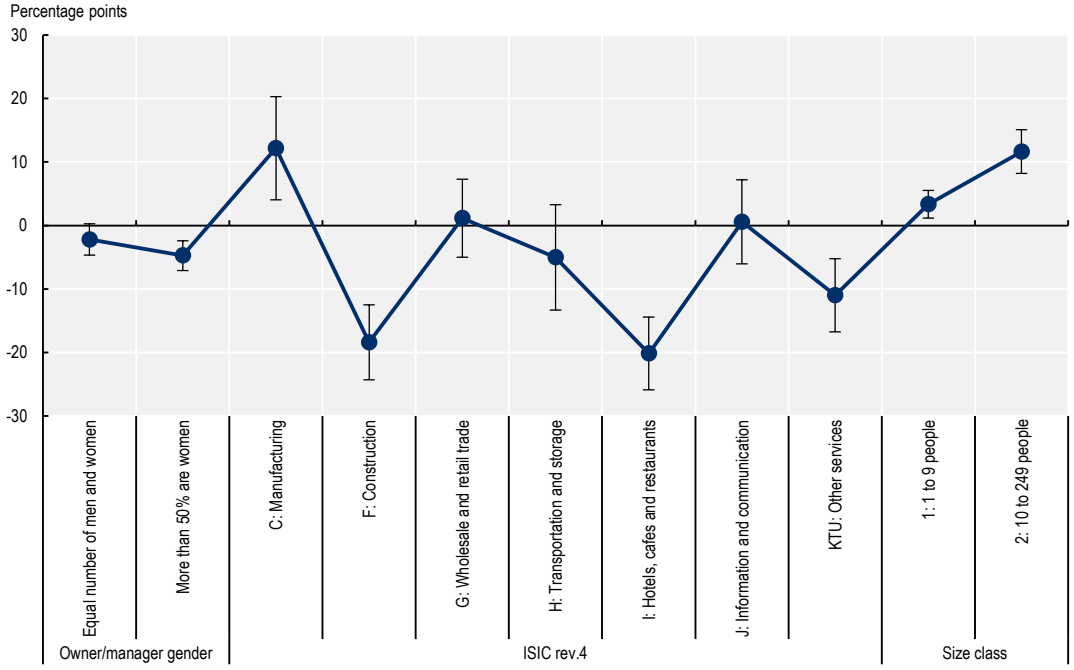
early-stage women entrepreneurs in the OECD expected that their new start-up would create at least 19 jobs in the next 5 years relative to 17% of early-stage men entrepreneurs (GEM, 2021[6]). Similarly, in emerging markets, women's entrepreneurship is concentrated in micro firms: one-third of very small enterprises and only 20% of medium-sized firms are owned by women (WTO, 2016[4]; IFC, 2011[2]).

Unpacking the importance of firms' characteristics on the gender export gap using a Kitagawa-Oaxaca-Blinder decomposition,[8] 26% is due to the concentration of women-led firms in industries less inclined towards international trade, 27% can be attributed to the smaller average size of women-led firms, 12% of the variation has captured the country of activity and 1% by business lifespan. This leaves a remaining 34% that cannot be explained by firms' features and instead seems to be associated with factors related to gender differences.

Complementing these results, a logit model shows that women-led small firms in OECD countries have a lower probability to export than their men-led counterparts even after correcting for the country, sectors and firm class-size (Figure 3.3). Having mostly men in the leadership increases on average the probability to export by 2 to 7 percentage points. By contrast, no significant difference is found between men-led firms and firms whose board is comprised of an equal balance between men and women. A similar outcome can be observed when looking more generally at engagement in international trade (which includes both imports and exports).

Figure 3.3. Probability to export, depending on the gender, sector and firm size

Marginal effect of gender and firm size on the probability of exports



Note: The numbers plot the increase in the probability an SME will export depending on the composition of its leader team, sector or size. Marginal effects are derived using a logit regression on SMEs in 34 OECD countries. with observations from March 2022. Effects are relative to the reference category "more than 50% of men" regarding the gender dimension, relative to "agriculture, mining, energy, water supply" regarding the sectoral dimension and relative to "firm with no employees" regarding firm size. Confidence bands are reported at 95% and indicated by the whiskers. Effects are statistically significant when the confidence bands do not cross the zero line.
Source: Using data from the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/jwz95l

Data from the Future of Business Survey suggest that women are also less likely to lead firms in industries in which their country has a revealed comparative advantage, defined as sectors or industries where a given country exports more than it imports. Based on regression analyses controlling for country and sector, OECD firms led by women are 3% less likely than those led by men to be in an industry with a comparative advantage.[9] A survey of women-owned firms in emerging markets suggests that they are more likely to be in lower value-added sectors (ITC, 2015[10]). Combined with known gender gaps in attaining senior management positions, where entrepreneurial skills are developed, this evidence suggests that women face multi-faceted obstacles to engaging in international trade.

Characteristics of the individual women and men entrepreneurs, rather than their businesses, do not seem to explain gender gaps in export. Among the business leaders surveyed, women and men show a similar distribution across age categories. The gender export gap is relatively larger among the youngest and oldest entrepreneurs (under 30 and over 60), with more modest levels in between. Regarding educational attainment, 54% of women entrepreneurs have completed a university or college degree compared to 44% of men, suggesting that lack of formal training is not what is holding women back from exporting. In fact, the gender export gap is largest among respondents with a college or university degree.

It could be the case that women entrepreneurs do not trade as much because they are looking to get different things out of their business. When asked about their motivation for starting a business, women were significantly more likely to name a desire for work-life balance and the decision to pursue a hobby or passion professionally, while men were more likely to be running a family business or to have started one out of a desire to make more money. These choices are also impacted by domestic polices and societal norms, including those that impact time spent raising children and caring for the elderly, responsibilities that are disproportionately taken on by women. Given the fixed costs and time commitment often associated with beginning export activities for the first time, this investment may appear more worthwhile to men than to women entrepreneurs given their differing aims.

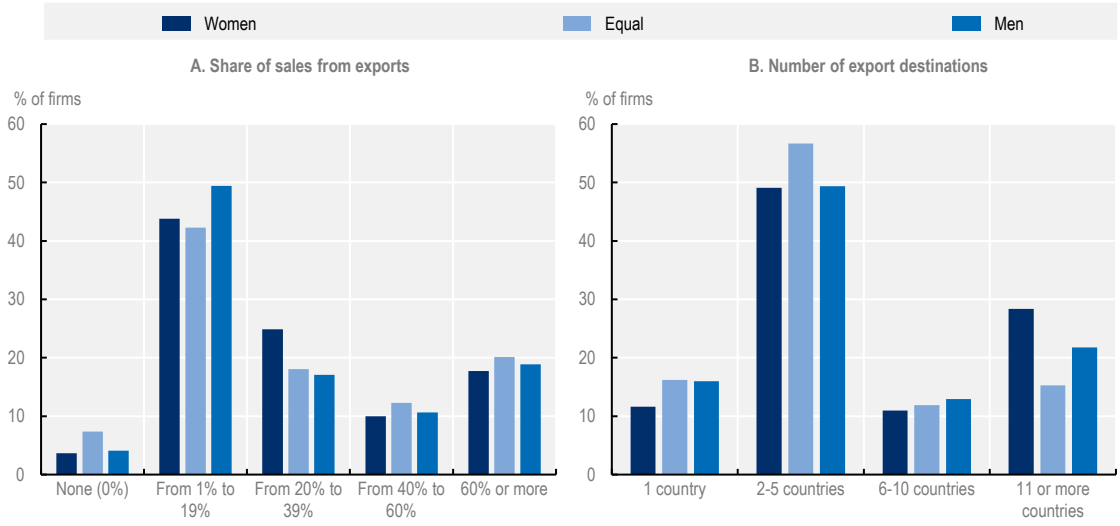
The gender export gap is present in most OECD countries (Figure 3.2) but differs substantially across countries, and in a handful of countries, it is absent or even reversed. The level of exports and the size of the gender export gap are not highly correlated: some countries see large numbers of businesses selling abroad and a small difference between men- and women-led businesses, and vice versa. A gender export gap is also present in almost all industries and the industries in which it is absent tend to have relatively few women entrepreneurs.

The gender gap also increases with business size. There is a clear relationship between the size of a business and its trading behaviour: as businesses grow, their likelihood of exporting increases but this effect is stronger for men-led businesses.

While women-led businesses are generally less likely to export than men-led ones, those that do sell to foreign markets display similar export patterns to men-led firms (Figure 3.4). Firms in the Future of Business Survey that indicated they sell abroad were asked what share of their overall revenues comes from export. Some 46% of businesses indicated that exports amounted to less than 20% of their revenue and only 19% responded that exports accounted for 60% or more of their revenue. These numbers do not differ significantly between men- and women-led firms.

Once involved in export, women-led firms do so to a similar or larger number of countries than firms led by men. Twenty-eight percent of women-led firms and 20% of men-led firms exported to 11 or more countries, while 88% of women-led firms and 84% of men-led firms export to more than 1 country. This suggests a particular role for policy in helping women-led firms overcome the barriers to beginning their export journey, perhaps even more so than support in expanding operations.

Figure 3.4. Export behaviour of exporting firms, March 2022



Source: OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022). SMEs with a presence on Facebook.

StatLink https://stat.link/51h84w

One striking gender difference in the pattern of foreign sales is that women-led firms tend to export more directly to consumers and less to other businesses. While 79% of the surveyed men-led firms engaged in exporting report selling to foreign companies, only 51% of women-led firms do so according to the Future of Business Survey. A Kitagawa-Oaxaca-Blinder decomposition of this difference shows it is 18% due to the industries in which these firms operate, 16% due to average size differences and 2% due to the more recent creation of women-led businesses in the survey, but most of the remaining gap, i.e. over half of the difference, is not explained by the features of women- and men-led firms. Business-to-business sales are often made up of larger orders and therefore offer more opportunity to increase exports along the intensive margin, i.e. increasing the average size of orders.

Gender differences with regard to exporting are also present when it comes to importing: 15% of men-led firms import compared to 11% of those led by women. In part, this is due to men's concentration in sectors where inputs are more frequently imported, such as manufacturing and wholesale trade. Yet a statistically significant difference of 3% in the probability of importing remains even when controlling for firm sector, size and country.[10] The greater likelihood of importing means that men-led firms gain more of the benefits of the cost-lowering effects of trade liberalisation, although it also makes them more vulnerable to supply chain shocks as the next section shows.

Women-led firms are at least as engaged on line as men-led firms. Women-led firms are more likely than men-led firms to be active on digital platforms. Moreover, a larger share of women-led firms' sales is made on line compared with men-led firms, even when controlling for other firm characteristics. Larger shares of online sales for exporters also underline the importance of digital sales for international trade (OECD et al., 2023[11]). Firms engaged in international markets are much more likely to use digital platforms compared with those that do not export. Sixty-four percent of women-led firms that export use digital platforms to buy and sell goods and services compared with 37% of women-led firms that do not export.

Given the importance of online sales and engagement for international trade, one way to facilitate trade is by ensuring easy and affordable Internet access, including in more remote or rural areas.

Impact of the COVID-19 pandemic[11]

The COVID-19 pandemic has had wide-reaching economic impacts and has been particularly challenging for SMEs. One important reason is that younger and smaller SMEs were less likely to receive fiscal support in the first phase of the pandemic (OECD, 2021[12]) and many operate in service sectors which were hit hard by the crisis. SMEs engaged in international trade were particularly vulnerable, as some supply chains were severely disrupted and travel restrictions hampered international trade (Cernat, Jakubiak and Preillon, 2020[13]).

A comparison of Future of Business Survey answers from the March 2022 survey with those given in an earlier edition of the same survey administered in July 2019 allows for investigation of the effects of the pandemic and whether it triggered some long-lasting change in behaviours.

Men-led and women-led businesses experienced different challenges during the COVID-19 pandemic period, with disproportionate negative impacts on women-led businesses, which often operate in the service sectors and are smaller in size, relative to those led by men (OECD/EC, 2021[7]). Women-led businesses were more likely to close than those led by men between January and May 2020 (26% vs. 20%) (Facebook/OECD/World Bank, 2020[14]) and this gap increased in 2021 (25% vs. 17%) (Meta, 2022[15]). Similarly, national surveys frequently show that women entrepreneurs were more likely than men to have their volume of work and income reduced. For example, a German survey revealed that self-employed women were one-third more likely to face income loss due to the pandemic than self-employed men (Graeber, Kritikos and Seebauer, 2021[16]). Men-led and women-led firms also expressed different types of challenges during the COVID-19 pandemic period. Between 2019 and 2022, men-led businesses reported a significant increase in the difficulty in finding and retaining skilled employees. At the same time, more women-led businesses reported that they could not obtain the necessary financing for daily operations.

The greater impact of the COVID-19 pandemic on women business leaders can in part be explained by women's disproportionate responsibility for childcare, elder care and domestic chores. As schools and childcare centres closed due to the pandemic and lockdowns prevented domestic workers from entering homes, women working in those sectors experienced the loss of employment activity and women more generally increased their time spent in unpaid work. Before the pandemic, women typically spent between 33% and 66% more time caring for children compared to men (Korinek, Moïsé and Tange, 2021[17]), and although there is some evidence that the increased burden of caring for children and others during the pandemic was shared, women continued to undertake the vast majority of unpaid work in most households. Single-parent households, which are in their majority headed by women, were particularly affected by the loss of childcare and schooling services. These impacts disproportionately affected women and therefore also women entrepreneurs and business leaders.

The greater difficulty of women-led businesses in accessing the funding they need is also seen in their reduced ability to access government support. Many governments implemented extensive support programmes for firms to help them during the pandemic. In the 2022 survey, firms were asked what types of support they received, e.g. extra credit, deferral of payment and advisory services. In most sectors, a similar share of women- and men-led businesses were supported. However, the types of support they received differed: men-led businesses were more likely to have received non-repayable grants and subsidies than those led by women (26% vs. 22% of firms).[12] The lack of both private and non-repayable public funding may hinder the ability of women-led firms to recover from the disruptions brought on by the pandemic.

One of the consequences of the pandemic was a significant strain on international supply chains; these challenges were felt more strongly by male business leaders. Across the board, men-led businesses were more likely than women-led firms to indicate they experienced supply challenges, most prominently "delay in receiving supplies" and "an increase in shipping costs". This may be due to the higher prevalence of men-led businesses in manufacturing and the higher rates of importing and exporting of men-led firms, all of which may have left them more vulnerable to global supply chain shocks.

Another effect of the pandemic was a switch to the digital sphere, as working and shopping moved on line. Women-led businesses in particular were able to take advantage of this: while in 2019 a similar percentage of women- and men-led businesses made at least a quarter of their sales on line (43% and 40% of them respectively), by 2022 these shares had shifted to 53% and 44% respectively. The use of technology by women entrepreneurs is not limited to online sales: women were less likely to say they do not use digital platforms and more likely to say they use online platforms for advertising and communication with customers. Moreover, women entrepreneurs were more convinced than their male counterparts that they would continue their digital engagement over the longer term.

Yet despite women entrepreneurs' use of digital technology, gender exporting gaps persist in online sales. Exports are less likely to account for half or more of digital sales for women-led businesses (21% vs. 33% for men-led firms). A similar gap persists when looking just at the firms that indicated that they export. Given the importance of digital business and digital trade, there is a significant opportunity to support women entrepreneurs in using the online experience they have gained to sell abroad.

Challenges accessing international markets[13]

The challenges faced by small firms in engaging in business abroad are well documented (Table 3.1). They arise from the business environment in which small firms operate, which varies across countries and sectors. In the service sectors, where women-led firms are most represented, there is evidence that the regulatory environment became less stringent in 2021, slowing the steady build-up of trade barriers observed in previous years (OECD, 2022[18]). In 2022, service regulations changed substantially in many countries: services liberalisation, aimed at improving business operations and easing remaining hurdles on business travel after the COVID-19 pandemic, was counterbalanced by new services trade barriers that limited the movement of service providers and increased screening of foreign investments (OECD, 2023[19]). SME access to international trade is also hampered by a lack of access of those firms to finance and their difficulty in attracting high-skill workers and innovating. Informational barriers are also a major impediment to engaging in international trade. While navigating foreign regulation is the main challenge put forward by large firms, small firms rather struggle to find business partners in other countries, according to the Future of Business Survey.

Table 3.1. SME challenges to engage in international trade

External barriers arising from the business environment		
Institutional and regulatory framework	Market conditions	Infrastructure
Governmental barriers, associated with the actions or inaction of the home and foreign governments in relation to Indigenous companies and exporters.	*Procedural barriers*, associated with the operating aspects of transactions with foreign customers.	*Distribution, logistics and promotion barriers*, associated with the distribution, logistics and promotion aspects in foreign markets.
Tariff and non-tariff barriers, associated with restrictions on exporting and internationalising imposed by government policies and regulations in foreign markets.	*Customer and foreign competitor barriers*, associated with the firm's customers and competitors in foreign markets, which can have an immediate effect on its export operations.	

Internal barriers arising from suboptimal access to strategic resources		
Finance	Skills	Innovation assets
Financial barriers, associated with a lack or insufficiency of finance with regard to internationalisation.	*Informational barriers*, related to problems in identifying, selecting and contacting international markets due to information inefficiencies.	*Digitalisation barriers*, associated with lower digital intensity and difficulties in leveraging information and communication technology (ICT) and data for internationalisation.
	Human resource barriers, related to inefficiencies of human resource management with regard to internationalisation.	*Network barriers*, associated with connection to fewer business partners and greater reliance on more limited external networks.

Source: Adapted from OECD (n.d.[20]), *Glossary for Barriers to SME Access to International Markets*, https://www.oecd.org/cfe/smes/glossaryforbarrierstosmeaccesstointernationalmarkets.htm and OECD (2019[21]), *OECD SME and Entrepreneurship Outlook 2019*, https://dx.doi.org/10.1787/34907e9c-en.

Women-led firms face additional challenges. The lower rates of exporting among women-led businesses raise the question of what obstacles women encounter in engaging in international markets. Identifying such challenges may help to suggest policy solutions that support women in trade.

A substantial part of the gap in exporting is due to the fact that women more frequently lead businesses in the service sectors. Trade costs in services are almost double those in goods and a large share of these costs results from policy barriers (WTO, 2019[22]). Moreover, some evidence suggests that women-owned and women-led firms find barriers to trade more costly to overcome than men-led firms (Davies and Mazhikevev, 2015[23]). Globally, services represent two-thirds of world gross domestic product (GDP) but only 30% of trade, measured in value-added terms.[14] Efforts towards removing services trade barriers are particularly important to increasing gender equality in trade, as they will open up foreign markets for women-led businesses that are more commonly found in the service sectors. Moreover, since services are inputs into exports of both goods and services, they can reduce the costs of production for all firms, which is particularly important for small firms with less capital. Increased digitalisation has helped increase the tradability of many services and reduce trade costs incurred in fragmented value chains.

Another challenge women-led firms face in exporting is the smaller average size of their businesses. Larger businesses engage in exporting more in part because there are a number of fixed costs involved, such as gathering information on foreign markets and understanding customs procedures and regulations in the destination market. Women face a variety of obstacles when it comes to growing their businesses, including less access to financing and less available time due to care obligations (Korinek, Moïsé and Tange, 2021[17]; ITC, 2015[24]) ( ). Among the businesses surveyed, 12% of women-led firms currently had a bank loan compared to 20% of men-led firms. This complements other findings such as in the European Union where women entrepreneurs are 25% less likely than their male counterparts to use bank loans to fund their business and, even when they receive external finance, they typically receive smaller amounts, pay higher interest rates and are required to secure more collateral (OECD, 2022[25]). Including other types of financing such as family and friends and equity investors, 24% of women-led firms and 32% of men-led firms surveyed had access to outside financing. Other research has found that women-owned firms face 50% more rejections in applications for traditional trade finance than men-owned businesses; as such, women are more likely to seek out alternative finance than men business leaders (41% vs. 35%) (DiCaprio, Kim and Beck, 2017[26]) (Box 3.2).[15]

Box 3.2. Reducing the gender gap in trade finance and diversifying funding sources

Improving access to traditional bank credit for women-led firms can help reduce the gender gap in trade finance. To compensate for higher risks in international trade, as compared to domestic trade, financial institutions tend to raise their requirements regarding creditworthiness, due diligence information and collaterals. Women are more penalised than men: available survey data reveal that only 18% of women-led firms requesting trade finance, although most of them have a bank account, receive sufficient trade finance to go global (DiCaprio, Beck and Pokharel, 2016[27]). Women-owned firms also face 50% more rejections in applications for traditional trade finance than men-owned businesses (DiCaprio, Kim and Beck, 2017[26]). Policy responses could address this challenge through programmes that facilitate connections between bank intermediaries and women-led enterprises, with a focus on export loans and guarantees.

Alternative sources of finance can also play a role. Due to high rejection rates, women-owned firms are in fact more likely to seek out alternative finance than men-led businesses (41% vs. 35%) (DiCaprio, Kim and Beck, 2017[26]). Public development banks propose grants as well as venture capital matching programmes as a response to the gender gap in trade finance. Financial technology (fintech) solutions can alleviate some of the barriers to cross-border e-commerce SMEs face, including women-owned businesses (Suominen, 2018[28]). Digitalisation lowers the costs of participating in trade and opens up new opportunities for women to engage in markets abroad (OECD, 2021[29]). In particular, crowdsourcing platforms reduce discrimination against women in accessing finance (Barasinska and Schäfer, 2014[30]) and allow them to find trade finance at much lower costs, even though women tend to ask for less money on average than men (World Bank/WTO, 2020[1]). Fostering new financial skills for women through digital adoption is another promising avenue for policy makers to explore.

Source: OECD (2022[31]), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, https://doi.org/10.1787/81c738f0-en; DiCaprio, A., S. Beck and S. Pokhare (2016[27]), "Trade and supply chain finance", in *Integrating SMEs into Global Value Chains*, Asian Development Bank; DiCaprio, A., K. Kim and S. Beck (2017[26]), "2017 Trade finance gaps, growth, and jobs survey", *ADB Briefs*, No. 83, Asian Development Bank, Manila; Suominen, K. (2018[28]), "Closing in on the holy grail of world trade: Using blockchain to expand Southeast Asia's trade", International Institute for Sustainable Development; OECD (2021[29]), "Seizing opportunities for digital trade", https://doi.org/10.1787/bc4081f3-en; Barasinska, N. and D. Schäfer (2014[30]), "Is crowdfunding different? Evidence on the relation between gender and funding success from a German peer-to-peer lending platform", *German Economic Review*, Vol. 15/4, pp. 436-452; World Bank/WTO (2020[1]), *Women in Trade: The Role of Trade in Promoting Gender Equality*, https://www.wto.org/english/res_e/publications_e/women_trade_pub2807_e.htm; and national sources.

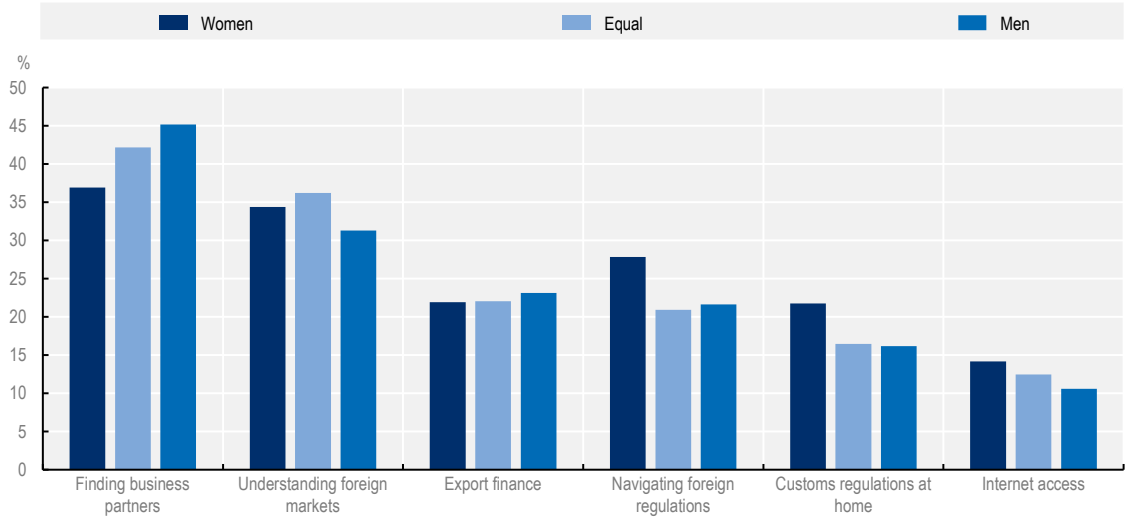
Therefore, efforts toward supporting the growth of women-led businesses by removing barriers to their access to finance will also play a role in enabling them to export. This situation may have been exacerbated during the COVID-19 pandemic when risk assessments in financial institutions were heightened.

When asked what challenges they face in selling abroad, for the most part, men- and women-led firms identified similar obstacles (Figure 3.5).[16] The most common response was finding local business partners; other commonly named challenges were understanding foreign markets and navigating both domestic customs procedures and foreign regulations. The challenges expressed by business leaders to exporting were similar among SMEs. Women business leaders more often indicated challenges navigating domestic customs procedures and foreign regulations, which suggests a potential knowledge gap that could be filled by export promotion agencies. This finding mirrors the challenge women face in accessing professional networks: women's professional networks are generally shallower and smaller than those of men whereas such networks can provide information on foreign markets, potential partners and distributors (Korinek, Moïsé and Tange, 2021[17]). Women-led businesses are also more concerned with the quality of Internet access, in line with the finding that they are more likely to sell goods on line.

Challenges to selling abroad identified by survey respondents can depend on their export status. Firms that already export listed different obstacles than those not yet selling abroad. Both men- and women-led

firms that do not yet export are more likely to identify export finance as a barrier than firms already selling abroad. Women-led firms that do not yet trade are more likely to identify understanding foreign markets as an obstacle, while women-led firms that already trade are more likely to point to customs regulations and Internet access as a barrier. These findings suggest that the types of policy responses and support needed may be different for firms that are aiming to export compared with those that are looking to expand existing export operations.

Figure 3.5. Challenges faced by SMEs to exporting, March 2022



Note: Responses of firms that are currently exporting or have considered selling abroad.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022) of online firms with a presence on Facebook.

StatLink https://stat.link/pxyac1

To gain more insight into what holds back firms from starting to export, firms that indicated they do not export were asked whether they had considered selling abroad. A sizeable share of both men- and women-led firms (31% and 27% respectively) replied "yes" but identified different obstacles holding them back. The two most common concerns were the need for further information and financing, which are both common components of many trade promotion programmes. Among those firms responding that they had not considered exporting, the overwhelming majority said this was because their product is not suitable to export, something that may shift with the increasing move towards digital trade in many services sectors.

Businesses that use digital technology in the process of their exports face particular challenges with regard to this technology. When asked what challenges firms face when using digital platforms, the need for greater technical skills and knowledge is identified as the most common challenge. The other top challenges that particularly affect women-led firms are paying for access fees, complying with legal standards and dealing with extreme competition on digital platforms. Women-led businesses in general indicated more often that they experienced difficulties using digital platforms despite (or because of) their higher usage of such technology.

In OECD countries on average, gender gaps in accessing the Internet are almost non-existent. In high-income countries, 92% of women and 93% of men access the Internet, a difference which is not statistically significant (ITU, 2022[32]). Differences in Internet use in upper-middle-income countries are also not statistically significant (79% of women and 80% of men). Basic information technology skill levels between women and men in non-digital-intensive industries are similar (OECD, 2018[33]). However, differences may exist in some countries. In Colombia, for example, fewer women know how to download software programmes (35%), compared to men (41%) (Consejo Nacional De Política Económica y Social, 2022[34]). More generally, large gender gaps exist in almost all OECD countries regarding jobs that require deep

digital skills, which are in part the result of low levels of women and girls' enrolment in science, technology, engineering and mathematics higher education.

Government policy can be instrumental in helping firms overcome some of these challenges to international trade. The OECD Trade Facilitation Indicators (TFI) measure a wide range of border procedures and the extent to which these have been streamlined. Surveyed exporting firms in countries with a higher TFI score are less likely to name navigating their country's customs regulations as a challenge to trade, which underscores the importance of trade policies for women business leaders. This chapter now turns to the broader question of what governments can do to support SMEs, particularly women-led firms, in their exporting journey.

Infographic 3.1. Challenges to exporting faced by women-led firms



Source: OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Policies to support women business leaders in trade

The above analysis suggests that the gender exporting gap is wide – women-led businesses are substantially less likely to export than their men-led counterparts – and it is even wider than the gender gap in entrepreneurship. Moreover, the gender exporting gap widens as firms grow.

Since engaging in international markets generally increases firms' productivity and offers greater opportunities for them to grow their businesses, targeted policies to support women in trade may be a low-hanging fruit to promote gender equality. Indeed, 127 World Trade Organization (WTO) member countries confirmed this by signing the 2017 Buenos Aires Joint Declaration on Trade and Women's Economic Empowerment for mainstreaming gender in trade policy.

Moreover, many countries have implemented policies that aim to support women entrepreneurs in their export journey, ensure that trade opportunities are available to them and lessen barriers to trade and international expansion that particularly impact women. Some policies target SMEs or generally aim to improve the ease of doing business but are not gender-specific; others support women entrepreneurs but are not specific to trade. Some countries, such as Canada, Ireland and Spain, have developed an overarching strategy to support women entrepreneurs and business leaders, including in trade. In 2020, Enterprise Ireland launched an Action Plan for Women in Business, which included as its first priority (of four) doubling the number of women-led companies growing internationally (Box 3.3). Spain has implemented specific measures to increase women's participation in trade in the areas of access to finance, trade-related training for women, data and information and ensuring compliance with Spain's Gender Equality Law. The Asia-Pacific Economic Cooperation (APEC) La Serena Roadmap for Women and Inclusive Growth provides a clear strategic direction for women's economic empowerment, including through trade, for countries seeking to mainstream gender-responsive policies and drive structural reforms.

Box 3.3. Ireland's Action Plan for Women in Business

Ireland has pursued a wide-ranging strategy to increase women's participation in entrepreneurship and business leadership since it launched its Action Plan for Women in Business in 2020. The strategy has four objectives:

1. Increase the number of women-led established companies growing internationally.
2. Increase the number of women in middle and senior management and leadership roles in Irish companies.
3. Increase the number of women entrepreneurs.
4. Increase the number of women-led start-ups with high potential growth.

Increasing the number of women in leadership positions is expected to positively affect the pipeline of women entrepreneurs, as women with senior management experience are more likely to become growth-oriented entrepreneurs and acquire the means to succeed (such as professional networks and managerial and business strategy skills). A number of actions were undertaken to encourage more women to become entrepreneurs since existing gender export gaps among women-led businesses and gender gaps in start-ups with high growth potential are in part due to the smaller pool of women who choose entrepreneurship.

Taking a broad approach has meant implementing actions in a wide range of areas such as: requiring large firms to publish their pay gaps; raising awareness throughout Enterprise Ireland, Ireland's export promotion agency, of the need to support women entrepreneurs by creating a steering group of Women in Business Champions; organising networking meetings of women business leaders in Ireland with

those in Australia and New Zealand; and organising women-only high-level trade missions to the United States.

Targets were set for each of the objectives, to be met by 2026: a 100% increase in the number of women-led international trading companies; a 100% increase in the participation rate of women on Enterprise Ireland management development programmes; a 50% increase in women participants in start-up programmes; a 50% increase in Local Enterprise Office support to women in business; an increase in the proportion of female-founded High Potential Start-Ups to 30% of the total.

The objective of doubling the number of women-led firms (defined as having a woman chief executive officer) in trade over the six-year period is particularly ambitious. At the beginning of 2023, the target looks challenging as the 2020 benchmark of 10% of women-led firms exporting has increased by only a few percentage points. Data have been collected from the 5 000 or so firms that make up Enterprise Ireland's client base. Enterprise Ireland's client firms are usually either high-potential start-ups or established firms that have more than ten employees and are already exporting. Enterprise Ireland has expanded its client base to women-led firms that are not yet exporting.

Support to women-led high-potential growth start-ups has included creating a ringfenced investment fund for early-stage start-ups led by women. Investment amounts are lower than in other funds (EUR 50 000) and requirements for matching funding are also less stringent. Funds exist to invest in 10-15 selected start-ups in 3-4 investment rounds per year. Training is also available to founders to develop skills such as pitching their firms to investors and developing financial acumen.

Source: Enterprise Ireland (2020[35]), *2020 Action Plan for Women in Business, Fuelling Growth Through Diversity*, https://www.enterprise-ireland.com/en/Publications/Reports-Published-Strategies/Action-Plan-for-Women-in-Business.pdf.

Trade policies are only one aspect of the policy mix necessary to support women entrepreneurs in their export journey. Complementary domestic policies that favour and remunerate women's participation in labour markets are equally, if not more, important. Domestic policies that serve to share the burden of unpaid work, close gender wage gaps, promote women in leadership, close gaps in access to finance, encourage women and girls in science, technology, engineering and mathematics (STEM) studies and professions, and support women-owned and women-led firms in government procurement, are some of the main policy areas that increase women's ability to lead and expand businesses, including internationally.

The preceding analysis on women-led businesses in trade, combined with previous OECD research (Korinek, Moïsé and Tange, 2021[17]; OECD, 2022[36]) as well as research undertaken in other organisations (World Bank/WTO, 2020[1]; ITC, 2015[24]; 2020[37]) suggests a number of specific areas of trade policy that can most benefit women entrepreneurs and their businesses. These are:

- Applying a gender lens to trade agreements.
- Ensuring market access for goods and services produced and consumed by women and their businesses.
- Implementing trade-facilitating measures.
- Ensuring inclusive access to the Internet and digital spaces.
- Ensuring trade promotion services reach women exporters and cater to their needs.
- Providing adequate finance, including trade finance and promoting financial literacy.
- Ensuring professional and business networks are inclusive of women.
- Closing data gaps.

Some of the main areas of targeted policy intervention to support women in trade that have been undertaken by OECD countries are outlined below, with a selection of illustrative examples of programmes implemented.

Applying a gender lens to trade agreements

Increasingly, countries include gender-specific provisions in their trade agreements. This is particularly the case of newer trade agreements negotiated by Canada, Chile, the European Union (EU) and New Zealand.[17] The preceding analysis indicates that much of the gender gap in exporting is unexplained by firms' characteristics, which suggests the gap may be due in part to unconscious bias and wider societal norms. Many trade agreements include provisions to reaffirm trading partners' commitments to international standards of gender equality, such as those defined by International Labour Organization (ILO) Conventions on Non-discrimination and Equal Remuneration, or the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW). Such provisions can go some way to ensuring basic equal rights, especially if the provisions are subject to dispute settlement within the agreement.

Trade agreements increasingly call for co-operation and implement joint activities, between the trading partners that aim to reduce gender discrimination and barriers to trade and labour market participation that women face. One example of a wide-ranging co-operation agreement on trade and women's empowerment is the Global Trade and Gender Arrangement (GTAGA),[18] which was signed in 2020 by Canada, Chile and New Zealand, and has now been joined by Colombia, Mexico and Peru. The GTAGA provides a forum for the adhering countries to share good practices in ongoing, regular activities in the trade area as well as wider domestic policies that affect women's ability to engage in labour markets and trade such as access to finance, parental leave and care policies, women's representation in STEM, and improving women's business and digital skills (Box 3.4).

Box 3.4. The Global Trade and Gender Arrangement (GTAGA)

The GTAGA is a co-operation agreement that was signed by Canada, Chile and New Zealand on 5 August 2020. They have since been joined by Mexico on 6 October 2021, in a ceremony that took place at the OECD, and Colombia and Peru on 13 June 2022. The arrangement aims to "promote mutually supportive trade and gender policies and unlock new opportunities to increase women's participation in trade as part of broader efforts to improve gender equality and women's economic empowerment". The arrangement is a comprehensive tool for operationalising trade policies and ensuring that they support women. It works toward improving women's access to trade and investment opportunities and removing the barriers they face to engaging in labour markets and entrepreneurship, recognising that this contributes to prosperity, competitiveness and the well-being of society.

The arrangement is comprehensive in that it references trade, domestic labour market and gender policies. It acknowledges the importance of not weakening or reducing the protection afforded in the participants' respective gender equality laws and regulations to increase trade or investment. The arrangement also commits the participants to:

- Enforcing their laws and regulations promoting gender equality and improving women's access to economic opportunities.
- Jointly implementing co-operation activities to facilitate women's access to international trade opportunities.
- Avoiding discrimination on the basis of gender for licensing and certification in the services sector.

- Co-operating and sharing best practices to eliminate discrimination in employment and occupation, including on the basis of sex, pregnancy, the possibility of pregnancy, maternity, gender and gender identity, and sexual orientation.
- Encouraging enterprises operating in their territory to incorporate into internal policies gender equality principles.
- Working together in international fora, such as the WTO, OECD and APEC, to advance trade and gender issues.

The arrangement establishes a working group to identify, co-ordinate, implement and report on the activities and to engage with stakeholders.

It points to areas where trade disproportionately affects women and how countries can address them. The text and activities of the arrangement can also be used to provide input into increasing the inclusiveness of regional trade agreements.

Source: Government of Canada (n.d.[38]), *Global Trade and Gender Arrangement*, https://www.international.gc.ca/trade-commerce/inclusive_trade-commerce_inclusif/itag-gaci/arrangement.aspx?lang=eng.

Ensuring market access for goods and services produced and consumed by women and their businesses

One way that trade policy makers can support women is to prioritise sectors where women work and lead businesses in market access negotiations, in particular services, where barriers to trade are generally higher. As outlined above, women work and lead businesses in their majority in services, so trade negotiations could provide an important opportunity to advance market access for women-led firms.[19] Services commitments are often extended by establishing equivalencies in qualification requirements, as well as harmonising and mutually recognising licensing requirements and technical standards. Services commitments also include the movement of services providers between trade partner countries. The OECD Services Trade Restrictiveness Index regulatory database includes indicators of barriers to services trade in 50 countries that can be used to benchmark trading partners' services restrictions in 22 services sectors.

In December 2021, 67 WTO member countries agreed to a Joint Initiative on Services Domestic Regulation[20] which included, for the first time in the history of the WTO, a clause on non-discrimination between men and women. This means that the signatory countries agree not to discriminate between women and men when adopting and applying measures relating to the authorisation of services suppliers.

In order to understand the impacts of trade agreements on workers, consumers and entrepreneurs, it is desirable to undertake *ex ante* impact assessments including measuring gender-differentiated effects, as also suggested by the ILO (2011[39]) as well as the World Bank and WTO (2020[1]). Since women work and own businesses disproportionately more in some sectors than men, they are affected differently by the opportunities and competition that result from trade agreements. When these effects are measured, they can inform negotiating strategies, for example by prioritising sectors where women export for gaining market access in partner countries.

Implementing trade-facilitating measures

The preceding analysis found that 30% of the gender exporting gap can be attributed to the smaller size of women-owned and women-led firms. The smaller size of women-led firms means they are more strongly impacted by non-transparent and overly cumbersome border processes that increase the trade costs of smaller businesses more (ITC, 2019[40]; World Bank/WTO, 2020[1]). The gender exporting gap is also more

pronounced in manufacturing, where more trade takes place and where trade facilitation measures are most effective.

Trade facilitation reforms that make border processes more efficient can reduce trade costs on average for OECD countries by more than 10%. Moreover, smaller firms benefit more from improvements in the overall trade facilitation environment relative to large firms (López González and Sorescu, 2019[41]). Even modest improvements in trade facilitation policies such as transparency, automation and streamlining of processes at borders, as well as border agency co-operation, are found to have a positive impact on exports of parcels of between 6% and 14% (López González and Sorescu, 2021[42]). An increase in the ease of trade in parcels may affect women-owned businesses even more than those owned by men given that women-owned businesses tend to export more to individuals whereas men-owned businesses export more to other businesses.

Many countries have implemented trade-facilitating policies that have lowered barriers to trade. The OECD benchmarks such measures in the TFI dataset.[21] Since women entrepreneurs have less time than men due to their greater unpaid responsibilities in the home, trade-facilitating measures aimed at easing importing and exporting procedures are particularly beneficial to them. Greater automation of border procedures is key to facilitating border crossings; preferred exporter programmes also help to save time for traders. Some countries particularly target women exporters in their trade facilitation programmes. For example, Australia's export promotion agency AusTrade has developed a programme called Women in Export that offers market information, resources and advice that caters specifically to women exporters.

Ensuring inclusive access to the Internet and digital spaces

The findings above, and our collective experience throughout the COVID-19 pandemic, underline the importance of e-commerce and online access to customers, suppliers and information. Digitalisation can help level the playing field by enabling greater access to digital inputs and international markets, including in services sectors where women are more active. As outlined above, firms that export are much more likely to be engaged in online sales and digital platforms. Therefore, ensuring that women-led firms have affordable access to the Internet and online platforms can help close gender gaps.

Although in most of the OECD area, women and men access the Internet in similar proportions, this may not be the case in all countries. In high-income countries, 92% of women and 93% of men have Internet access but in lower-middle-income countries, gender gaps increase: 51% of women and 61% of men have Internet access (ITU, 2022[32]). If Internet access is lacking, slow or unaffordable, this will affect women-led firms particularly since they are very active on line. The high cost of access to high-speed Internet connections will particularly affect women-led firms since they are less well-financed. Ensuring high-speed access is key to ensuring women-led firms can engage in international markets.

Many of the highly traded and highly remunerated jobs today, as well as projections for the future, require deep digital skills. Although women and men in OECD countries generally have similar levels of digital skills required in jobs in less digitally intensive industries, large gender gaps remain when considering ICT skills in digitally intensive industries. This is in part due to lower participation rates of women and girls in STEM studies in OECD countries. Although many governments have implemented policies to counter this trend, they have had limited success thus far (OECD, 2022[43]). Moreover, when women do study STEM, they often choose alternate career paths, a phenomenon described as the "leaky pipeline" of technology professionals.

Ensuring trade promotion services reach women exporters and cater to their needs

The findings outlined above suggest that women exporters trade with fewer countries and sell more to individuals than to businesses, which may impede women-owned and women-led businesses from expanding their exports. Moreover, a large part of the gender exporting gap cannot be explained by

differences in firm characteristics; this suggests that targeted export support to women entrepreneurs could help close these gaps. In most countries, trade promotion agencies support exporters and potential exporters with information and trade promotion services, and organise trade missions. APEC created a toolkit[22] for trade promotion organisations to better understand the challenges in providing gender-responsive support services and suggests what they can do to support women entrepreneurs in building their export readiness and capacity to access global markets.

Trade promotion services are more effective when they cater to the stage of businesses' export readiness. Early-stage exporters may be helped by programmes that provide export readiness assessments and information about export procedures. Global Affairs Canada, AusTrade and the International Trade Centre, for example, provide online export readiness assessments. The Canadian Trade Commissioner Service offers step-by-step guides[23] for women business leaders exporting to the European Union in the context of the EU-Canada Comprehensive Economic and Trade Agreement (CETA). Other guides provide more detail on particular dimensions of exporting such as customs procedures or supply chain management.

More seasoned exporters may be helped more by stronger business networks and specific services catering to them, in order to close the gender exporting gap that widens with firm size. Chile's trade promotion agency ProChile's Mujer Exporta programme provides export training, business planning (including for digital transformation), coaching, workshops and support networks aimed at women exporters. Mexico has implemented a similar programme for women exporters, including organising trade missions.

New Zealand has been actively working toward more inclusive trade. Its Trade for All strategy includes a strong gender component. In 2022, the Ministry of Foreign Affairs and Trade of New Zealand partnered with the OECD to produce the first-ever Trade and Gender Review of that country. The review included a list of policy recommendations to make trade more supportive of New Zealand women. One area for reform was its trade promotion policy and New Zealand Trade and Enterprise, its export promotion agency, has been implementing those reforms (Box 3.5).

Some of the lessons learned from the New Zealand experience were that women business leaders may not be aware of the export promotion services available to them, possibly due to their shallower business networks. Export promotion agencies can reach women business leaders by going to their networks and being more intentional about engaging with them. The findings above that women-led businesses are less likely to export but when they do, they do so to the same extent as men, suggests that export promotion services may need to target firms that do not yet export in order to close gender gaps. Some export promotion agencies lower the capital requirements or size categories of the firms they target in the case of women-led or minority-led firms.

Box 3.5. How New Zealand's export promotion agency has enhanced its support for women exporters

In 2021, New Zealand's Ministry for Foreign Affairs and Trade (MFAT) partnered with the OECD Trade and Agriculture Directorate to undertake the global-first Trade and Gender Review of New Zealand, which was launched in June 2022 in the margins of the OECD ministerial meeting. Working closely with government agencies across New Zealand, including New Zealand Trade and Enterprise (NZTE), its export promotion agency, the OECD suggested policy reforms in 11 distinct policy areas with the aim of increasing support for women in trade. One of those areas was export promotion. The NZTE has been implementing many of those recommendations in order to better support women-owned and women-led businesses on their export journeys. The main reforms undertaken as a response to the review are outlined below.

Table 3.2. Gender mainstreaming in New Zealand's trade promotion agency

NZTE action taken	OECD recommendation
Established a target of doubling the number of women in firms supported by NZTE by 2026.	Gender-specific targets could be considered for inclusion of women-owned and women-led businesses in the 1400 Focus (NZTE-supported) firms.
Women now represent 16% of NZTE Focus firms. Data collection has been expanded to include areas such as: the number of Focus firms with women in senior leadership by export sector, the number of women advisors (Beachheads) that are matched with exporters, investment supported by the NZTE of women-led firms by investment round, number of people engaging with Women in Export directly and participating in their events and the number of new, engaged women customers in MyNZTE online platform.	The NZTE could increase its knowledge base of engagement with women entrepreneurs by collecting information on the number of women contacts or women-led firms that make contact with the agency and the share that become customers.
Established a target of women's participation among NZTE-matched advisors (Beachheads) of 40% in 2023 to 50% in 2024 (from 25% in 2022). The NZTE has fostered an online engaged community through LinkedIn and has concluded partnerships with women's professional organisations.	The NZTE could further reach out to women's professional networks and networks of small business owners and leaders to ensure the offer of services is known and procedures for accessing export promotion assistance are understood.
Creation and extension of a dedicated Export Lead specialised in supporting Women in Trade.	New Zealand should be commended for prioritising export promotion. Consideration could be given to making the Women in Export Lead a permanent position to ensure support builds over time.
The NZTE has established a target of 40% women among participants in trade missions by 2023 and 50% women by 2024. Invitations to trade missions have been intentionally diverse. Anecdotal evidence in recent trade missions suggests participation by gender has been close to parity.	Ensure that women are represented in New Zealand's trade missions and conferences. A first step would be to develop a more deliberate approach to the membership of trade missions, including developing a strategy to better represent women. Such an approach requires the collection of gender-differentiated information on participation in trade delegations.
Data on investment were collected in June 2022, which indicated that women-led firms raise 1.67 times less than men-led firms in NZTE-supported pre-seed and Series A funding rounds. Twenty-one percent of NZTE investment objectives are led by women but only 17% of completed deals and 7% of total capital raised. Work has been underway, in particular with the University of Auckland, to examine investor behaviours and investment ecosystems.	Collecting gender-differentiated data on NZTE investment initiatives, in order to track the amount of investment going to women-led firms is also important. Where investment in women-led firms is lacking, a closer examination of the ecosystem of women-led firms could be undertaken, to better understand how to match entrepreneurs and investors, and pitch firms.
Cohorts of women-only or mixed men-women groups have been established to supplement networks that women need to scale their businesses globally. Five hundred women participated in 13 Women in Export Leadership events between February and June 2022. A Women in Export podcast was started in May 2022 and 4 000 listeners were recorded in the first month.	NZTE's network of women exporters could be expanded, providing training in areas where women entrepreneurs feel they need support; organising information sessions on procedures necessary for different aspects of importing and exporting; engaging with officials on the content and implications of specific trade agreements; and showcasing successful women entrepreneurs and their journey to export.
Target established to halve the number of Focus firms with no women in senior leadership (from 39% to 20%) by 2026.	No relevant recommendation.
Worked on a code of conduct to reduce bullying which was found to be a problem affecting women more acutely.	No relevant recommendation.
Worked with an incubator to increase the inclusivity and participation of women founders.	No relevant recommendation.

The NZTE has established a target of doubling the number of women-led firms that it supports through its export promotion activities by 2026. There are a number of ways it intends to do this: by engaging NZTE customer managers to intentionally engage with women leaders; communicating more widely the export promotion services offered and educating business leaders about exporting through events, online women's networks and networks of cohorts; increasing the number of NZTE-funded experienced women advisors (called Beachheads) that counsel exporting firms; and communicating about successful women in export through online content, a podcast and events. Interestingly, the NZTE has

set a target to halve the number of firms that it supports that do not have any women in senior leadership. It aims to do this in large part through awareness-raising, communication and influencing. NZTE trade missions aim to be at gender-parity by 2024; some evidence from recent trade missions suggests that gender-parity has already been achieved.

The NZTE has clearly gone far and fast toward establishing ambitious targets of support for women exporters and is actively pursuing those goals through a variety of means. It should be commended both for the breadth of scope and the speed of implementation of its policies in support of women business leaders.

Source: OECD Trade and Gender Review, NZTE Board Report August 2022, NZTE Women in Export Report for FY 2022.

Another way trade promotion agencies support exporters is by organising trade missions where entrepreneurs benefit from the networks established by trade officials in partner countries. Monitoring the gender balance in such missions and ensuring a gender balance can provide networking and business opportunities for women entrepreneurs. Some countries and organisations such as Canada, Chile, Switzerland, the United States and the Organization of Women in International Trade (OWIT) organise women-only trade missions. OWIT is a women-run, volunteer-led organisation of women business leaders in trade that provides a network of services (Box 3.6).

Box 3.6. The Organisation of Women in International Trade (OWIT)

The OWIT is a volunteer-run network of women who work in international trade. OWIT International is the global umbrella organisation that includes independently established chapters in a specific geographic region. OWIT chapters host programmes and events enabling their members to learn, network and forge professional relationships in their business communities. Local chapter members are automatically members of the OWIT International global network which is comprised of over 2 000 individual members. Local chapters have been founded in Africa (4 chapters), the Americas (17) and Europe (3). OWIT International encourages the creation of chapters in areas where a local group does not exist.

OWIT chapters organise events to encourage networking and information sharing about export procedures and challenges. These include better understanding and taking advantage of trade agreements; digital tools for export processing, branding and marketing; intellectual property and protecting a brand; leveraging partnerships; networking between specific geographical chapters; and formalisation of micro, small- and medium-sized enterprises (MSMEs).

In February 2022, the OWIT-Toronto and OWIT-Monterrey chapters organised a trade mission to Mexico in collaboration with the Canadian Trade Commissioners in Mexico City and Monterrey for Canadian businesswomen wishing to better explore trading opportunities and make business connections. Participating businesswomen were active in manufacturing, IT, education and government. The aim was to promote Canadian women-led businesses to men and women industry leaders in Mexico and learn more about the Mexican market. In March 2022, OWIT-Toronto organised a webinar on exporting to Mexico with a focus on the agri-food sector that aimed to support women business leaders wishing to access the Mexican market through US-Mexico-Canada trade agreement (USMCA). The webinar included information about exporting to Mexico and virtual B2B meetings with matched buyers or partners.

Source: OWIT (n.d.[44]), *Homepage*, https://owit.org/.

Providing adequate finance, including trade finance and promoting financial literacy

It was seen above that women are less likely than men to access credit and equity. Moreover, potential women exporters indicate that one of the main barriers they face is export financing (see section on challenges to exporting above). To tackle the barriers in access to credit and equity as well as export financing, some countries have put in place targeted export financing mechanisms. Export Development Canada, Canada's export credit agency, has provided women-owned and -led businesses with diversified financial solutions and the international insights they need to grow in the wider context of Canada's Export Diversification Strategy (Box 3.7). The International Finance Corporation (IFC) Banking on Women Global Trade Finance Programme (BOW-GTFP) aims to close gender gaps in trade financing by creating incentives for partner banks in emerging markets to lend more to women entrepreneurs for importing and exporting and encouraging partner banks to better serve women-owned SMEs.[24] Some research has identified gender gaps in financial literacy as well as the need for financial institutions to be more gender-sensitive; programmes in place in some countries aim to tackle those barriers. Banco Estado, Chile's state-owned bank, offers training to increase women's financial knowledge and management skills.

Box 3.7. Mainstreaming support to SMEs owned and led by women in Canada

Canada's Trade Commissioner Service (TCS) provides free services to help Canadian companies grow and succeed in international markets. In alignment with Canada's Trade Diversification Strategy, the TCS provides tailored programming to support businesses owned by groups that are traditionally underrepresented in international trade, including SMEs owned and led by women. Women are underrepresented in Canada's exports, accounting for only 14.5% of all Canadian SME exporters. While this is largely due to a gender gap in overall entrepreneurship, there are a number of challenges that women cite more often than men when exporting. Leading the list of challenges are financing and cash flow issues and a lack of market knowledge. Global Affairs Canada works to help SMEs owned and led by women to overcome many of these challenges, such as by informing them of the services, funding and networks available to them, and by proactively engaging with these companies to reduce the barriers they face in accessing international markets.

The TCS has several types of enhanced programming for women exporters, including dedicated Diversity Champions in each of the organisation's regional offices, who provide local support to SMEs owned and led by women, as well as other underrepresented exporters.

Women-focused programming also includes group-specific initiatives, including business delegations to international markets tailored for women-owned and -led businesses. Business delegations are organised by Canadian embassies or consulates and companies are supported by trade commissioners, by helping to prepare clients before travel, business-to-business meetings and connections on arrival. Canadian companies participating in trade missions organised by the TCS for groups underrepresented in international trade may apply to have 50% of their participation costs covered through the CanExport SMEs funding programme. The TCS also provides training and preparation through accelerator programmes and other activities and initiatives.

Export Development Canada (EDC), Canada's export credit agency, also has a dedicated strategy to support businesses owned by women, Indigenous Peoples, ethnic minorities, people with disabilities and members of the 2SLGBTQ+ community. It supports potential exporters in four ways:

- Knowledge: free, online resources as well as dedicated resources for the inclusive trade programme.
- Export credit insurance: to cover the additional risk of non-payment inherent in exporting.
- Financing for exporters and financial guarantees in commercial institutions.

- Connections to established networks including 20 EDC offices.

The EDC set a cumulative target of reaching 2 000 women in trade and facilitating CAD 6 billion (USD 4.5 billion) in trade between 2018 and 2023. By the end of 2021, 1 900 women business leaders had been served and CAD 5.2 billion (USD 3.9 billion) in trade was facilitated (these targets combine loans, loan guarantees and export credit insurance, a broad and heterogeneous category of types of assistance).

Access to capital is one of the main barriers to growth for businesses owned and led by equity-seeking groups. To address this issue, EDC committed CAD 200 million (USD 150 million) in equity support through a new Inclusive Trade Investments Program (ITIP). The programme includes a previously approved CAD 100 million (USD 75 million) commitment for the Women in Trade Investment Program and an additional CAD 100 million to support other equity-seeking groups.

The programme supports women and diverse founders with funding from seed to Series B rounds. Moreover, it has undertaken limited partnerships with established investment funds to jointly support women- and diverse-owned businesses.

Source: EDC (2021[45]), 2021 Integrated Annual Report, p. 50-56, https://www.edc.ca/en/about-us/corporate/corporate-reports/2021-annual-report.html; Government of Canada (n.d.[46]), *Business Women in International Trade*, https://www.tradecommissioner.gc.ca/businesswomen-femmesdaffaires/index.aspx?lang=eng.

Some programmes put into place to ease financial strains during the COVID-19 pandemic have targeted firms that face greater barriers to access such as women, ethnic minorities or those in remote locations. In the United States, the extension of the Paycheck Protection Program, announced in February 2021, set aside USD 1 billion of the USD 7 billion programme for sole proprietors located in low- and moderate-income areas (OECD, 2022[25]). A 14-day window for application for these loans was available only to businesses with fewer than 20 employees with a loan formula that prioritised sole proprietors. By March 2021, loans to minority-owned businesses were up by 20%, reaching an additional 1 000 minority-owned businesses each day; loans to women-owned businesses were up by 14%, reaching an additional 600 women-owned businesses each day; and loans to small businesses in rural areas were up by 12% during the 14-day window (OECD, 2022[25]).

Ensuring professional and business networks are inclusive of women

A well-documented challenge for women entrepreneurs and women business leaders is that they have shallower business networks (Korinek, Moïsé and Tange, 2021[17]). Moreover, women report that they benefit less from traditional, male-dominated professional and business networks (ITC, 2019[40]). In some countries and sectors, professional women have set up their own networks; however, in some cases, these networks may provide less access and voice. For example, despite the New Zealand government's broad stakeholder engagement regarding priorities in trade agreement negotiations, few submissions by industry associations came from women's professional associations although those associations exist, including in the export-intensive primary sectors (OECD, 2022[36])

However, strong networks can be a crucial conduit for enabling access to capital and are fundamental for smaller businesses to manage common problems, reduce information asymmetry, and build social capital to engage in more distant markets (Ernst & Young, 2013[47]; Bamber and Staritz, 2016[48]). This suggests women have less access to information, fewer contacts and less mentoring and support than men. It was seen above that women entrepreneurs that export indicate challenges in navigating customs procedures and foreign regulations, and finding foreign partners. Stronger networks can reduce these informational barriers and can provide the types of information that are not readily available such as recommendations for partners and services in-country.

Box 3.8. Strong support for women and youth entrepreneurs in Türkiye

The Directorate-General (DG) of Exports within the Ministry of Trade in Türkiye, which specialises in exports of goods, has shown strong and active support for women entrepreneurs since 2019. At that time, a Women and Young Entrepreneurs Exports Department was formed in the DG of Exports. The aim was to increase both the number of women entrepreneurs in trade and the volume of exports by women-led firms.

The Ministry of Trade undertook a survey of women entrepreneurs in 2019 to determine the needs and challenges they faced moving to international markets. Seventy-one percent of entrepreneurs, mostly in manufacturing sectors, did not export although they deemed their products suitable for export. The challenges they expressed in moving into international trade were much the same as women entrepreneurs elsewhere: access to finance, accessing and engaging in B2B networks, difficulty engaging in e-commerce and accepting payments on line, and a need for mentorship.

The DG of Exports aimed to close the gap in professional networks through the Women Entrepreneurs Network Programme. Women entrepreneurs were recruited to the network using information found in business registers. An important element was the construction of an inventory of women entrepreneurs in Türkiye for potential targeting of programmes. The network programme provides information, training and mentorship. More than 3 000 women have participated in networking and training programmes in 72 provinces in Türkiye since 2019. A B2B platform was created that now has 3 000 registered firms on line. Some online courses have been administered by the Ministry of Trade that award successful participants with certifications. The programme targets women business leaders that export or who are considering exporting.

The DG of Exports partnered with the logistics firm UPS to create a Turkish Export Academy, offering practical information on e-commerce, digital marketing, export procedures and advice on accessing government export incentives. The academy has held 30 one-day events that were attended by over 6 000 women and youth since late 2019. Türkiye was the country with the largest participation in the global UPS programme.

An online survey was launched in January 2021 of the networking and training events organised by Türkiye's Ministry of Trade. It surveyed 551 participants to events and produced the following results:

- 44% of responses by participants that already export said their exports had increased.
- 18% of respondents who did not export indicated that they had started exporting.
- 92% of respondents indicated that they planned to export in future.

Although not strictly within the purview of government, some countries have undertaken efforts to strengthen women's access to professional networks. The Women Entrepreneurs Network Programme run by the Turkish Directorate-General for Exports, for example, has created a peer-to-peer network to share information about best practices in exporting (Box 3.8). The network programme provides information, training and mentorship. The programme was designed after an initial information collection of challenges faced by women entrepreneurs. The programme has collected its own data to measure the results of its training and mentorship and B2B networks.

Digital networks that link firms to potential clients and suppliers can also help to close gaps in networks. The Pacific Alliance of Chile, Colombia, Mexico and Peru have created a Women's Entrepreneurship Community within the ConnectAmericas network to link women entrepreneurs in Pacific Alliance countries to buyers and suppliers (see Box 5, p. 150 in WTO (2022[49])).

Closing data gaps

Comprehensive gender-differentiated data related to international trade is lacking in most countries. This is especially true of services trade data. The present analysis has used survey data rather than comprehensive administrative or census information. Since evidence-based analysis is a prerequisite to good policy making, filling the gaps in the availability of gender-differentiated data is a prerequisite to closing gender gaps.

The ability to examine the gender implications of trade is limited especially when statistics are based on sample surveys rather than registers or administrative data, which cover the full population. Statistical business registers are an essential source to link existing business statistics and cast light on the relationships between trade and gender. Population census, when relatively recent, can also provide a source of data to be combined with other surveys. Some studies have combined data sources in new and innovative ways: one example of using existing data sources in new ways can be found in the Trade and Gender Review of New Zealand, a joint study by the OECD and the New Zealand Ministry of Foreign Affairs and Trade (OECD, 2022[36]).

Alternatively, gender-differentiated data could be collected through existing channels (Table 3.3). Chile started collecting new data on women exporters through its *Radiografía a la participación de las mujeres en las exportaciones chilenas*, a survey that collects gender-disaggregated data by industry, sector, market destination and total value.

Closing data gaps also implies collecting data on and monitoring gender balance in trade programmes and policies such as export promotion services, women entrepreneurs' engagement in preferential exporter programmes and women's participation in trade policy making both on negotiating teams and as engaged stakeholders.

Table 3.3. Main official statistical sources for gender and trade analyses

Sources	Information contained
Statistical Business Register (full population)	Firms, industries, ownership links, ultimate controlling unit
Foreign affiliate statistics	
International Trade in Goods Statistics	International sales, imports, trade partners
International Trade in Services Statistics	
OECD Structural and Demographic Business Statistics (SDBS) database	Structure, activity of business, performances indicators (e.g. productivity)
Employer-employee data	Workers, occupations, education, earnings

Source: UN (2020[50]), *Desk Study on the Gender Aspects of Trade and Trade Policy for Statistics*, United Nations Conference on Trade and Development, United Nations Economic Commission for Africa, United Nations Economic Commission for Europe.

Annex 3.A. Descriptive statistics of Future of Business Survey sample

Country	Firms	Leadership (%)			Export (%)		Industry (%)			Number of employees (%)		
		Women	Equal	Men	Yes	No	Agriculture	Manufacturing	Services	< 5	< 50	> 50
Australia	421	38	29	34	12	88	5	5	80	71	26	3
Austria	262	24	33	43	22	78	2	1	88	72	23	5
Belgium	294	31	33	36	15	85	2	2	85	79	21	1
Canada	338	44	25	31	10	90	3	2	83	73	24	3
Chile	240	28	42	30	3	97	2	11	82	77	21	2
Colombia	167	20	39	41	11	89	1	10	83	77	23	0
Costa Rica	237	21	43	35	9	91	4	5	87	74	24	2
Czech Republic	239	34	20	46	20	80	3	7	81	61	35	4
Denmark	301	33	24	43	15	85	1	3	90	73	24	3
Finland	286	31	21	48	16	84	5	4	81	81	17	1
France	268	39	31	31	19	81	8	1	87	79	21	1
Germany	279	33	29	38	10	90	2	4	88	68	30	2
Greece	362	31	32	37	16	84	4	4	86	68	31	1
Hungary	378	36	24	41	14	86	2	4	85	77	20	2
Ireland	202	41	23	36	18	82	3	4	83	67	30	4
Israel	350	35	26	39	7	93	0	3	90	76	18	6
Italy	243	28	35	36	8	92	3	3	84	76	22	2
Japan	487	22	20	58	10	90	1	3	85	69	26	4
Lithuania	179	28	30	42	27	73	2	6	83	72	27	1
Mexico	215	21	43	36	6	94	2	6	85	70	29	0
Netherlands	333	36	26	38	13	87	3	2	87	71	26	3
New Zealand	318	39	34	27	13	87	7	4	80	68	30	2
Norway	270	35	20	45	10	90	6	4	81	63	35	2
Poland	208	27	29	44	13	87	1	7	83	66	33	1
Portugal	327	31	27	43	18	82	2	2	90	71	27	2
Slovak Republic	160	22	26	52	17	83	1	12	74	57	39	4
South Korea	268	32	24	45	30	70	4	12	78	70	27	4
Spain	292	30	37	34	10	90	0	3	90	71	26	3
Sweden	273	30	27	43	18	82	3	3	84	71	27	2
Switzerland	202	28	37	35	11	89	6	3	85	61	36	3
Türkiye	408	14	27	59	15	85	4	10	77	60	38	2
United Kingdom	336	39	23	38	13	87	2	2	86	76	22	2
United States	535	39	32	28	6	94	2	2	88	71	25	3
Total	**9 676**	**31**	**29**	**40**	**13**	**87**	**3**	**4**	**85**	**71**	**27**	**3**

References

Ariu, A. (2012), "Services versus goods trade: Are they the same?", *SSRN Electronic Journal*, https://doi.org/10.2139/ssrn.2185851. [8]

Baldwin, J. and B. Yan (2015), "Empirical Evidence from Canadian Firm-level Data on the Relationship Between Trade and Productivity Performance", *Statistics Canada*. [51]

Bamber, P. and C. Staritz (2016), "The gender dimensions of global value chains", International Centre for Trade and Sustainable Development (ICTSD), Geneva. [48]

Barasinska, N. and D. Schäfer (2014), "Is crowdfunding different? Evidence on the relation between gender and funding success from a German peer-to-peer lending platform", *German Economic Review*, Vol. 15/4, pp. 436-452. [30]

Bélanger Baur, A. (2019), "Women-owned Exporting Small and Medium Enterprises: Descriptive and Comparative Analysis", *Office of the Chief Economist, Global Affairs Canada, draft, 3 October*. [57]

Benz, S. and A. Jaax (2020), "The costs of regulatory barriers to trade in services: New estimates of ad valorem tariff equivalents", *OECD Trade Policy Papers*, No. 238, OECD Publishing, Paris, https://doi.org/10.1787/bae97f98-en. [9]

Bernard, A. and J. Jensen (1999), *Exporting and Productivity*, National Bureau of Economic Research, Cambridge, MA, https://doi.org/10.3386/w7135. [55]

Bernard, A. et al. (2007), "Firms in International Trade", *Journal of Economic Perspectives*, Vol. 21/3, pp. 105-130, https://doi.org/10.1257/jep.21.3.105. [56]

Cernat, L., M. Jakubiak and N. Preillon (2020), "The role of SMEs in extra-EU exports", European Commission Chief Economist Note. [13]

Consejo Nacional De Política Económica y Social (2022), "Política pública de equidad de género para las mujeres: Hacia el desarrollo sostenible del país", *Documentos Conpes*, No. 4080, https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%C3%B3micos/4080.pdf. [34]

Davies, R. and A. Mazhikevev (2015), "The glass border: Gender and exporting in developing countries", *UCD Centre for Economic Research Working Paper Series WP15/25*, https://researchrepository.ucd.ie/bitstream/10197/7184/1/WP15_25.pdf. [23]

DiCaprio, A., S. Beck and S. Pokharel (2016), "Trade and supply chain finance", in *Integrating SMEs into Global Value Chains*, Asian Development Bank. [27]

DiCaprio, A., K. Kim and S. Beck (2017), "2017 Trade finance gaps, growth, and jobs survey", *ADB Briefs*, No. 83, Asian Development Bank, Manila. [26]

EDC (2021), *2021 Integrated Annual Report*, Export Development Canada, https://www.edc.ca/en/about-us/corporate/corporate-reports/2021-annual-report.html. [45]

Enterprise Ireland (2020), *2020 Action Plan for Women in Business, Fuelling Growth Through Diversity*, https://www.enterprise-ireland.com/en/Publications/Reports-Published-Strategies/Action-Plan-for-Women-in-Business.pdf. [35]

Ernst & Young (2013), *It's Who You Know: Women Entrepreneurs and the Impact of Networks*. [47]

Facebook/OECD/World Bank (2020), *The Future of Business Survey*, https://dataforgood.fb.com/global-state-of-smb (accessed on 6 May 2021). [14]

GEM (2021), *2020/2021 Global Report*, Global Entrepreneurship Monitor, https://www.gemconsortium.org/report/gem-20202021-global-report (accessed on 22 December 2022). [6]

Government of Canada (n.d.), *Business Women in International Trade*, https://www.tradecommissioner.gc.ca/businesswomen-femmesdaffaires/index.aspx?lang=eng. [46]

Government of Canada (n.d.), *Global Trade and Gender Arrangement*, https://www.international.gc.ca/trade-commerce/inclusive_trade-commerce_inclusif/itag-gaci/arrangement.aspx?lang=eng. [38]

Graeber, D., A. Kritikos and J. Seebauer (2021), "COVID-19: A crisis of the female self-employed", *Journal of Population Economics*, Vol. 34/4, pp. 1141-1187, https://doi.org/10.1007/s00148-021-00849-y. [16]

IFC (2011), *Strengthening Access to Finance for Women-Owned SMEs in Developing Countries*, International Finance Corporation, https://www.ifc.org/wps/wcm/connect/2a9123b3-d369-4115-8cbf-19083218ce64/G20_Women_Report.pdf?MOD=AJPERES&CVID=jqeI-xk. [2]

ILO (2011), *Trade and Employment: From Myths to Facts*, International Labour Office, https://www.ilo.org/wcmsp5/groups/public/@ed_emp/documents/publication/wcms_162297.pdf. [39]

International Finance Corporation (2022), "Banking on Women Who Trade", *Presentation to WTO Gender Research Hub Think Up! Conference, March*. [59]

ITC (2020), *Mainstreaming Gender Provisions in Free Trade Agreements*, International Trade Centre, https://intracen.org/resources/publications/mainstreaming-gender-in-free-trade-agreements. [37]

ITC (2019), *From Europe to the World: Understanding Challenges for European Businesswomen*, International Trade Centre, https://intracen.org/resources/publications/from-europe-to-the-world-understanding-challenges-for-european-businesswomen. [40]

ITC (2015), *SME Competitiveness Outlook 2015*, International Trade Centre, https://intracen.org/resources/publications/sme-competitiveness-outlook-2015-connect-compete-and-change-for-inclusive. [10]

ITC (2015), *Unlocking Markets for Women to Trade*, International Trade Centre, https://intracen.org/resources/publications/unlocking-markets-for-women-to-trade. [24]

ITU (2022), *Measuring Digital Development: Facts and Figures 2022*, International Telecommunications Union, https://www.itu.int/itu-d/reports/statistics/facts-figures-2022/. [32]

Korinek, J., E. Moïsé and J. Tange (2021), "Trade and gender: A framework of analysis", *OECD Trade Policy Papers*, No. 246, OECD Publishing, Paris, https://doi.org/10.1787/6db59d80-en. [17]

López González, J. and S. Sorescu (2021), "Trade in the time of parcels", *OECD Trade Policy Papers*, No. 249, OECD Publishing, Paris, https://doi.org/10.1787/0faac348-en. [42]

López González, J. and S. Sorescu (2019), "Helping SMEs internationalise through trade facilitation", *OECD Trade Policy Papers*, No. 229, OECD Publishing, Paris, https://doi.org/10.1787/2050e6b0-en. [41]

Máñez, J., M. Rochina-Barrachina and J. Sanchis (2020), "Foreign sourcing and exporting", *The World Economy*, Vol. 43/5, pp. 1151-1187, https://doi.org/10.1111/twec.12929. [3]

Melitz, M. and S. Redding (2014), "Heterogeneous Firms and Trade", *Handbook of International Economics*. [52]

Meta (2022), *Global State of Small Business: A Look at the Continuing Recovery in 2022, with Insights on Women-led and Minority-led SMBs*, https://dataforgood.facebook.com/dfg/resources/March-2022-Global-State-of-Small-Business-Report (accessed on 26 September 2022). [15]

Ministry of Foreign Affairs and Trade of New Zealand (2022), "Inclusive and Productive Characteristics of New Zealand Goods Exporting Firms", *MFAT working paper, February*. [58]

OECD (2023), *The OECD Services Trade Restrictiveness Index: Policy Trends up to 2023*, OECD, Paris. [19]

OECD (2022), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/81c738f0-en. [31]

OECD (2022), *Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard*, OECD Publishing, Paris, https://doi.org/10.1787/e9073a0f-en. [25]

OECD (2022), *OECD Services Trade Restrictiveness Index: Policy Trends up to 2022*, OECD, Paris. [18]

OECD (2022), *Report on the Implementation of the OECD Gender Recommendations*, Meeting of the Council at Ministerial Level, 9-10 June 2022, OECD, Paris, https://one.oecd.org/document/C/MIN(2022)7/en/pdf. [43]

OECD (2022), *Trade and Gender Review of New Zealand*, OECD Publishing, Paris, https://doi.org/10.1787/923576ea-en. [36]

OECD (2021), *OECD SME and Entrepreneurship Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/97a5bbfe-en. [12]

OECD (2021), "Seizing opportunities for digital trade", in *Development Co-operation Report 2021: Shaping a Just Digital Transformation*, OECD Publishing, Paris, https://doi.org/10.1787/bc4081f3-en. [29]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [21]

OECD (2018), *The Digital Gender Divide: Include, Upskill, Innovate*, OECD, Paris, https://www.oecd.org/digital/bridging-the-digital-gender-divide.pdf. [33]

OECD (n.d.), *Glossary for Barriers to SME Access to International Markets*, OECD, Paris, https://www.oecd.org/cfe/smes/glossaryforbarrierstosmeaccesstointernationalmarkets.htm. [20]

OECD/EC (2021), *The Missing Entrepreneurs 2021: Policies for Inclusive Entrepreneurship and Self-Employment*, OECD Publishing, Paris, https://doi.org/10.1787/71b7a9bb-en. [7]

OECD et al. (2023), *Handbook on Measuring Digital Trade across Borders*. [11]

OWIT (n.d.), *Homepage*, Organisation of Women in International Trade, https://owit.org/. [44]

Schank, T., C. Schnable and J. Wagner (2007), "Do Exporters Really Pay Higher Wages? First Evidence from German Linked Employer-Employee Data", *Journal of International Economics*, Vol. 72, pp. 52-74. [53]

Schneider, J. (2020), "Future of business survey - Methodology note", *Mimeo*. [5]

Sekkel, J. (2020), "Women-owned SMEs and Trade Barriers", *Global Affairs Canada, 04-02-2020*. [60]

Singh, T. (2010), "Does International Trade Cause Economic Growth? A Survey", *The World Economy, 33(11), 1517-1564*. [54]

Suominen, K. (2018), "Closing in on the holy grail of world trade: Using blockchain to expand Southeast Asia's trade", International Institute for Sustainable Development. [28]

UN (2020), *Desk Study on the Gender Aspects of Trade and Trade Policy for Statistics*, United Nations Conference on Trade and Development, United Nations Economic Commission for Africa, United Nations Economic Commission for Europe. [50]

United States Government Accounting Office (USGAO) (2022), "International Trade: Trade Agreements Increasingly Promote Women's Rights and Economic Interests, but Barriers Remain", *https://www.gao.gov/assets/730/720377.pdf*. [61]

World Bank/WTO (2020), *Women in Trade: The Role of Trade in Promoting Gender Equality*, World Bank/World Trade Organization, https://www.wto.org/english/res_e/publications_e/women_trade_pub2807_e.htm. [1]

WTO (2022), *Aid for Trade Global Review: Empowering Connected, Sustainable Trade*, World Trade Organization, https://www.wto.org/english/res_e/booksp_e/aid4trade22_e.pdf. [49]

WTO (2019), *World Trade Report 2019: The Future of Services Trade*, World Trade Organization, https://www.wto.org/english/res_e/booksp_e/00_wtr19_e.pdf. [22]

WTO (2016), *World Trade Report 2016: Levelling the Trading Field for SMEs*, World Trade Organization, https://www.wto.org/english/res_e/booksp_e/world_trade_report16_e.pdf. [4]

Notes

[1] See (Baldwin and Yan, 2015[51]), (Melitz and Redding, 2014[52]), (Schank, Schnable and Wagner, 2007[53]), (Singh, 2010[54]) for surveys of studies examining exporting and growth, and wages in exporting firms. Early work in this area includes (Bernard and Jensen, 1999[55]) and (Bernard et al., 2007[56]).

[2] See https://www.oecd.org/cfe/smes/sme-scale-up.htm.

[3] The analysis in the section uses Future of Business Survey data and should be considered as relevant to businesses with an online Facebook presence.

[4] This finding is echoed in much of the literature on women entrepreneurs in developing and emerging countries (ITC, 2015[24]), the European Union (ITC, 2019[40]), Canada (Bélanger Baur, 2019[57]) and New Zealand (Ministry of Foreign Affairs and Trade of New Zealand, 2022[58]) among others.

[5] These differences, as well as all other findings stemming from the Facebook survey analyses mentioned throughout this chapter, are statistically significant at the conventional 95% level. Moreover, all differences persist and remain significant when controlling for a firm's country, sector, size and age.

[6] Entrepreneurs generally own and lead businesses in sectors where they have worked as employees. More than two-thirds of women in upper-middle- and high-income countries were employed in services sectors in 2017, up from 45% in 1991. In low- and lower-middle-income countries, the proportion of women in services sectors jumped to 38% from 25% over the same period (World Bank/WTO, 2020[1]).

[7] The less traded sectors of health, education and public administration represent 12% of the survey sample. Women represent 59% of the business leaders in these sectors according to the survey, compared to 35% in services sectors in general and 31% in the survey sample as a whole.

[8] Kitagawa-Oaxaca-Blinder decomposition is a statistical approach developed initially to analyse gender pay gaps and was used to disentangle the extent to which the gap in exporting can be attributed to differences in firm characteristics. When looking at two groups with a different mean on a variable (in this case, share of exporters), this technique disentangles the share of this difference that can be attributed to specific features and the share that remains unexplained.

[9] Based on a linear regression where the outcome is a binary variable indicating revealed comparative advantage, regressed on variables for women- and equal-led businesses and dummy variables for each industry and country ($p = 0.0026$).

[10] Evidence from Canada and New Zealand also points to women-owned firms that are less likely to import goods and services than those owned by men (Bélanger Baur, 2019[57]) (Ministry of Foreign Affairs and Trade of New Zealand, 2022[58]).

[11] The analysis in the section uses Future of Business Survey data and should be considered as relevant to businesses with an online Facebook presence.

[12] This difference between women- and men-led firms is statistically significant, even when controlling for firm country, sector, size and age.

[13] The analysis in the section uses Future of Business Survey data and should be considered as relevant to businesses with an online Facebook presence.

[14] See https://www.oecd.org/trade/topics/services-trade/.

[15] Other surveys suggest that women-led firms find alternative methods of financing to commercial banks such as through family and friends, and using credit card debt (International Finance Corporation, 2022[59]), or applying for EU funding (ITC, 2019[40]), more frequently than men. Lack of collateral, inadequate financial

infrastructure and other barriers involving gender-based social and cultural barriers restrict the access of women-owned SMEs to more formal sources of financing (International Finance Corporation, 2022[59]) (IFC, 2011[2]; ITC, 2015[10]).

[16] This finding contrasts with a survey of women exporters in Canada where women are more affected by logistics, border procedures and administrative barriers to exporting as compared with men-led firms (Sekkel, 2020[60]). Women in the European Union, however, do not say they experience difficulties in obtaining up-to-date trade-related information (ITC, 2019[40]).

[17] The United States has fewer gender-specific provisions in its preferential trade agreements. The 2020 US-Mexico-Canada free trade agreement is the only one with such provisions in the body of the agreement (United States Government Accounting Office (USGAO), 2022[61]). A study undertaken by the U.S. Government Accountability Office underlined the importance of monitoring and reporting on compliance with preferential trade agreement provisions (United States Government Accounting Office (USGAO), 2022[61]), which has been done to a certain extent by the United States in the context of more general labour provisions. This suggests another benefit of including gender-specific provisions in trade agreements – that monitoring and reporting on those provisions can give more visibility and raise awareness of progress in closing gender gaps.

[18] See https://www.international.gc.ca/trade-commerce/inclusive_trade-commerce_inclusif/itag-gaci/arrangement.aspx?lang=eng.

[19] In emerging economies, women also work in textiles and agriculture sectors, where tariffs are also generally high. A study on India shows that products produced largely by women face on average 6-percentage-point higher tariffs than products produced largely by men in export markets .

[20] See https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/L/1129.pdf&Open=True.

[21] See https://www.compareyourcountry.org/trade-facilitation.

[22] See https://www.apec.org/publications/2018/04/supporting-womens-access-to-global-markets---a-toolkit-for-trade-promotion-organisers.

[23] See https://www.tradecommissioner.gc.ca/guides/toolkit_women_business_eu-outils_faisant_entrepre.aspx?lang=eng.

[24] The BOW-GTFP programme has issued CAD 120 million in loans and loan guarantees since it started in 2019. Banks in emerging markets that loan to women-owned or women-led SMEs receive a rebate on the funds they borrow for those loans from the IFC of 20 basis points (for loans financed above 100 basis points per annum). See p. 147 of the WTO Aid for Trade Global Review (https://www.wto.org/english/res_e/booksp_e/aid4trade22_e.pdf)

4 SMEs in more resilient, sustainable and circular supply chains

Small- and medium-sized enterprises (SMEs) can access new markets, knowledge spillovers and trade finance, by engaging in global value chains (GVCs). They have become strategic partners in global production networks, as firms and places seek to gain strategic autonomy and resilience, and re-balance the imperatives of competitiveness with those of sustainability and due diligence. This chapter discusses the transformations at play in global trade and international investment, and implications for SME policy makers. It looks into the disruptions the COVID-19 pandemic and Russia's war of aggression against Ukraine brought in logistics and supply chains. It analyses the growing threats natural disasters and cyberattacks pose to GVCs. It explores how technological change, digitalisation, servicification, and the call for greener, more circular and more responsible business conduct, can alter the structure of global production (e.g. reshoring, nearshoring, diversification, regionalisation, etc.) and affect SME ecosystems. It concludes with an overview of recent policy action taken in OECD countries for creating a supportive environment to SME integration in shifting GVCs and for lowering the costs of the transition.

In Brief

- Small- and medium-sized enterprises (SMEs) could draw benefits from engaging in more resilient, sustainable and circular supply chains, such as improved access to innovation assets, skills and finance, greater exposure to international knowledge spillovers and the potential to exploit market opportunities in specialised segments of global value chains (GVCs).
- Yet, the ability of SMEs to participate in international networks remains constrained by limited internal capacities (including managerial skills, technology, capital or innovation assets) and a range of external barriers, e.g. to access trade finance and information and knowledge gaps, including on intellectual property protection and enforcement in potential partner countries.
- The COVID-19 pandemic and Russia's war of aggression against Ukraine hit GVCs hard, triggering supply disruptions. Whilst globally integrated SMEs were initially more severely affected, they were also able to recover faster.
- However, although tensions in logistics and supply chains are progressively relaxing, vulnerabilities, both economic and political, in GVCs have emerged as a key public and corporate policy concern, not least given the heightening emphasis on strategic products and strategic autonomy.
- In addition, other threats to GVCs are growing in magnitude and frequency (e.g. natural disasters, cyberattacks) calling on actors, small and large, to improve resilience, including through adapting production networks to reduce risks related to interdependencies, disruptions, volatility and damaged reputation, etc.
- Technological change, digitalisation and servicification further heighten the debate around the length and degree of fragmentation of GVCs, which has been propelled even further by the strong call of markets, investors and regulators for more sustainability and due diligence in production systems.
- Looking forward, these pressures may invoke changes in GVCs (reshoring, diversification, redundancy, etc.) that will affect SME market conditions differently across places and industries. The capacity of SMEs to be resilient, innovative and diligent partners in shifting chains will be important to integrate, partner and create stronger linkages with multinationals and international investment. SME digitalisation, greening, access to data and upskilling, as well as enabling policies, will be instrumental to ensuring that SMEs are able to benefit from these reconfigurations.

Introduction and background

The fragmentation of industrial production worldwide has increased scale-up opportunities for SMEs, enabling access not only to resources, markets and partners but also knowledge spillovers (OECD, 2019[1]; 2022[2]).

However, globally integrated SMEs are also more exposed to disruptions in supply chains and international investment, and to shocks in market conditions abroad. A case in point is the COVID-19 crisis, which hit harder in GVCs where inputs were difficult to substitute and in particular SMEs in those chains who typically have lower levels of diversity in suppliers and customers and lower liquidity than larger firms. The initial shock was particularly severe in industries (e.g. automotive or aerospace) relying on extensive networks of small suppliers and service providers. Supply chain disruptions also led to global product shortages in other sectors too, generating fierce competition and leaving smaller firms with less negotiating power at a disadvantage in sourcing (OECD, 2021[3]).

Russia's war of aggression against Ukraine has further raised concerns about the resilience of supply chains and heightened the debate around secure strategic sourcing and industrial sovereignty. The surge in energy prices and high levels of inflation (Chapter 1) are likely to affect the organisation of GVCs as firms, countries and regions seek to reduce dependency on price volatility and diversify sources of essential products and commodities.

Other threats to GVCs are also growing in magnitude and frequency (e.g. natural disasters, cyberattacks) calling on actors, small and large, to improve resilience, including through adapting production networks to reduce risks related to interdependencies, disruptions, volatility and damaged reputation, etc. SMEs have been in particular increasingly exposed to cyberattacks as they became more reliant on digital technology during the COVID-19 pandemic.

In addition, achieving greater sustainability in global production systems has also become, in many countries, an objective. Recent years have seen growing demands from markets, investors and regulators for better management and integration of environmental, social and governance (ESG) considerations in GVCs. The push towards greener business models and more responsible business conduct (RBC) may lead to further shifts in GVCs, especially if carbon taxes come into effect (OECD, 2021[4]).

Creating circularity in trade and supply chains is increasingly seen as a way to boost resilience and sustainability. On the one hand, the call for more sustainable use of finite natural resources has strengthened the business case for developing more circular supply chains, enabling reuse, recycling, waste reduction, optimising use and boosting productivity. On the other, circular production systems can reduce firms' exposure to risks, notably related to resource price volatility and supply disruptions, making value chains more resilient.

Building more resilient, sustainable and circular value chains requires an understanding of enabling factors and policies that will support transitions, as well as challenges and opportunities. This chapter reflects on the changes at play within domestic and global value chains and focuses on the scope and forms of restructuring in GVCs. It explores how some strategic value chains and related regional SMEs and entrepreneurship (*SME&E*) ecosystems could evolve in the context of reconfiguring networks. It discusses the core role of SMEs in place-based approaches to new industrial and internationalisation policies, for attracting quality foreign direct investment (FDI), increasing domestic competitiveness and attractiveness, creating circular industrial systems based on local production, achieving greater resilience and sustainability, and creating quality jobs.

Issue: Challenges and opportunities for SMEs in existing and emerging GVCs

SME internationalisation and integration into GVCs could be direct through trade or indirect through supply chains and market mechanisms that involve international actors, such as multinational enterprises (MNEs) (OECD, 2019[1]; 2021[3]). In fact, earlier estimates have shown that the share of SMEs that are directly engaged in trade, through exporting or importing, remains limited and underestimates the real contribution of SMEs to international transactions through the buyer-supplier linkages they maintain with trading actors (OECD, 2019[1]). Domestic SMEs are also engaged in GVCs via their transactions and strategic partnerships with the foreign affiliates of MNEs installed locally, or their first-tier suppliers that are more often larger firms. Finally, local SMEs, even when not integrated into GVCs, can benefit from knowledge, technology and innovation spillovers through competition and imitation (OECD, 2023[5]).

SMEs can benefit from global integration

SMEs stand to benefit from international trade and FDI spillovers, as they access foreign know-how, technology and diverse supply chain finance mechanisms (OECD, 2023[5]; 2019[1]; 2008[6]). In fact, SMEs are less often engaged in international activities than those that are performing better (Eurostat, 2018[7]). They are more profitable and innovative than their domestic peers and are more often engaged in various business collaborations (St-Pierre, 2003[8]; Baldegger and Schueffel, 2010[9]). Integration in GVCs is found to be a key source of productivity, although the relationship between trade openness and productivity growth varies depending on the stage of development of the country[1] and the sector considered, and evidence on the link between FDI and productivity is mixed (OECD/APO, 2022[10]; OECD, 2022[11]). Conversely, business performance is a key determinant of trade integration.

Through international trade, SMEs can access cheaper or more sophisticated products and services, or the technology embodied in imported capital products and services (López González, 2016[12]; López González and Jouanjean, 2017[13]). Firms that use more imports are more productive and better able to face the costs of exporting (Bas and Strauss-Kahn, 2015[14]; 2014[15]). Global integration has implications for non-exporting firms that operate in local markets as well, through increased competition and disruptive effects on local economies.

International investments can have positive spillovers on domestic SMEs (Crespo, Fontoura and Proenca, 2009[16]; Keller and Yeaple, 2009[17]; Criscuolo and Timmis, 2017[18]; Lejarraga et al., 2016[19]; OECD, 2023[5]; 2022[20]; OECD-UNIDO, 2019[21]). Technology and knowledge diffuse through value chain linkages when SMEs serve as local suppliers/buyers of foreign affiliates, through strategic partnerships with foreign investors, through the mobility of foreign firms' employees to local SMEs, or through competition and imitation effects. The magnitude of FDI spillovers depends on the qualities of the FDI, the absorptive capacity of local SMEs, and structural factors such as local economic geography and the policy and institutional framework. A greenfield investment, for example, is likely to involve the implementation of new technology in the host country and a direct transfer of knowledge from the parent firm to the new affiliate (Farole and Winkler, 2014[22]) and more broadly to local SMEs (OECD, 2023[23]).

More specifically, SMEs could draw a number of direct benefits from engaging in more resilient, sustainable and circular supply chains (OECD, 2019[1]). Greater resilience in production networks can reduce risks of supply disruptions and price volatility, shorten delays in delivering to markets and receiving payments, and overall, reduce transaction costs for smaller actors. Greater resilience can also contribute to reinforcing trust among network partners that would more easily invest in co-creation and open innovation (Chapter 4).

Sustainable supply chains provide scope for new market and business opportunities for SMEs that are able to comply with due diligence standards and demonstrate RBC, not least through integrating into supply chains of MNEs that play a leading role in ensuring due diligence through their supply chains (upstream and downstream) (OECD, 2022[24]). Sustainable supply chains also offer a means for SMEs to bridge skills, technology and finance gaps needed for their transformation, in particular in accessing green finance.

A more circular approach in production networks can also reduce costs, improve resource price predictability (e.g. energy price volatility) and deal with supply disruptions and shocks. A 2020 survey of 540 Belgian businesses showed that those employing circular business models suffered considerably less from lockdown restrictions during the COVID-19 pandemic than those with non-circular practices (66% for the former, compared to 2% for the latter, declared not suffering any loss respectively) (Vlaanderen Circulair, 2020[25]). Beyond lower costs, circular models also provide a means to raise product quality and visibility, improve operations and workplace environment, and access new markets, including by ensuring compliance with environmental standards (UNEP, 2010[26]; IEA, 2014[27]; OECD, 2019[1]).

Table 4.1. More circularity in production networks is likely to boost innovation and activities in a broad range of SME-dominated sectors

Circular business models			Innovation and technology	Main sectors affected
Circular supply	"Cradle to cradle" - Replace traditional material inputs with renewable ones		Eco-design, dissolvable/edible or compostable packaging, materials innovation (fibres from regenerative sources, plastics made from agri-products), digital technology for tracking	Consumer product sectors
Resource recovery	Produce secondary raw materials from waste (recycling, upcycling, downcycling)		Industrial symbiosis; technologies and infrastructure for collecting, disassembling, sorting and recycling, reusable plastics, packaging design	Metals; paper and pulp; plastics
Product life extension	Extend product lives: classic long life; direct reuse; repair; refurbishment; remanufacture		Artificial intelligence (AI) and predictive maintenance, technologies and infrastructure for collecting, disassembling, sorting and recycling, digital watermarks, reverse logistics, platforms and refurbished products/second-hand marketplaces	Automotive; heavy machinery; electronics
Sharing	Increase utilisation of existing products and assets		Co-ownership; co-access, autonomous driving, connected vehicles, digital solutions to optimise logistics (Internet of things [IoT], freight load pooling), digital platforms, multimodal integrated public transport, mobility-as-a-service	Short-term lodging; transport (e.g. bike/car sharing, smart mobility); machinery; consumer products
Product-service system (PSS)	Selling product functionality instead of selling products, and providing services rather than products, or a mix of both.	*Product-oriented PSS*: ownership remains with the customer and the provider sells additional services	Bundling of product-services, repair and after-sale services, maintenance, supply of consumables, return agreement, financing programmes and range of information and advice support	Automotive, electronic equipment, fashion industry (e.g. swapping, second-hand), furniture
		Use-oriented PSS: ownership remains with the provider and usage rights are sold to the customer	Infrastructure-as-a-service, pay-as-you-go business models, rentals and leasing	Software, transport services, fashion industry
		Result-oriented PSS: the product's functionalities are sold, to fulfil customer needs	Infrastructure-as-a- service, pay-as-you-go business models	Energy (e.g. lightening, heating), water

Source: Based on Ellen MacArthur Foundation (2023[28]), *Circular Economy Growth Potential by Sector*, https://ellenmacarthurfoundation.org/topics/finance/sector-insights; OECD (2019[29]), *Business Models for the Circular Economy: Opportunities and Challenges for Policy*, https://doi.org/10.1787/g2g9dd62-en; Van Ostaeyen, J. et al. (2013[30]), "A refined typology of product–service systems based on functional hierarchy modeling", https://doi.org/10.1016/j.jclepro.2013.01.036; Gebauer, H., C. Saul and S. Joncourt (2016[31]), "Use-oriented product service systems in the early industry life cycle", https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd; Munten, P., J. Vanhamme and V. Swaen (2021[32]), "Réduire les pratiques d'obsolescence du point de vue des systèmes produit–service orientés produit : un agenda de recherche", https://doi.org/10.1177/0767370120984755.

The circular economy can bring opportunities in nearly every sector of the global economy and high-profit potential for a broad range of industries where SMEs are in the majority, or in globally integrated sectors where SMEs operate (OECD, 2020[33]; 2019[1]). The plastic, fashion and food sectors are the most likely to experience major changes, and the electronics, transport and technology sectors exhibit high growth potential (Ellen MacArthur Foundation, 2023[28]). Product-service systems (bundling services and products) could also help reduce product obsolescence and reduce waste. The circular trade is likely to boost services sectors as manufactures substitute secondary raw materials for primary raw materials and consumers substitute services for goods (McCarthy, Dellink and Bibas, 2018[34]) (Table 4.1).

SMEs are well placed to support the deployment of circular and sustainable models

SMEs are particularly well placed to support the deployment of circular models, due to their greater reactivity, local footprint, and proximity to customers and end markets (OECD, 2019[1]). They can operate within circular chains in local markets that may be unattractive or impenetrable for large global firms. They have also a comparative advantage in implementing business strategies with more customer-focused design thinking that circular models require. In fact, recent evidence from Finland shows that most firms trading services for the circular economy are micro or SMEs with a higher propensity to export and operate on a global scale (Tamminen et al., 2020[35]) (Box 4.1).

Box 4.1. Trade in circular-economy-enabling services: New evidence from Finland

A survey, developed by the Finnish Innovation Fund Sitra and the International Institute for Sustainable Development, with the support of Finland's Ministry of Foreign Affairs, conducted among 96 firms in Finland involved in circular economy-enabling services (complemented by in-depth interviews) showed that:

- Most of the 96 firms surveyed are small- or micro-sized firms (and cannot be considered representative).
- Around a third of the services providers operate in manufacturing sectors, and a quarter in professional services and utilities, including waste and recycling services.
- Activities involved a wide range of services, the most common being recycling services, research and development (R&D), maintenance, repair and installation services (except construction), training, and professional services such as information technology (IT) and software services, technical testing or environmental consulting, or leasing or rental without an operator.
- Many services are business-to-business (B2B) and are enabled by digitalisation.
- Around 70% of the responding services providers export to foreign markets and services are most often delivered digitally or via foreign subsidiaries that ensure a commercial presence abroad. This means that most of these firms are SMEs and MNEs.
- The most frequent barriers to trade relate to differences in regulations, in particular diverging regulations on secondary material and waste trade.

Source: Tamminen, S. et al. (2020[35]), *Trading Services for a Circular Economy*, https://www.iisd.org/system/files/2020-10/trading-services-circular-economy.pdf.

Moreover, SMEs can help secure international investments and input and market outcomes. Domestic SMEs through their business linkages and networks could help places attract – and retain – quality international investments and secure the sourcing of strategic products and services (OECD, 2023[5]).

Foreign affiliates may be less inclined to disinvest in a country or region where they have developed strong and reliable customer and/or supplier relationships (Cadestin et al., 2019[36]). The capacity of MNEs to raise their ESG or RBC performance is also closely related to that of their SME supplier networks to innovate and adapt to new global market conditions.

SMEs face challenges in leveraging opportunities from GVC integration

SMEs' ability to engage in international trade is constrained by more limited internal capacities (managerial skills, technology capital or innovation assets) as well as a range of external factors, including access to trade finance, information, the quality of logistics services and physical infrastructure for trading abroad, or the level of intellectual property protection and enforcement provided in the foreign country (OECD, 2019[1]). SMEs tend to be less innovative than large firms, which lowers their capacity to export.[2] Likewise, many smaller firms are less digital-intensive (OECD, 2021[37]), which prevents them from seizing the opportunities digitalisation brings for business expansion and operations abroad, e.g. by reducing the costs associated with transport and border operations. SMEs' ability to benefit from these digital-driven transformations would be greatly enhanced if they manage to close the digital gap, improve data governance and access talent and skills (OECD, 2021[37]; 2022[2]).

The benefits from GVC participation are not systematic for SMEs and require some preconditions to be in place. For instance, GVC integration does not automatically translate into upgrading and upgrading trajectories are shaped by various factors, including economic competencies of the firms, replicability of value chain business models and the mode of GVC governance between lead firms and more or less "captive" suppliers (Gereffi, Humphrey and Sturgeon, 2005[38]). Typically, the mode of governance of the GVC is dictated by the MNE leading the chain, as well as the sector in which it operates, and determines the type of relationships that bind GVC actors and the scope of knowledge spillovers between them. In order to tap into upstream and downstream linkages with MNEs, SMEs often need to meet certain preconditions, such as product quality, supply and storage capacity, technology maturity or adequate skills (OECD, 2023[23]).

- In sectors where quality (e.g. **pharmaceuticals**) and a commercial presence (e.g. marketing/advertising, financial services) are important, the establishment of a subsidiary will allow MNEs to secure high levels of quality in production and direct access to clients in the domestic market, creating room for knowledge spillovers to the local economy.
- In sectors of standardised and simple products for which little formal co-operation between GVC participants is required (e.g. **agricultural commodities**), arm's length market transactions are MNEs' preferred strategy (UNCTAD, 2013[39]; Gereffi and Fernandez-Stark, 2016[40]). Although MNEs do not exert any direct influence on suppliers, indirectly, including through growing pressure on MNEs to adopt RBC standards, suppliers, many of them SMEs, are also motivated into adapting, not least through the potential to leverage upgrading opportunities, e.g. fair trade.
- In knowledge-intensive sectors (e.g. **IT hardware**, **automotive industry**), contractual partnerships are more frequent (Andrenelli et al., 2019[41]), allowing MNEs to exert influence over partners, including via bargaining power (UNCTAD, 2011[42]). In the car industry, around three-quarters of all first-tier suppliers in a manufacturer's global production chain operate through contractual partnerships, of which over three-quarters are with foreign-owned enterprises (Lejarraga et al., 2016[19]).

FDI may have crowding out effects on local enterprises because of their impact on local market conditions, i.e. growing imports or competition for the local skilled workforce. For instance, benefits in terms of productivity often incur more to local SMEs in different sectors to the activity of FDI (Lembcke and Wildnerova, 2020[43]; OECD, 2022[11]). Likewise, attracting inward investment in sectors where skills shortages already exist often translates into a rise in earnings of local workers in these sectors, putting further pressure on crowded-out SMEs (Becker et al., 2020[44]).

The position of SMEs within global production networks also matters. Firms and industries positioned at the centre of complex production networks have access to a greater variety of foreign inputs and, potentially, a broader range of technologies compared to those at the periphery. Smaller firms have displayed faster productivity growth in those sectors that have become more central to global production, from those on the periphery and also in sectors with stronger linkages to more productive foreign buyers/suppliers (Criscuolo and Timmis, 2018[45]; OECD, 2023[5]).

Alignment with ESG and RBC standards may also heighten the cost of SME internationalisation. There are large differences between industries in the market penetration of circular models and SMEs are lagging behind larger firms in improving their environmental performance (see literature review in OECD (2021[46])). Whilst alignment with sustainability standards presents opportunities for SMEs, including through potential cost efficiencies, in addition to new markets, this may also involve costs.

Recent shocks and structural changes in GVCs

A complex nexus of short-term and structural changes has raised questions about the resilience of GVCs. This section discusses how technological change, regionalisation of trade and increasing international economic and political tensions, as well as the COVID-19 pandemic and the war in Ukraine, could affect and reshape GVCs. It explores the asymmetries in trends, shocks, losses and benefits, across countries, regions, sectors and firms and implications for SMEs. In fact, the COVID-19 crisis and the war in Ukraine have strong sectoral and territorial components (OECD, 2021[3])**.**

Global supply chains are increasingly exposed

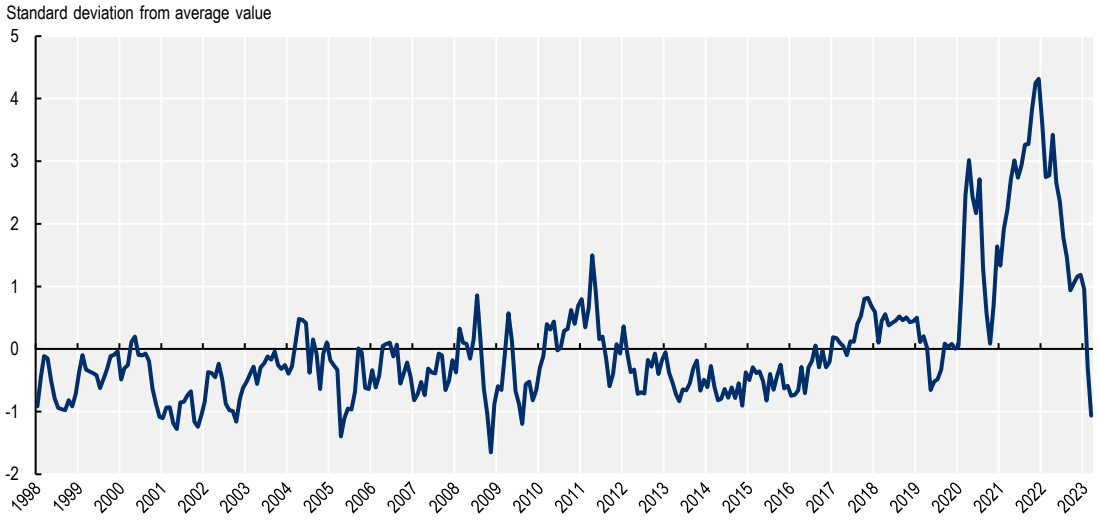
Recent strains that arose in global supply chains have revealed vulnerabilities in how GVCs are designed. GVCs surged during a period when supply chain conditions were relatively stable globally (Figure 4.1) and actors within them were typically aiming to optimise economic efficiency and maximise profits (Javorcik, 2020[47]). In 2022, global supply chain conditions have recovered (Figure 4.1), benefitting from China's reopening, but vulnerabilities remain heightened in many sectors, including in energy-intensive industries (e.g. cement, glass, paper, steel, ceramics, etc.) as well as less energy-intensive sectors (e.g. computer and electronics); it is unlikely that the ongoing process could fully revert the slowdown in GVC expansion (Chapter 1).

Indeed, supply constraints remain high in some sectors, feeding inflationary pressures. The rapid recovery in global demand over 2020 has not been supported by a similar recovery of production capacity in all sectors. Severe product shortages have emerged in semiconductors, basic materials and equipment industries, and have compounded the impact of increasing commodity and energy prices (OECD, 2021[3]; 2021[48]).

Disruptions in world logistics increased transportation costs. Lockdowns to contain the pandemic and transport bans imposed as a response to the war have severely impacted supply chain logistics. More than 80% of world merchandise trade by volume is carried by sea (UNCTAD, 2022[49]). When demand for goods soared, ports were congested, due to weak infrastructure and labour shortages. Shipping times increased and, as logistics were still partially on hold and containers not available in the right places, freight rates soared. Average world shipping times increased by 25% after COVID-19 hit (Komaromi, Cerdeiro and Liu, 2022[50]). The cost of shipping a container internationally was about seven times higher in 2022 than two years prior (Dadush, 2022[51]).

Figure 4.1. Global supply chain conditions may have returned to normal after a massive setback

Global Supply Chain Pressure Index (GSCPI), Jan 1998-Feb 2023



Note: The GSCPI is a composite index based on two sets of data. Global transportation costs are measured by using data on ocean shipping costs (the Baltic Dry Index [BDI], the Harpex index and U.S. Bureau of Labor Statistics (BLS) air freight cost indices for freight flights between Asia, Europe and the United States) and supply chain-related components are drawn from Purchase Managers' Index (PMI) surveys – "delivery times", "backlogs" and "purchased stocks" – for manufacturing firms across seven economies: China, the euro area, Japan, South Korea, Taiwan, the United Kingdom and the United States.
Source: Based on New York Fed (2022[52]), *Global Supply Chain Pressure Index (GSCPI)*, https://www.newyorkfed.org/research/policy/gscpi#/overview.

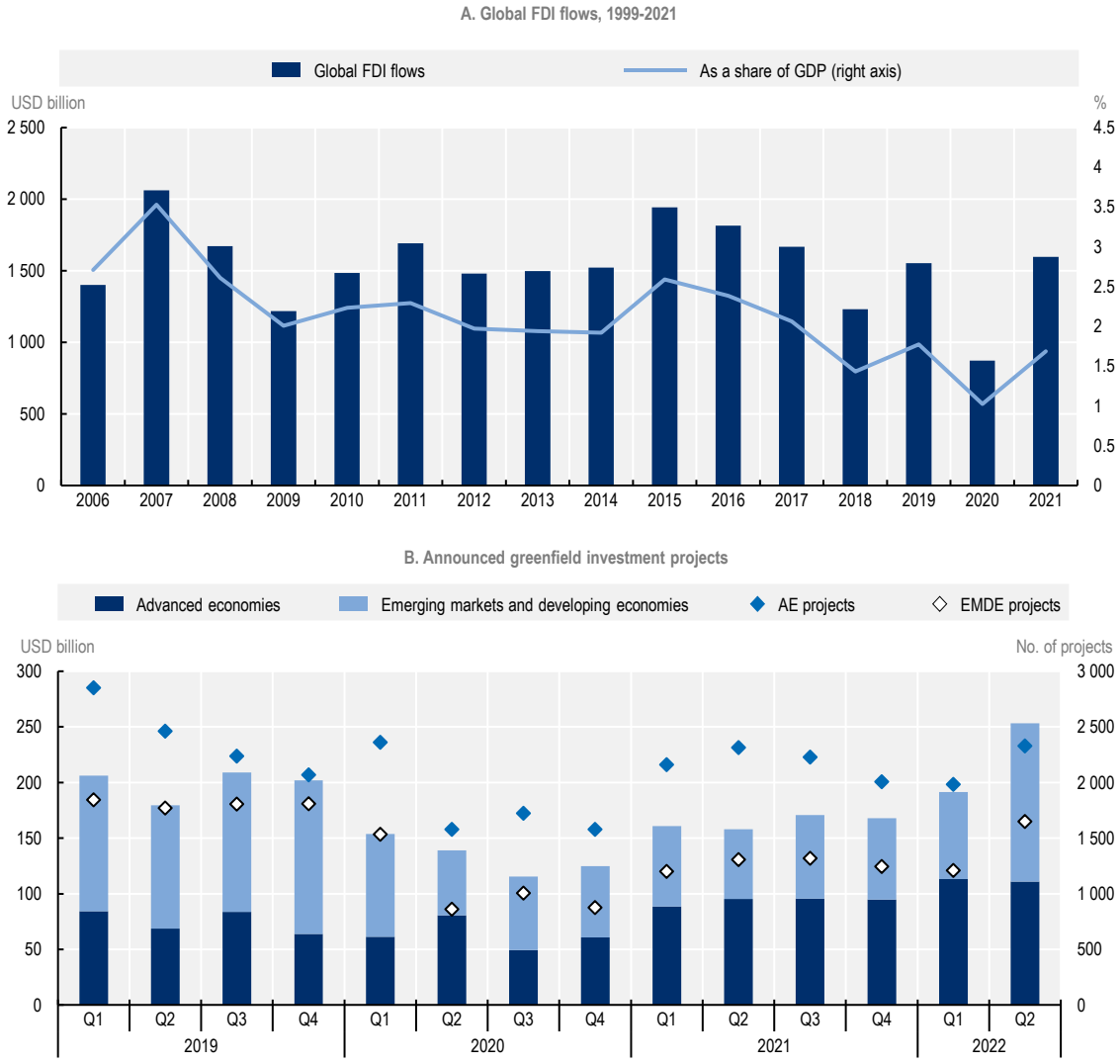
StatLink https://stat.link/e98kv2

FDI has also been affected

FDI has recovered slower than trade (OECD, 2021[3]; 2023[5]). In addition, the uneven recovery in greenfield investments (Figure 4.2). is limiting the scope of knowledge spillovers to SMEs (OECD, 2023[23]),

Greenfield investment has concentrated in advanced economies and into a few strategic sectors, i.e. semiconductors, communication and biotechnology industries. While it has surpassed pre-pandemic levels by 16% in advanced economies, it remains subdued in emerging and developing economies (OECD, 2022[53]) as well as some sectors, such as extractive industries, mainly coal, oil and gas (which dropped by 96% in 2021 compared to 2020).

Figure 4.2. International investments rebounded in 2021 but greenfield investment is still subdued



Note: "Advanced economies" and "emerging and developing economies" follow the International Monetary Fund (IMF) definition.
Source: OECD (2022[53]), *FDI in Figures - April 2022*, OECD, Paris, https://www.oecd.org/investment/investment-policy/FDI-in-Figures-April-2022.pdf, based on OECD International Direct Investment Statistics database (Panel A) and Refinitiv and FT FDI Market databases, OECD calculations (Panel B).

StatLink https://stat.link/v2o8uw

Threats to GVCs are increasing in magnitude and frequency

GVCs have been subject to threats of increasing magnitude and frequency in recent years. Natural disasters, extreme weather, pandemic, wars, terrorism and political instability, and cyberattacks are occurring more often and more intensively disrupting operations along value chains. Estimates suggest that supply chain disruptions lasting a month or longer are now happening every 3.7 years on average (McKinsey & Company, 2020[54]).

Natural hazard events have highlighted the risks inherent in a production system that relies heavily on parts sourced from only a few key locations. The number of natural disasters has increased by a factor of 5 over the past 50 years, driven in part by climate change (WMO, 2021[55]). Economic losses have

increased sevenfold over the same period, the two main causes being storms and floods. In 2011, severe floods in Thailand shut down local factories that produced 43% of the world's hard drives, bringing the world industry to a standstill (OECD, 2020[56]). In 2017, Hurricane Harvey, which hit Louisiana and Texas, United States (US), disrupted some of the largest US oil refineries and petrochemical plants, creating shortages of key plastics and resins for a range of industries (e.g. auto parts, smart phones, computers) (McKinsey & Company, 2020[54]). In 2021, the freeze in Texas triggered massive power outages and led to local chemical plant closures, causing new global plastic shortages and prices to reach historical highs (Wall Street Journal, 2021[57]). It is estimated that the freeze forced more plants in the Gulf of Mexico region to shut down than during Hurricane Harvey in 2017 (see also Chapter 4).

Cyberattacks and data privacy risks are also increasing. Growing connectivity and interdependencies in GVCs have increased the "attack surface" and the number of weak points that hackers can infiltrate, enabling them to evolve within digital systems and networks towards larger and more profitable targets. Indeed, a key aspect of digital supply chain risk is that an organisation could be vulnerable to a supply chain attack even when its own defences are good (ENISA, 2021[58]). Cyberattacks intensified during the COVID-19 crisis (OECD, 2021[3]). The European Union Agency for Cybersecurity (ENISA) reports that supply chain attacks increased in number and sophistication in the years 2020 and 2021 (times four between 2020 and 2021 only) and around 62% of the attacks on customers took advantage of their trust in their supplier (ENISA, 2021[58]). Response times are also longer in GVCs, with an average of 235 days to identify the breach and 68 days to contain, for a total of 303 days, compared to an overall average of 277 days (IBM, 2023[59]).

SMEs are particularly exposed to cyberattacks. SMEs became more reliant on digital technology during the COVID-19 pandemic. Their lack of preparedness in case of incidents has contrasted with the sophistication of attacks. Indeed, they tend to have less comprehensive and advanced digital security risk management practices and fewer resources to seek information, implement formal procedures of detection, or invest in digital security. In fact, SMEs tend to delegate responsibility, explicitly or implicitly, to third parties, e.g. their digital solution providers. These developments have stressed the urgent need to increase the resilience of critical infrastructure but also to improve digital security risk management and data protection in the SME sector (OECD, 2021[37]; 2022[2]).

Impact of recent disruptions in GVCs on SMEs

Not surprisingly, the recent disturbances to supply chains have greatly affected SMEs. According to the OECD-World Bank-Meta Future of Business Survey 2022 (hereafter the Future of Business Survey) (Box 4.2), six out of ten SMEs reported supply chain problems in 2021.

SMEs are disproportionately vulnerable to GVC disruptions. GVC disruptions affect not only SMEs engaged in direct trade but also those indirectly engaged, through their upstream linkages as well through imports. In addition, SMEs are more vulnerable to market failures and economic shocks (OECD, 2019[1]). Suppliers may also favour their large customers when there are shortages or delays.

Disruptions also revealed limitations in the flow of information and visibility across supply chains. Many firms struggled to identify their reliance on Russian suppliers, particularly energy, and therefore could not properly assess how sanctions would impact their operations. The limited flow of information was also showcased during the outset of the COVID-19 crisis as many countries experienced shortages of products seemingly unrelated to the pandemic. Some of these shortages were caused by a lack of communication between actors in the different stages of the supply chain (Kouvelis, 2022[60]).

Box 4.2. The Future of Business Survey

This chapter relies on data from the OECD-World Bank-Meta Future of Business Survey. A questionnaire was distributed to a random sample of businesses with a Facebook business page in March 2022. There was no compensation delivered to participants for engaging with the survey.

Information for almost 15 000 businesses in every OECD country included questions on recent performance in sales, main obstacles to operate and engagement in international trade, as well as other business characteristics such as size and sector of activity. The data used in this analysis refer to micro, small- and medium-sized firms, i.e. those with fewer than 250 employees.

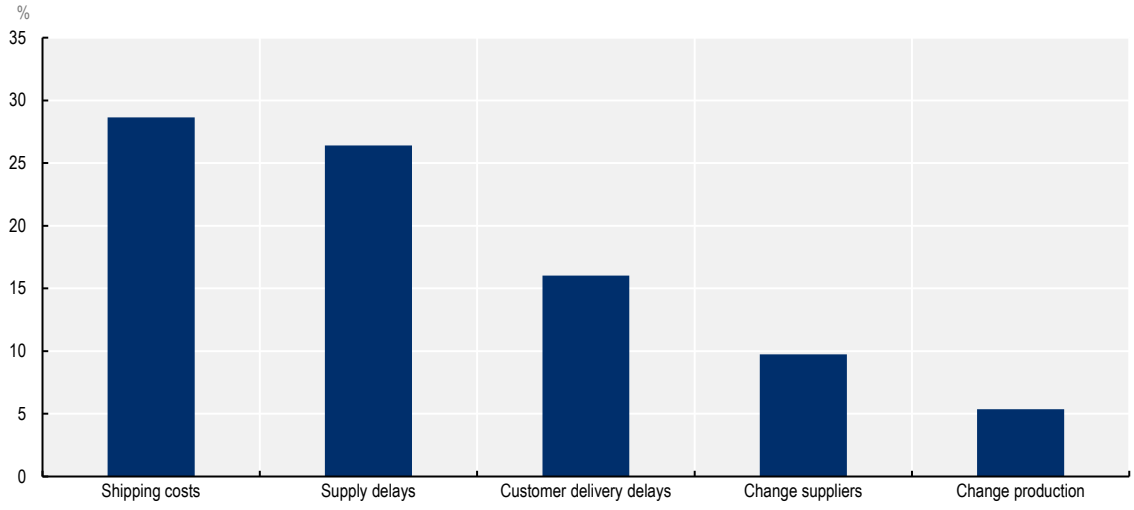
Surveys were randomly sampled. Results were weighted using non-response weights for the entire sample (derived from country-specific logistic regressions) to ensure they are representative of the entire Meta population. Such a weighting scheme is found to be relatively constant from one survey wave to another.

As the survey covers only firms with a digital Facebook page and is weighted in accordance with the page administrator population rather than the total business population, it should be regarded as representative of firms with an online presence rather than the entire business population.

Source: Schneider, J.W. (2020[61]), *Future of Business Survey Methodology Note*, mimeo.

Figure 4.3. Higher shipping costs and supply delays were the most frequent difficulties reported by SMEs in 2021

Percentage of SMEs with a Facebook page reporting having experienced disruptions by type of disruption, 2021

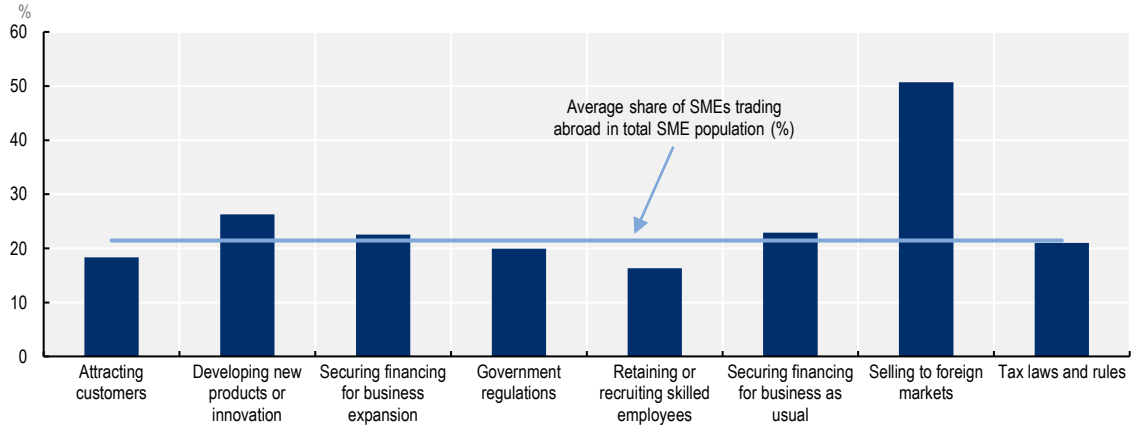


Note: Shares obtained using the question: "Which of the following, if any, did your business experience in your supply chain in 2021?". SMEs – firms below 250 employees – operating in 33 OECD countries (OECD excluding Estonia, Iceland, Latvia, Luxembourg and Slovenia) are the subpopulation of analysis.
Source: Based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/l8kian

Figure 4.4. SMEs engaged in global trade experienced disproportionately some business challenges

Percentage of SMEs trading abroad in total SME population (line) and in SME populations that report having experienced different business challenges (bars) in 2021, OECD countries



Note: Refers to SMEs importing or exporting as a share of the total population of SMEs reporting a challenge to a given item in 2021. Based on SME responses to the question: "What are the most important challenges your business currently faces?". The average share of SMEs importing or exporting in the total OECD population of SMEs with a Facebook page is 21% (baseline). Firms with fewer than 250 employees only.
Source: Based on the OECD-World Bank-Meta Future of SBDS, Data for Good, (March 2022).

StatLink https://stat.link/waz59l

Figure 4.5. Export barriers differ for trading and non-trading SMEs

Percentage of SMEs trading abroad versus SMEs trading domestically, as a percentage of total SME population and as a percentage of populations of SMEs reporting different export barriers, OECD countries



Note: Refers to the share of SMEs trading internationally versus trading domestically in the SME population reporting each export barrier as the most important in 2021. Based on SME responses to the question: "What are the most important challenges your business currently faces to selling in other countries?". Firms with fewer than 250 employees only.
Source: Based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

StatLink https://stat.link/3v9024

Delays in receiving supplies and higher shipping costs are the supply chain difficulties most often reported by SMEs, 29% and 26% of them respectively (Figure 4.3). However, a significant share of them has also reported a change in suppliers (10%) and production processes (5%) to adapt to the new environment, suggesting a reconfiguration of global and regional value chains may be at play. SMEs engaged in international trade have faced some greater challenges than non-internationalised SMEs (Figure 4.4). The most frequent challenges reported are selling to foreign markets (51% of SMEs experienced this issue in 2021 were trading abroad, which is more than twice the share of SMEs trading abroad in the total SMEs population at 21%), followed by developing new products or innovation (26% compared to 21%) and securing financing for expansion and business as usual (23% each compared to 21%). In addition, the relative impact of barriers to exports reported by SMEs once they engage in exports differs from those reported by non-trading SMEs (Figure 4.5), with the latter seeing access to Internet and trade finance as more important impediments, compared to exporting firms, which report disproportionately more difficulties in navigating foreign regulations, especially custom regulations and finding business partners in other countries. This could impact how policy makers design and target export support schemes.

The structural transformation in GVCs is poised to intensify

Prior to the COVID-19 crisis, there was evidence of a slowdown in the pace of global fragmentation of production. The continuous expansion of GVCs, which was the main trend from the mid-1980s to 2008, stopped with the Great Financial Crisis (Jaax, Miroudot and van Lieshout, 2023[62]), https://one.oecd.org/official-document/TAD/TC/WP(2022)9/FINAL/en. In constant prices, the import intensity of production (i.e. the value of trade in intermediate inputs needed to produce one US dollar of output) in 2019 was very close to 2011, confirming a stabilisation of the extent of global economic integration. A number of trends were at play that already questioned the rationale for maintaining long value chains (De Backer and Flaig, 2017[63]).

Table 4.2. Mega-challenges affecting production systems and supply chains

Market changes	Changing lifestyle and consumer preferences (e.g. "Made in Local", mass customisation requiring closer proximity to end markets)
	New business models (often digital-driven or data-enhanced)
	Servicification of manufacturing
Digitalisation and technologies for the New Industrial Revolution	AI and robotics
	Three-dimensional (3D) printing
	IoT and supply chain management tools
	New materials (e.g. graphene)
Political globalisation and geopolitical context	Protectionism - backslash against globalisation
	Partial erosion of the rules-based trading system
	Regionalisation (e.g. regional trade agreements)
	Rising influence of MNEs
Climate change, fairness and sustainability	Supply chain due diligence (ESG and RBC requirements)
	Increasing requirements for traceability and transparency
	Circular models

Note: The categories above are not mutually exclusive and in fact closely interrelated. See also Annex 4.B.
Source: Based on OECD (2019[1]), *OECD SME and Entrepreneurship Outlook 2019*, https://dx.doi.org/10.1787/34907e9c-en; OECD (2021[3]), *OECD SME and Entrepreneurship Outlook 2021*, https://doi.org/10.1787/97a5bbfe-en; OECD (2016[64]), *OECD Science, Technology and Innovation Outlook 2016*, https://doi.org/10.1787/sti_in_outlook-2016-en; Bolwijn, R. et al. (2020[65]), "Global value chain transformation to 2030: Overall direction and policy implications", https://cepr.org/voxeu/columns/global-value-chain-transformation-2030-overall-direction-and-policy-implications
New business models require more responsiveness to end-user demand and greater proximity to the market, with large-scale impacts on production and logistics systems (OECD, 2019[1]).

The servicification of manufacturing, i.e. bundling of products and (often locally delivered) services, has limited the scope for offshoring (OECD, 2020[56]). Manufacturing firms that increasingly use and produce services they combine and bundle with the goods they sell are involved in the logistics services needed for their operations as well as a variety of installation, maintenance, repair or business support services. The strong complementarities that exist between these activities substantiate the colocation of manufacturing and services operations, especially since there are limitations to the extent to which services could be offshored.

The deployment of circular models within supply chains and product-service systems across a broad range of sectors is likely to reinforce this trend (Table 4.1), especially since these business strategies are increasingly valued for adding more value to the original product, creating a longer-term relationship with customers (Miroudot and Cadestin, 2017[66]) and enabling the collection of more data on final users and product life that can allow further value creation and efficiency (e.g. maintenance, customisation, related needs, obsolescence, etc.) (OECD, 2022[2]) (see also Annex 4.B).

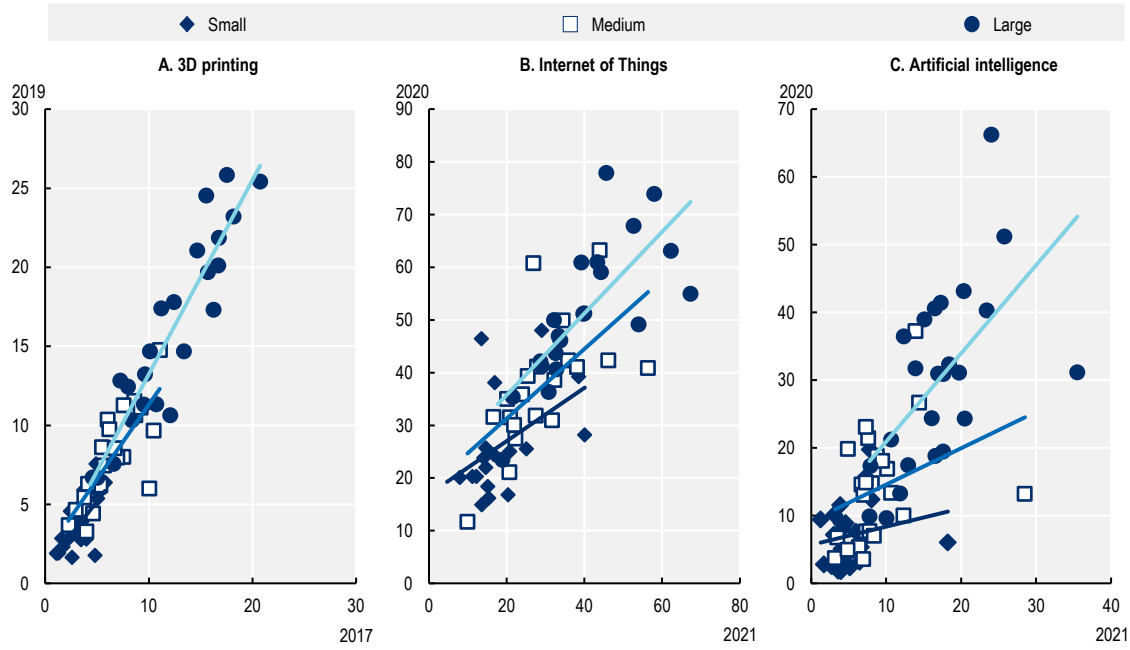
The servicification of manufacturing has led to the servicification of GVCs. Less and less value-added and employment generated in GVCs depends now on core manufacturing activities (ADB, 2021[67]). By contrast, intellectual property (IP) is playing a growing role in setting up GVCs, as value chains have turned into an efficient channel for firms to exploit brands, patents and other IP. Trade in services and intangible assets, R&D, product design, branding, know-how and marketing and retailing has increased dramatically. In the extreme, this alteration of GVCs has led to “factoryless” production firms designing and marketing products without owning any of the manufacturing processes. Instead, they outsource the transformation to suppliers located in the country or abroad, while maintaining ownership of the IP embedded in the product, controlling the overall production process and focusing own activities on design, marketing and commercialisation. Most GVCs are therefore more knowledge-intensive, especially pharmaceuticals, medical devices, machinery and equipment, computers and electronics and IT services.

The degree of supply chain digitalisation still remains suboptimal. At the start of the pandemic, a McKinsey & Company (2020[68]) survey of global supply chain leaders showed that 85% of them struggled with insufficient digital technologies in the supply chain. Large firms are driving the deployment of Industry 4.0 technologies but SMEs still lag. Adoption rates of 3D printing, IoT and AI across OECD countries increased faster between 2020 and 2021 (or the nearest years available) among larger enterprises, especially for AI (Figure 4.6). IoT use has become mainstream in this segment of the business population in most OECD countries, where about 50% or more of large firms were using it in 2021. 3D printing is still at an early stage[3] of adoption for SMEs, with little improvement in 2020-21. These trends confirm that the recent digital acceleration experienced by SMEs during COVID-19 took place mainly in less sophisticated forms of digitalisation (Chapter 4) (OECD, 2021[37]; 2021[3]).

At the same time, the new industrial revolution is under way, and across all firm size categories in the most advanced countries (Table 4.3). Among OECD countries, Nordic countries and innovation leaders are often ahead in the transition. Denmark and Finland lead the deployment of 3D printing and AI. Germany has an edge in 3D printing, while the Netherlands and Portugal are more advanced in AI applications. Austria, Slovenia or Sweden show faster IoT diffusion. In these countries, SMEs are also leading the transition towards Industry 4.0 (I4.0) compared to their OECD peers. This seems to indicate that the industrial transformation is not taking place in a sub-segment of the business population only but across entire national production systems.

Figure 4.6. Large firms are driving the deployment of Industry 4.0 technologies

Adoption rates of I4.0 technologies, by firm size class, 2020 and 2021 or otherwise stated



Note: Firms with ten or more employees. Micro firms are not covered in information and communication technology (ICT) surveys. The trendlines mark an acceleration in digital adoption; the higher the slope, the faster the diffusion.
Source: Based on OECD.Stat (2023[69]), *ICT Access and Usage by Businesses (database)*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS.

StatLink https://stat.link/6czqbd

Table 4.3. Production systems transform across all firm size categories

Top five OECD countries with the largest share of small, medium-sized and large enterprises adopting 3D printing, IoT and AI, 2021 or the latest year available

	3D printing			IoT			AI		
	Small	Medium	Large	Small	Medium	Large	Small	Medium	Large
Top 1	DNK	DNK	CZE	AUT	AUT	SVN	DNK	DNK	DNK
Top 2	FIN	DEU	SVN	SVN	SVN	AUT	PRT	FIN	FIN
Top 3	DEU	SWE	DNK	FIN	SWE	LVA	FIN	PRT	NOR
Top 4	CHE	FIN	DEU	SWE	IRL	FIN	LUX	NLD	BEL
Top 5	BEL	AUT	AUT	DEU	DEU	LTU	NLD	SVN	NLD

Note: Only includes firms with ten or more employees.
Source: Based on OECD.Stat (2023[69]), *ICT Access and Usage by Businesses (database)*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS.

Digitalisation is also changing the conditions of GVC participation, supporting the further integration of SMEs (ADB, 2021[67]; OECD, 2021[37]). By bringing different sides of the market together, digital platforms have created room for more modularity and for reducing costs related to communication and asymmetries of information. They not only ease transactions but have become integral to value creation processes, orchestrating innovation in their ecosystems (e.g. by collecting data) (see Chapter 4). Digital platforms pose however a number of challenges to regulators. Risks come from distortions in competition due to platforms' consolidation and growing market power. As their user networks increase, digital platforms gain in profitability and business intelligence and can turn into gatekeepers to the market(s) they support, by raising entry barriers (e.g. fees) and gaining unique market knowledge with the data they are the only ones to collect from operations taking place on the platform.

SMEs in more resilient, sustainable and circular GVCs

A reconfiguration of GVCs, including through geopolitical shifts (Annex 4.B), will affect SMEs' market conditions differently across places and industries but the how and how far remain uncertain. Strong trade openness/MNE presence could make the export/host economy more vulnerable in case of a sudden shift in global market conditions (e.g. product shortage or price inflation) or in case of changing MNEs' optimisation strategies (e.g. disinvestment). SMEs that have currently integrated into value chains further afield could be in difficulty if there is a push towards more localised/regional value chains. At the same time, potential reconfigurations provide opportunities for reinforcing SME integration in international markets and networks and for future capacity upgrading within the SME sector and in countries and regions.

The potential restructuring of GVCs can take many forms that are difficult to anticipate. The way individual industries and production systems will transform depends on the original architectures of the value chain and on how the rationale for organising production globally will evolve (see further elaboration in Annex 4.B).

This section explores different possible scenarios for building more resilient, sustainable and circular GVCs and the challenges faced by – and place given to – SMEs in these reconfigurations.

GVCs trajectories towards resilience and impact on SME ecosystems

Five possible trajectories (Table 4.4) for GVCs are considered (based on OECD (2023[70]), Pla-Barber, Villar and Narula (2021[71]), Miroudot (2020[72]) and Zhan et al. (2022[73])): i) relocation of production (reshoring, nearshoring or friendshoring); ii) diversification (in suppliers); iii) redundancy (in stocks and production capacity); iv) regionalisation; and 5) digitalisation.

Table 4.4. Different GVC trajectories towards resilience and their impact on SME ecosystems

	Industries most likely to be affected	Impact on GVCs	Impact on local SMEs and ecosystems
Reshoring	• High-tech and strategic industries (e.g. defence, essential goods) and sectors of emerging technologies (e.g. AI, renewable energy, 5G)	• Disinvestments in some regions, most likely the less R&D-intensive and developing countries Shrinking pool of efficiency-seeking FDI globally and growing competition for FDI Relocation of high-value-added production facilities with R&D facilities	• Increased concentration of innovation and R&D assets into world-class clusters Reduced/increased opportunities for knowledge and technology spillovers in disinvested/reinvested regions Enhanced role of FDI-SME ecosystems to attract and retain quality FDI • Lack of resources to absorb the high cost of reshoring for SMEs

	Industries most likely to be affected	Impact on GVCs	Impact on local SMEs and ecosystems
	• Distributed low-value-added services with strong physical components (wholesale and retail trade, logistics)	• Increased volume of regional market-seeking FDI	• Reduced opportunities for knowledge and technology spillovers from FDI
Diversification	• Medium- and low-tech industries (textile and apparel)	• Strong reliance on supply chain digitalisation and platform-based governance models in GVCs • Diminishing returns on vertical specialisation • Shift from global efficiency-seeking FDI towards regional market-seeking FDI • Shift from large-scale investment to smaller-scale distributed manufacturing • Considerable investment required in transport infrastructure	• Increased market opportunities for new entrants and incumbents in distributed manufacturing networks • Imperatives for SME digital transformation and improving digital security risk management
	• Higher-value-added services (financial, business services)	• Platform-based governance models in GVCs • Continued growth and fragmentation in services value chains	• Increased opportunities for new entrants and (knowledge-intensive) service providers • Emergence/consolidation of local knowledge-intensive services markets for SMEs
Redundancy	• Hub-and-spoke (e.g. e-commerce, consumer products and regional processing industries) • Critical intermediate inputs and critical final products (e.g. pharmaceuticals, energy and commodities)	• Stockpiling and extra production and storage capacity • Replication of production stages • From "just-in-time" to "just-in-case" inventory management • Digitalisation for product traceability and better management of reserves (e.g. perennial products), waste control and cost efficiency • 'Warehouse infrastructure development	• Increased market opportunities for new entrants and incumbents but increased competition • Imperatives for SME digital transformation and improving digital security risk management • Need to pool inventories through networks/places
Regionalisation	• Extractive, processing and agro-food industries • High-technology industries (automotive, machinery and equipment, electronics)	• A shift from global to regional and sub-regional value chains • Decrease in global trade for intermediates • Shift towards cross-border investment in infrastructure, and domestic services	• Business opportunities in related services and in the green and blue economies • Strong specialisation and risk of heightened competition

Source: Based on OECD (2023[70]), "Risks and opportunities of reshaping global value chains", Working Party No. 1 on Macroeconomic and Structural Policy Analysis (CPE/WP1(2023)8), OECD Economics Department, OECD, Paris; Zhan, J. et al. (2022[73]), "Global value chain transformation to 2030: Overall direction and policy implications", https://cepr.org/voxeu/columns/global-value-chain-transformation-2030-overall-direction-and-policy-implications; Miroudot, S. (2020[72]), "Reshaping the policy debate on the implications of COVID-19 for global supply chains", https://doi.org/10.1057/s42214-020-00074-6; Pla-Barber, J., C. Villar and R. Narula (2021[71]), "Governance of global value chains after the Covid-19 pandemic: A new wave of regionalization?", https://doi.org/10.1177/23409444211020761.

Relocating production domestically (reshoring), in neighbour countries (nearshoring) or like-minded countries (friendshoring) may lead to shorter and less fragmented value chains. Reshoring could improve self-sufficiency and industrial autonomy. Sourcing from neighbouring economies can reduce supply chain delays and import costs (as well as, potentially, emissions). Friendshoring can facilitate greater regulatory alignment, involve smaller risks to IP and help to minimise geopolitical risks (OECD, 2023[70]).

There seem to be three strategies that firms can develop for reshoring or for non-domestic firms to build stronger supply chains with the local destination market. First, a reconfiguration of operations would require rebuilding business networks to adapt to the policy environment in place in the countries where firms want to operate. Second is flexibility, i.e. becoming more flexible and agile to adjust to uncertainty, conceding markets in some jurisdictions and refocusing operations in more "neutral" countries. Finally, conducting corporate diplomacy through lobbying and attempts to reshape the policy environment or to limit its impact on business operations.

The second strategy – flexibility – is most relevant for SMEs. In addition, relocating critical activities and attracting strategic high-value-added industries are likely to heighten global competition for assets, competition for which SMEs may be less well prepared. Some SMEs may however benefit from a relocation of production if new facilities and investment take place in their neighbourhood, also generating market opportunities and spillovers to SMEs in related industries and services.

Building resilience requires strong supplier relationships and some degree of supplier redundancy, possibly a diversification in sourcing and production locations. In fact, diversified and open markets are needed to ensure supply, in particular of essential goods (OECD, 2021[3]). As an example, reliance on domestic production of medical products is neither, at least currently, feasible, nor cost-effective (OECD, 2021[74]). In essential activities, supplier diversification may be critical, notwithstanding additional costs and loss of scale economies. In other non-essential activities, resilience may rely on the ability of existing networks of suppliers to bounce back faster (OECD, 2021[74]).

This diversification may involve divestments of MNEs from some locations but expansions in others, which presents both challenges and opportunities for SMEs (OECD, 2021[3]). However, compared to larger firms, SMEs may be particularly exposed as their ability to find new intermediate suppliers or diversify markets, and integrating new value chains is typically more limited (OECD, 2021[3]).

Redundancy implies some extra inventory or additional production capacity to face crises. A replication and rebundling of production stages could lead to shorter value chains (Zhan et al., 2022[73]) and more geographically distributed activities but more concentrated value-added. It will be especially relevant for hub-and-spoke (e.g. e-commerce, consumer products (OECD, 2019[75])) and regional processing industries. Optimising inventories can help reduce some supply chain risks, especially for critical intermediate inputs and critical final products (e.g. pharmaceuticals, energy and commodities) (OECD, 2023[70]). During the COVID-19 crisis, some firms shifted from "just-in-time" to "just-in-case" inventory management, driving warehouse take-up.

However, the cost of holding a large inventory or maintaining spare production capacity often outweighs the gains from mitigating risks, particularly in the case of low-probability events (Miroudot, 2020[72]). For companies that regularly face hurricanes or adverse climate conditions, redundancy can make sense (Sheffi, 2015[76]) but for others less so. In addition, there are limitations in how far firms can stockpile, which would imply the availability of adequate storage capacity, the ability to manage reserves of perennial products and to control waste production and inefficiencies. On all fronts, SMEs, especially those with already limited liquidity, will face size-constraints, unless they can pool stocks across networks or places.

Regionalisation will also reduce the physical length but not the fragmentation of supply chains (Zhan et al., 2022[73]). Regional integration and economic co-operation among countries at a certain proximity can reduce policy and institutional risk. Cultural proximity could also play a role by lowering transaction costs and easing co-operation between firms.

Finally, advancing the digitalisation of supply chains will be critical to create resilience and rely less on offshoring. Digital tools and platforms will also be instrumental to support the different strategies of resilience mentioned above, by connecting buyers with a broader supplier base, increasing business intelligence and predictive capacity (e.g. for managing inventories and production) or improving data exchange among value chain partners.

Overall, firms, countries and places are likely to combine approaches. The 2022 McKinsey & Company survey[4] of supply chain leaders (2022[77]) shows significant efforts made to improve supply chain resilience through new inventory management strategies, structural changes to networks and digitalisation. Over 2021-22, many companies changed supply chains by implementing dual or multiple sourcing strategies for critical materials (81%) and by moving from global to regional networks (44%). A common action was increases in the inventory of components and finished projects (80% of respondents). Supply chain planning has become a critical activity, requiring end-to-end visibility of the chain and data. Ninety percent of respondents declared having invested in digital supply chain technologies in the year and over 80% expect to make further investments. Yet, a large share still have limited visibility into their upstream supply chain or can see only as far as their first-tier suppliers (45%).

GVCs shifts towards sustainability and impact on SME ecosystems

Promoting resilience through responsible business conduct (RBC) will also be key (OECD, 2021[74]). Typically, throughout the COVID-19 crisis, many companies have been looking to collaborate towards solutions to enhance supply chain resilience, e.g. supporting their suppliers and business partners with accelerated payments (OECD, 2021[4]). But other reactions have exacerbated supply chain vulnerabilities, e.g. sudden order cancellations that had cascading effects on factory closures, product shortages and job losses. Mainstreaming more RBC within GVCs can help make GVCs more resilient and sustainable and ensure that the gains from globalisation are more fairly distributed, by minimising the risks of GVC disruptions and minimising the ESG impacts of disruptions (OECD, 2021[4]).

The deployment of circular business models that modify the pattern of product and material flows through the economy will operate in different parts of the value chain, underpinned by a transition to renewable energy and materials (OECD, 2019[29]). In energy- and emission-intensive industries such as steel, cement, plastics, paper and pulp, the circular economy is seen as particularly important for industrial transitions to climate neutrality (OECD, 2023[78]). Without exploring its potential, switching production to climate-neutral processes would result in substantially higher costs and tremendous demand for clean energy, including for the production of hydrogen (Sun, Lettow and Neuhoff, 2021[79]). The composition of trade flows may also be altered in the medium-to-long term since the share of secondary materials in global demand is expected to grow, as the expanded stock of used metals at the global level will increase the quantity and quality of recoverable scrap (de Sa and Korinek, 2021[80]). Trade volumes of primary products could decrease and contribute to a reduction in post-production manufacturing and end-of-life scrap and their corresponding trade flows. On the other hand, trade in used and remanufactured goods and in circular economy-related services may rise. These complex shifts will spread across all segments of GVCs and bring high uncertainty.

Compared to larger firms, SMEs may be particularly exposed as their ability to find new intermediate suppliers or to diversify markets and integrate new value chains is typically more limited (OECD, 2021[3]). Their capacity to screen the regulatory environment, implement more RBC or demonstrate ESG performance (e.g. accreditation) could also be more limited and undermine their ability to find business partners, customers and investors in the near future. In adopting circular strategies and practices, SMEs have also more limited organisational, technological and financial capacity and lesser access to eco-financing (OECD, 2019[1]). A lack of information and environmental awareness among SME managers is also under question (Rizos et al., 2015[81]; 2021[82]). For instance, SMEs integrated into the value chains of emission-intensive industries, especially those producing basic materials, need to be aware of the major transformations these industries require and related increases in production costs, the implications of circular economy practices and, for some of them, the need to phase out or reduce the scale of production (OECD, 2023[78]). SMEs also lag in adopting digital technologies or improving data governance, which will be instrumental for the scaling up of circular businesses, especially combined with non-technological and behavioural innovations (OECD, 2021[37]) (OECD, 2022[83]).

On this front, SMEs may however have less capacity than large firms to engage the organisational, monitoring and accountability changes needed or to comply with standards, reporting requirements and a growing legislative demand for coherent and robust circularity metrics (Barrie et al., 2022[84]).

SME&E policy action for more resilient, sustainable and circular GVCs

New rationales have arisen for policy makers to strengthen the resilience and sustainability of GVCs, enhancing preparedness and responsiveness to future crises and shocks, strengthening national security and boosting economic competitiveness and domestic employment, without undermining the benefits of open trade or sliding into protectionism (OECD, 2023[85]; Schneider-Petsinger, 2021[86]). While corporate decisions will predominantly shape the future resilience and sustainability of GVCs, government policies can help by providing a supportive environment and lowering the costs of the transition (IMF, 2022[87]; Szczepański, 2021[88]).

These multiple goals require a mix of policy approaches. Table 4.5 presents a non-exhaustive typology of policy instruments that may support these objectives, ultimately achieving greater GVCs resilience and sustainability.

Table 4.5. Selected policy options for GVCs' resilience, sustainability and circularity

	Associated policies
Resilience	***Reshoring***: • Incentives to MNEs that move manufacturing back or closer to end customers • Provisions in free-trade agreements • Development of domestic capacity in key industrial sectors and development of domestic infrastructure, including through public-private partnerships • Competition and industrial policy measures • Business support for SMEs in need of reconversion or phasing out activities, reskilling to address new skills demand
	Diversification: • Targeted financial and technical support to help SMEs diversify their supply chain (e.g. tailored trade finance scheme; supplier development programmes; matchmaking assistance; market intelligence services), including from abroad • Development of digital platforms (e.g. e-commerce marketplaces) • Harmonisation of product standards • Building diversified industrial clusters
	Regionalisation: • Regional and bilateral trade agreements and economic co-operation initiatives • Regional industrial clustering • Export-led strategies to extend investment in production for regional markets • Incentives for regional market-seeking investment • Strategies to increase the local embeddedness of international investment and make them more tied to geographical locations
Sustainability	• Incentives for SMEs transition towards sustainable and circular business models • Targeted financial and sectoral support to firms operating in the circular economy sector • Development of business standards and regulations on environmental sustainability • Incentives for brownfield investment in polluted, neglected or underused industrial sites • Green public procurement
Circularity	• Promote RBC and stewardship throughout the lifespan of their products, reuse, remanufacture and the recycling of waste and end-of-life final goods, and prolong the useful life of products and parts ○ Regulations to promote the reparability, durability and enhanced recycling of products, and their improved environmental performance (such as minimum mandatory requirements for energy efficiency) ○ Extended Producer Responsibility (EPR) systems whereby the cost for the final recycling or disposal of materials is borne by the producer of the good

	Associated policies
	○ Information instruments, such as eco-labelling, supply chain reporting, sustainability reporting, consumer advice services and information centres ○ Standards for waste recovery, e.g. e-waste the fastest growing waste stream • Mandated recycling targets associated with mandatory quality standards to facilitate the creation of markets for secondary raw materials • Incentives for the diffusion of new technologies, e.g. sensors, blockchain for traceability and transparency, new materials etc., and the support eco-innovation and eco-design • Support for innovative forms of collaborative consumptions ("sharing"), leasing and rental contracts and developing appropriate insurance schemes • Trade policies and trade facilitation mechanisms to encourage trade in reused and remanufactured products, secondary materials and waste and scrap, to enable economies of scale in recycling, increase incentives for the collection of such materials and help establish cross-border reverse supply chains • Improving the measurement systems to better reflect the differences between new, used and remanufactured products and different categories of waste and scrap

Source: Based on Zhan, J. et al. (2022[73]), "Global value chain transformation to 2030: Overall direction and policy implications", https://cepr.org/voxeu/columns/global-value-chain-transformation-2030-overall-direction-and-policy-implications; OECD (2023[23]), *Policy Toolkit for Strengthening FDI and SME Linkages*, https://doi.org/10.1787/688bde9a-en; de Sa, P. and J. Korinek (2021[80]), "Resource efficiency, the circular economy, sustainable materials management and trade in metals and minerals", https://doi.org/10.1787/69abc1bd-en; OECD (2022[89]), "Securing reverse supply chains for a resource efficient and circular economy: What role for trade facilitation mechanism and standards?", https://one.oecd.org/official-document/COM/TAD/ENV/JWPTE(2021)1/FINAL/en.

A generic approach

Governments adopt more often a broad approach to supporting SME integration in GVCs. Based on an international mapping of government initiatives implemented across OECD countries in 2023 with a view to reinforcing SME participation in production and supply chain networks (see Chapter 2), 377 national policies have been identified. Targeted measures (towards certain populations of firms, sectors, technologies or regions) represent only 45% of the total (OECD, 2023[90]). As a comparison, similar exercises showed that policies for financing SME growth and scale-up (73%) or policies for improving SME data governance (59%) were significantly more targeted, especially at SMEs. In these 377 policies, there are only 39 policies that specifically target sectors and value chains (OECD, 2022[91]).

When targeted towards a sector or value chain, initiatives aim to promote SME integration in sectors that are fundamental for the twin transition, in particular Industry 4.0, smart industry or green technology sectors and the sectors of the circular economy. A unique approach is the Space Labs initiative of Belgium which intends to foster the development of space technology for downstream applications. Other predominant sectors include the automotive, food beverage and pharmaceutical sector.

Reshoring strategic activities

Some countries are now developing reshoring strategies at the national or territorial level, as a way of reducing dependence in strategic areas but also as instruments to support local employment, using territorial attractiveness policies (Charbit and Gatignol, 2021[92]).

Government policies to reinforce national security and competitiveness are likely to play a prominent role in the rerouting of GVCs. The COVID-19 pandemic brought attention to the importance of self-sufficiency in food, pharmaceuticals and certain medical equipment. Russia's war of aggression against Ukraine and the consequent disruptions in the global energy market also raised concerns about energy autonomy in many countries. In other cases, some nations will enact industrial policies to safeguard emerging technologies (e.g. AI, renewable energy, 5G equipment) (Pla-Barber, Villar and Narula, 2021[71]).

Governments can harness a broad set of policy instruments to incentivise companies to revert to domestic production but these also come with risks., including potential economic distortions or adverse impacts on innovation and competitiveness (Schneider-Petsinger, 2021[86]). Another issue with reshoring is that the entire supply chain cannot be completely relocated and it simply shifts the risks and dependence on foreign inputs to other segments of the value chain (Choudhary et al., 2022[93]). Furthermore, while enhancing self-sufficiency, greater reliance on domestic production may conversely increase vulnerability to local shocks, such as natural disasters or disease outbreaks. To prevent costs from outweighing benefits, reshoring should not be regarded as a singular strategy but rather as a component of broader and diversified policy approaches to GVC resilience. Table 4.6 provides examples of recent policy initiatives implemented in OECD countries to strengthen autonomy and resilience in strategic sectors.

Table 4.6. Selected examples of policies to enhance autonomy and resilience in strategic GVCs

Typologies of policy instruments	Targeted/ Generic	Country initiatives	Timing
Ensure a level playing field for domestic and foreign firms			
Regulation	Generic	**Regulation on distortive foreign subsidies (European Commission)** – Addresses the existing regulatory gap regarding foreign subsidies on the EU internal market and ensures a level playing field for all undertakings operating in the single market which receive support from either an EU member state or a non-EU country (EU, 2022[94]; Council of the European Union, 2022[95]).	2022 onwards
Reshore and build self-sufficiency in strategic sectors			
National strategy or action plan	Generic	**Update of the 2020 New Industrial Strategy (European Commission)** – Improves the focus of the strategy on analysing and addressing the EU's strategic dependencies, both technological and industrial (Szczepański, 2021[88]).	2021 onwards
National strategy or action plan	Generic	**REPowerEU Plan (European Commission)** – Aims to respond to the global energy market disruption caused by Russia's invasion of Ukraine and at the same time tackle the climate crisis, by ending the EU's dependence on Russian fossil fuels and fostering energy savings, diversification of energy supplies, and accelerated roll-out of renewable energy (EC, 2022[96]).	2022 onwards
Regulation/ Financial support	Generic	**Creating Helpful Incentives to Produce Semiconductors and Science Act of 2022 (CHIPS Act) (United States)** – Aims to invest in the semiconductor manufacturing capacity and has allocated USD 50 billion in building up the domestic semiconductor industry to counter foreign dependencies.	2022 onwards
Financial support	Generic	**Third round of the Programme for Promoting Investment in Japan to Strengthen Supply Chains (Japan)** – In 2022, Japan launched the third round of this programme, initiated in 2020 with the objective of supporting Japanese companies to relocate the production of critical goods and materials back to Japan. The 2022 call for applications has a total budget of around USD 5.2 billion (JPY 60 billion) (Szczepański, 2021[88]).	2020 onwards
Safeguard strategic technologies			
Regulation	Generic	**Act on Special Measures for Strengthening and Protecting Competitiveness of National High-Tech Strategic Industry (South Korea)** – Protects and fosters strategic technologies, i.e. technologies that significantly impact national and economic security, including the stability of supply chains. Among others, the act introduced tightened protection measures regarding the export and mergers and acquisitions (M&As) of strategic technologies.	2022 onwards

Source: Based on an international mapping of national policies and institutions supporting FDI-SME linkages (OECD, 2023[97]) (data extracted on 21 April 2023). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[98]).

Diversify the global integration of SMEs

At the same time, many governments are aiming to reinforce the positioning of their SMEs in GVCs by helping them access new markets abroad and diversify their global integration patterns. This includes tailored financial support (e.g. export guarantees) to mitigate the costs and risks associated with SMEs trading activities and GVC integration. It also includes a variety of non-financial support measures, such as market intelligence services, training and skills development programmers, and matchmaking

assistance. These schemes aim to fill the knowledge and information gap which often prevent SMEs from accessing new markets abroad, build in-house skills and capacity for internationalisation and facilitate new value chain linkages with foreign investors and partners.

Table 4.7. Selected examples of policies to strengthen the positioning of domestic SMEs in GVCs

Typologies of policy instruments	Targeted/ Generic	Country initiatives	Timing
Mitigate costs of trading and international expansion			
Financial support	Targeted (SMEs)	**FINVERRA Internationalisation Loans and Guarantees (Finland)** – Direct funding (e.g. loans, credit guarantees) to Finnish SMEs for establishing or developing a subsidiary, associated company or branch operating abroad. Funding cannot be used merely for financing exports or the establishment or expansion of a sales office abroad.	n.a.
Fill information gaps and build capacities for internationalisation			
Non-financial support	Targeted (SMEs)	**Export Academy (Hungary)** – Training courses and seminars by acknowledged experts to help SMEs build sound internationalisation strategies, thereby reducing the risks of market entry. Targets SMEs with export-suitable products and some previous export experience. Attendees can also exchange experiences and best practices with each other.	n.a.
Non-financial support	Targeted (SMEs)	**Internationalisation Academy (Portugal)** – Advanced training programmes for successful internationalisation. Provides companies with theoretical and practical tools to approach new markets, diversify their market presence and reduce the associated costs and risks.	n.a.
Networking services or infrastructure	Targeted (SMEs)	**CzechLink Start-up (Czech Republic)** – Matchmaking services performed by a team of experts with sound knowledge of the Czech start-up market, to facilitate connection between foreign investors and Czech start-ups, ensuring maximum tailored care for both.	2019-until now
Promote the adoption of digital tools for internationalisation			
Financial support	Targeted (SMEs)	**SI SME internationalisation/E-commerce and digital transformation (Portugal)** – Funding to promote e-commerce and the adoption of digital solutions for internationalisation by Portuguese SMEs (e.g. initiatives to enhance firms' presence on the web; international marketing and brand promotion, etc.).	2021-2023
Financial support	Targeted (SMEs)	**Digital Export Bonus (Italy)** – Non-repayable grants for the purchase by SMEs of digital solutions for internationalisation, such as: the creation of e-commerce websites and applications; digital marketing initiatives; consultancy services; subscription to SaaS (Software as a Service) platforms.	2022 until now
Support the adoption of international standards and certifications			
Financial support	Targeted (SMEs)	**Promoting International Competitiveness** – Conformity assessment of plants and products (Latvia) – Financial support to SMEs to certify that the production site, product, process or service meets the requirements of the target international markets.	n.a.
Financial support	Targeted (SMEs)	**Expo Certificate LT (Lithuania)** – Funding to SMEs to undertake activities related to the certification of products intended for export, as a way to encourage internationalisation. The funding covers different types of costs related to product certification, e.g. tests, transportation, translation of certification documents and certification expert from abroad.	2022-until now
Develop digital infrastructure for internationalisation			
Networking services or infrastructure	Generic	**Ex Tender (Italy)** – Online information system on business opportunities abroad for the the supply of goods, construction of works and provision of service with a focus on international tenders and major projects for helping Italian SMEs.	2003-until now
Networking services or infrastructure	Targeted (SMEs)	**ComerciaMX (Mexico)** – Platform that connects Mexican SMEs with clients, suppliers, partners and investors from global markets. This platform also allows users to comment and rate other users whom they know or have done business with to build trust in the community.	2021-until now
Networking services or infrastructure	Generic	**GoGlobal Cockpit (Switzerland)** – An interactive online platform that helps Swiss companies expand abroad by providing customised statistics, market insights and information on international tenders and customs tariff information.	2020-until now

Source: Based on an international mapping of national policies and institutions supporting FDI-SME linkages (OECD, 2023[97]) (data extracted on 21 April 2023). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[98]).

Some programmes also promote the adoption of international standards and certifications by SMEs as a way to facilitate their access to foreign markets. The government may achieve this by reducing the associated costs and regulatory barriers to SMEs. In addition to reducing production costs and thus increasing efficiency, the adoption of harmonised standards can also increase SMEs' resilience, by facilitating product substitutions and enabling more flexible production and distribution capacities on a global scale (Schneider-Petsinger, 2021[86]). At the same time, increased standardisation may challenge business capacities to differentiate and personalise products to meet consumer demand. Technology development enabling mass customisation may provide new solutions to overcome this tension.

Policy initiatives for GVC diversification also include the development of improved digital infrastructure. Digital platforms contribute to SMEs sourcing and selling abroad more easily, by connecting them to suppliers and customers and creating network effects for their users (OECD, 2021[37]).

Strengthening business partnerships could also play a role in creating more resilient supply chains – e.g. business consortia or collaboration initiatives to help manufacture essential goods domestically or boost the domestic processing of critical raw materials (OECD, 2023[23]).

Regionalisation of GVCs

Initiatives to strengthen international co-operation at the regional or bilateral level are also growing especially when featuring a focus on collaboration between trusted and like-minded partners (Schneider-Petsinger, 2021[86]).

Table 4.8. Selected policy initiatives for the regionalisation of GVCs

Typologies of policy instruments	Targeted/ Generic	Country initiatives	Timing
Strengthen regional business networks and collaboration in strategic sectors			
Financial support	Generic	**Norway Grants Green ICT programme (Estonia, Norway)** – Aims to financially support business co-operation between Estonian and Norwegian firms in the fields of green industry innovation, ICTs and welfare technology.	2014-21
Financial support	Generic	**Bilateral Cooperation Fund (Latvia, Norway)** – Aims to improve co-operation between Latvia and Norway in the fields of green innovation, technologies supporting the quality of life and ICTs. Financial support is available for activities related to the development of project partnerships, co-operation networks, exchange of knowledge, technologies or best practices between Latvian firms and Norwegian partners (including firms, institutions, associations, foundations).	
Establish frameworks for multilateral collaboration on strengthening regional value chains			
Regulation	Generic	**Supply Chain Resilience Initiative (SCRI) (Australia, India, Japan)** – Co-operative effort between the three partners to collaborate on supply chain resilience in the Indo-Pacific region (Australian Government, 2023[99]).	2021- …

Source: Source: Based on an international mapping of national policies and institutions supporting FDI-SME linkages (OECD, 2023[97]) (data extracted on 21 April 2023). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[98]).

Enhancing GVC sustainability and circularity

Recently, OECD governments' approaches to supply chain due diligence have shifted from soft law standards to legally binding regulation. Companies are legally required to respect human rights and the environment in their supply chains. As participants in supply chains, SMEs are also becoming covered by supply chain due diligence mandates. Consequently, policies helping SMEs achieve supply chain due diligence are becoming increasingly important to ensure SME compliance.

Yet, amongst OECD countries, sustainability considerations are still rare in public policies for better SME integration in production networks and supply chains. More commonly, provisions for promoting more sustainable and responsible business models are found in initiatives aiming to integrate SMEs into knowledge and innovation networks by linking them with other actors in their innovation ecosystem (see Chapter 4).

Government efforts are focused on supporting SME participation in the global trade of environmental technology, reflecting the growing demand for green products and services globally. Examples include the Environmental Technologies export initiative in Austria and the Export NOW programme in Denmark.

In OECD countries, policies to promote SME integration in production and supply chain networks rarely cover aspects related to RBC. Of the 377 mapped policies mentioned above, only the "Sectoral Partnerships – Pillar 1" implemented by the Netherlands, as a three-year subsidy programme, aims to help Netherlands-based companies, including SMEs, implement the OECD guidelines for MNEs to improve sustainability in their value chains. These companies can apply individually or as part of a partnership consisting of at least five enterprises. Besides these enterprises, sector and civil society organisations can also participate in the partnership.

There is room for policy to improve SME awareness in supply chain compliance. Supply chain due diligence practices are slightly less established amongst SMEs than in larger companies. Common barriers include a lack of awareness, limited leverage with regard to actors in their supply and a lack of financial resources for implementing these practices. The ongoing reconfiguration of GVCs provides opportunities to further strengthen social and environmental due diligence. Tackling these issues is not only a matter of value but is also related to ensuring a level playing field between domestic and foreign companies operating in the local market (Schneider-Petsinger, 2021[86]). For example, the EU-funded advisory service helps SMEs with minerals and metals due diligence procedures in their supply chains through the creation of a portal where SMEs can have access to webinars and other training materials and tailored advisory services. Another approach has been evidenced in Canada where a more holistic approach has been developed with the recent implementation of the national strategy Responsible Business Conduct Abroad, which aims to develop tools for increasing the uptake of due diligence requirements.

While certifications and labels can provide opportunities to position SMEs strategically in key export markets, compliance with the criteria laid down for certifications and labels may represent an unbearable financial burden for SMEs (Du, 2020[100]). As a response, some national and subnational governments have also promoted the adoption of international standards and certifications by SMEs, to facilitate their access to foreign markets.

The implementation of Extended Producer Responsibility (EPR) schemes can also represent a severe constraint for SMEs. EPRs are designed to place more of the financial and operational burden of the treatment and disposal of waste and certain "hard-to-recycle" products on the producers, manufacturers and retailers, involving fees and reporting. EPR systems place a substantial administrative burden on SMEs. A business association of SMEs operating in e-commerce across Europe estimated, for a firm in 2020, almost 40 working days per year to fulfil administrative requirements and comply with e-waste, batteries, packaging and other waste streams rules across EU member states (E-commerce Europe, 2020[101]). Further complexity arises from different EPR obligations applying across borders. In addition, SMEs with more limited resources may be more difficult in investing in the new processes, technologies and skills needed in order to comply.

Creating a supportive environment for SME participation in GVCs also calls for actions at both the national and subnational levels, across diverse institutions and agencies and across a number of policy areas, including investment promotion, trade and investment facilitation, IP protection, contract enforcement, innovation and industrial policies or targeted SME support, etc., which requests strong co-ordination and multi-level governance arrangements (Kergroach, 2019[102]; OECD, 2023[5]; 2022[2]).

Similar multi-level approaches have been adopted to develop strategies and lead markets for the circular economy, recognising the central role of SMEs in the transition. The European Union has been particularly active in this area (OECD, 2019[1]). The important linkages of circular economy and trade policy as well as the multiple levels at which public intervention should be aligned also call for greater attention to be given to the field (OECD, 2020[33]). At a time when GVCs have come under pressure and are subject to increasing scrutiny, a key area for government intervention includes measures to enhance transparency, visibility and traceability of value chain layers and ensure that related information is duly shared among the different actors along the value chain, including smaller supplier firms. This would also facilitate risk monitoring and the identification of potential problems in the supply chain, to improve the effectiveness of early warning systems and responsiveness to supply chain problems.

Table 4.9. Selected policy initiatives to enhance the social and environmental sustainability of GVCs

Typologies of policy instruments	Targeted/ Generic	Country initiatives	Timing
Promote RBC in GVCs			
Financial support	Generic	**Fund for Responsible Business (FVO) (Netherlands)** – Subsidy programme supporting partnerships between companies and civil society organisations with the objective of setting up multi-stakeholder projects to identify and tackle RBC risks or misconduct within international value chains.	
Regulation	Generic	European Parliament resolution with recommendations to the European Commission on corporate due diligence and corporate accountability for human rights and environmental impacts throughout supply chains.	May 2021
Support the development of circular and environmentally sustainable GVCs			
National strategy or action plan	Generic	**Action Plan for Circular Economy (Denmark)** – National plan for the prevention and management of waste until 2032. Sets out steps towards the mandatory use of ecolabels in public procurement; EPR for packaging; requirements for public tenders; and regulatory changes, including a ban on certain types of single-use plastics (Danish Ministry of the Environment, 2021[103]).	
Financial support	Generic	**Brownfield covenant (Belgium, Flanders)** – Supports brownfield investment projects aimed at re-using neglected, contaminated and/or underused sites (e.g. business parks), through various administrative, legal and financial benefits.	
Promote SMEs transition to circular and sustainable business models			
Financial support	Targeted (SMEs)	**SME Growth Subsidy (Belgium, Flanders)** – Subsidies to help local SMEs purchase advice or recruit staff to realise a growth trajectory in one of the following themes: innovation, internationalisation, digital transformation or sustainable and circular entrepreneurship.	
Financial support	Generic	**Circular economy (Italy)** – Incentives to facilitate the transition of productive activities towards a more sustainable business model. Financial support to companies of all sizes performing industrial, agro-industrial or artisan activities or providing services to the industry and research centres, for industrial research and experimental development aimed at supporting the circular economy transition.	
Non-financial support	Targeted (SMEs)	**Greenlab accelerator (Brussels, Belgium)** – Accelerator dedicated to sustainable start-ups in the fields of the environment and the circular economy.	
Non-financial support	Targeted (SMEs)	**C-VoUCHER (Sweden)** – Supports SMEs in their transition from a linear business model to a circular business model. It features two sub-schemes: the Circularity Programme and the Circularity Value Replication Programme. Support measures under the programme include both business mentoring and support services and innovation vouchers.	
Promote the adoption of environmental and RBC certifications and standards by SMEs			
Financial support	Generic	**Sectoral Partnerships – Pillar 1 (Netherlands)** – Three-year subsidy programme for helping Dutch companies, including SMEs, implement OECD guidelines for MNEs to improve sustainability in their value chains.	Oct. 2022
Financial support	Targeted (SMEs)	**Environment and Energy Management Agency (France)** – Subsidies to SMEs to help them apply for an ecolabel.	

Typologies of policy instruments	Targeted/ Generic	Country initiatives	Timing
Financial support	Targeted (SMEs)	**SME subvention (Castile and Leon, Spain)** – Subventions for acquiring technical services aimed at obtaining a certification or a verification or validation report on codes of conduct, norms or standards in the field of corporate social responsibility.	
Regulation	Generic	**Act on Corporate Due Diligence Obligations in Supply Chains (Germany)** – Regulation that imposes German enterprises to respect human rights across global supply chains.	Jul. 2021
Financial and Non-financial support	Targeted (SMEs)	**Green Growth (Costa Rica)** – Initiative that through financial and technical support helps SMEs in the export sector to adopt sustainable practices as a way to improve their competitiveness in international markets.	

Source: Based on an international mapping of national policies and institutions supporting FDI-SME linkages (OECD, 2023[97]) (data extracted on 21 April 2023). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[98]).

Annex 4.A. Russia and Ukraine in global trade

Before the war, Russia and Ukraine had a small direct role in the global economy (OECD, 2022[104]). Both countries accounted for about 2% of global GDP and a similar proportion of total global trade, and stocks of FDI in Russia, and by Russia in other economies, remained very limited, to about 1-1.5% of the global total. The impact on SMEs through direct trade is also estimated to be limited (Chapter 1). In 2020, the share of EU SME trade to/from Ukraine was generally below 3% of their total exports.

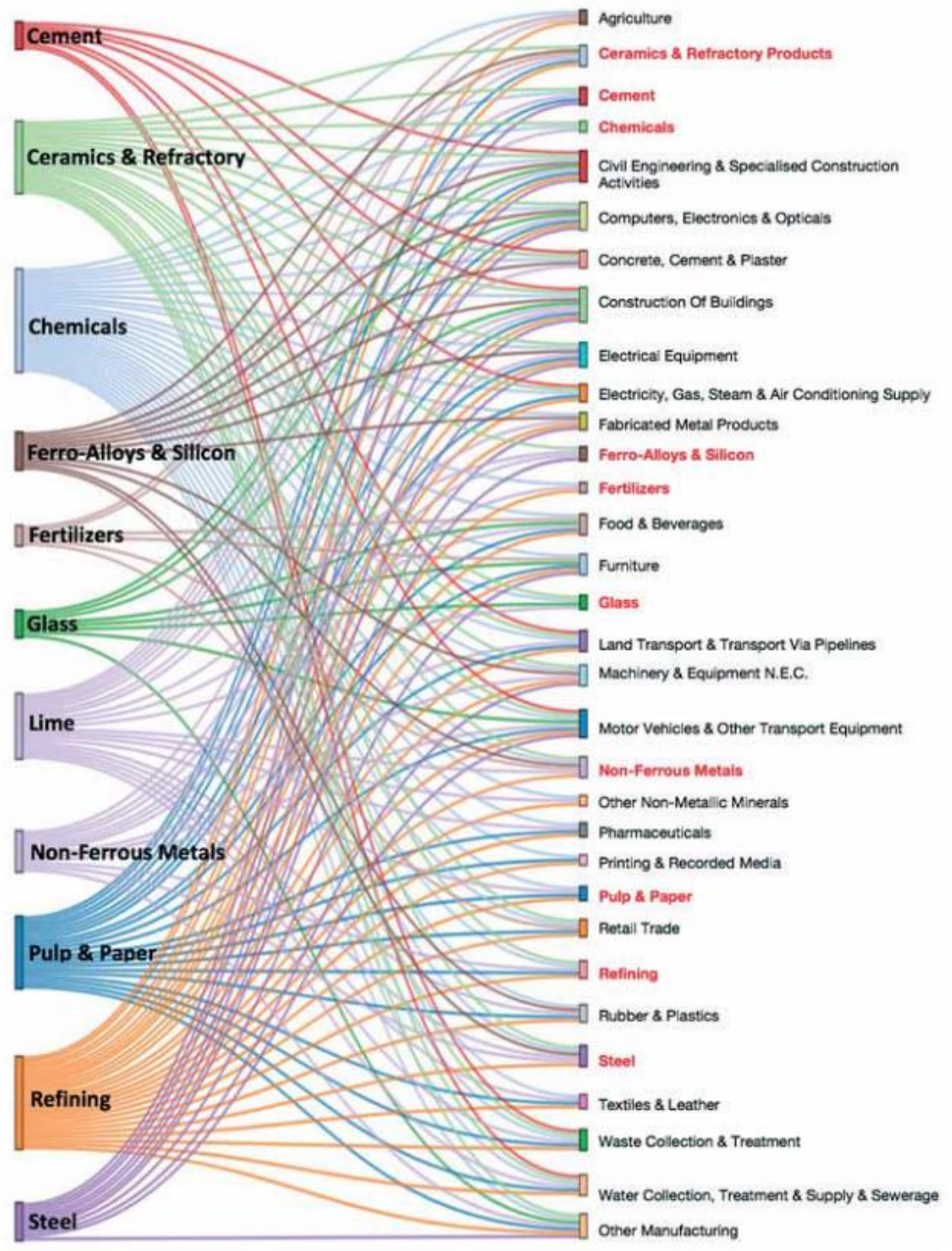
Both countries were however leading global suppliers of metals and raw materials, mostly directed to the EU market, and were important sources of intermediate inputs in several sectors across the OECD.

- Russia alone was a key supplier of palladium, which is used in catalytic converters for **cars**, and nickel which is used in **steel production** and the manufacture of **batteries**.
- Russia and Ukraine were also sources of inert gases such as argon and neon, used in the production of **semiconductors**, and large producers of titanium sponge, used in **aircraft**.
- Both countries also had globally important reserves of uranium.
- The **agricultural sector** is likely to remain under stress for the years to come. Together, Russia and Ukraine were major sources of wheat and manufacturers of fertiliser.

Russia's aggression against Ukraine has created a new shock in GVCs, driving commodity prices and inflation upward at historical highs, and raising concerns about energy and food security (Chapter 1). The war and trade sanctions against Russia are likely to have pervasive repercussions along GVCs through disruptions in energy supply. Energy-intensive industries (e.g. cement, glass, paper, steel, ceramics, etc.) are first affected but, through the complex connections they have with less energy-intensive sectors (e.g. computer and electronics), including in the circular economy (e.g. waste collection and treatment), they can alter the market conditions upstream and downstream in their value chains (Annex Figure 4.A.1).

The transport bans imposed as a response to the war have also impacted supply chain logistics. Airspace bans imposed on Russia affect 20% of global air cargo. Prices have risen as planes were rerouted and pressures on the maritime transport system are likely to increase as most maritime shipping cargo to Russia are suspended. The zero-COVID policy adopted in China that held some of the biggest ports in the world and dominates the global container trade added further stress to the global transport system. Its recent reopening is likely to relieve pressure on supply chains (Chapter 1).

Annex Figure 4.A.1. Value chains linkages of energy-intensive industries to other sectors in the economy



Source: EC (2019[105]), *Masterplan for a Competitive Transformation of EU Energy-intensive Industries Enabling a Climate-neutral, Circular Economy by 2050*, https://data.europa.eu/doi/10.2873/854920.

Annex 4.B. Structural changes in GVCs

Political globalisation and geopolitical context

Tensions in the rules-based global trading system have become increasingly evident in recent years, e.g. US tariffs on steel and aluminium, Brexit and the China-US trade tensions (Dadush, 2022[51]). The growing number of regional and bilateral trade agreements concluded worldwide is also reinforcing the risk of a fragmentation of the global trading system into mega-regional blocks (North and South Americas, Asia and Europe) (Bolwijn et al., 2020[65]; OECD, 2016[64]). This regional fragmentation/integration is also echoing a similar fragmentation of innovation systems, wherein breaches have emerged as R&D and innovation activities increasingly organise in geographical and highly specialised blocks.

Growing economic nationalism may affect the structure and depth of GVCs. While larger firms may be able to operate and invest in countries where subsidies or below-market finance (OECD, 2021[106]) are offered for sourcing locally (or not sourcing in designated countries), it may be more challenging for smaller globalised firms to adapt their supply chains in each destination market. At the same time, there might be opportunities if the duplication of supply chains requires domestic suppliers in each market.

Climate change, fairness and sustainability

Concerns have arisen about supply chain sustainability, decarbonisation and the traceability of products. In fact, international trade and climate change and mitigation are closely related (Jakob, 2022[107]) and companies were already rethinking their supply chains in response to consumer demands for more sustainable and inclusive production methods, as well as “made local” products and services (OECD, 2020g). Increasingly, firm performance is also evaluated on sustainability criteria, for stock valuation, investment, certification or business and partnership purposes, etc.

Enterprises of all sizes have been implementing sustainable practices in their production strategies. This not only involves adapting their own production processes but also making their cross-border sourcing and contracting arrangements more sustainable (Kumar, Prakash and Kumar, 2021[108]). MNEs have been taking steps to mitigate the environmental and social risks associated with participation in GVCs. These risks include the emission of greenhouse gases, the generation of hazardous waste, poor working conditions and the exploitation of child labour. As a result, some MNEs have been implementing due diligence processes to ensure that their supply chains adhere to social and environmental standards and to identify and address any areas of concern (OECD, 2022[24]).

How the rationale for organising global production networks can evolve

The economic rationale for fragmenting production worldwide remains strong and the inertia in production systems will contain the rapidity of adjustments or changes in the short term. But increased momentum around resilience and sustainability is likely to impact on GVCs.

How supply chains are organised worldwide responds to imperatives of optimisation and the main motivations behind MNEs’ decisions are market-seeking, resource-seeking, asset-seeking or efficiency-seeking (see literature review in OECD (2023[5])). The decision to import/export or invest and the location factors differ between industries, functional activities and entry modes, It can include the size and dynamism of the local market, the presence of local suppliers and partners, or a dynamic entrepreneurship

ecosystem, or the availability of skilled labour locally, the quality of the business environment (stability of legislation, the protection of data and intellectual assets) or the quality of infrastructure, e.g. for accessing markets nearby (OECD, 2011[109]). Intricate production networks were therefore designed for cost efficiency, sometimes proximity to markets but not necessarily for transparency or resilience (McKinsey & Company, 2020[54]).

Recent developments with the COVID-19 pandemic and the war against Ukraine have called for a reassessment of global production networks to make them more resilient. Dependencies within GVCs have emerged as factors of risk and economic and reputational costs. For instance, the shortage of basic non-medical products in some countries during the outset of the pandemic showed the interdependencies of supply chains across seemingly unrelated products.

Such dependencies, both upstream (on suppliers) and downstream (on buyers) increase with the length of the GVCs, their complexity and the centrality of key hubs that could become points of failure (OECD, 2021[3]). This was the case in China during the pandemic, when output contractions in Chinese industry and depressed demand from Chinese consumers were felt around the world. This is also the case with Russia and Ukraine due to their leading role in supplying some metals and raw materials globally and as an important source of intermediate inputs in several globally integrated sectors (OECD, 2022[110]).

Across OECD countries, there are a significant number of industries with relatively high foreign dependence as well as a high production concentration (i.e. for which global production is concentrated in a few countries). The European Union recently identified 137 products used in sensitive ecosystems (out of 5 200 imported products) that were highly dependent on foreign suppliers. Highly dependent industries include motor vehicles and other transport, basic metals, textiles, pharmaceuticals and electrical components (EC, 2022[111]). Moreover, the industries where SMEs tend to be more active in exports tend to rely less on foreign value-added and have low or medium digital intensity. These include wholesale and retail trade, warehousing and accommodation.

Beyond the architecture of value chains, risk exposures in GVCs arise from spatial concentration. GVCs are often accompanied by large-scale agglomeration where firms in the same or connected industries tend to locate close to each other (ADB, 2021[67]). In turn, clustering tends to reduce transaction costs between actors and create opportunities for knowledge spillovers. Recent work based on OECD Inter-Country Input-Output (ICIO) tables of 2019 show that GVC vulnerabilities increase in value chains with a high geographical concentration of suppliers/buyers (Schwellnus et al., 2023[112]). During the pandemic, spatial concentration has indeed been a factor of vulnerability, at least temporarily. The regional and local impact of the crisis has been highly asymmetric within countries and it appears to depend on the region's exposure to tradable sectors and GVCs, the crisis briefly turning a source of productivity into vulnerability (Tsvetkova et al., 2020[113]). Agglomeration also tends to increase exposure to environmental risks when natural disasters happen in areas of concentrated population and industrial activity (Gereffi and Luo, 2014[114]).

For most OECD countries, exposures to GVC risk are largely intra-regional and intra-OECD. The same ICIO-based work highlights that this is especially true in Europe and, to a lesser extent, in North America (Schwellnus et al., 2023[112]). By contrast, in some Asian and South American OECD countries, exposure is to a much larger extent extra-OECD, mainly reflecting large dependencies on China. This is due to the fact that most "global" supply chains are of a regional rather than global nature (Miroudot and Nordström, 2019[115]; Antràs, 2020[116]), also reflecting the regionalisation of production networks and a parallel regionalisation of innovation networks.

For achieving greater resilience and sustainability, global actors adapt their internationalisation strategies to reflect changing rationale for where to locate activities and investments. Under the pressure of markets, investors and regulators, establishing supply chain due diligence has become a growing imperative for MNEs (OECD, 2022[24]). As lead firms in GVCs, they are likely to promote the transformation of their production networks by setting RBC requirements, deploying new ESG standards (and the needed technology, data and knowledge in support) and making due diligence a prerequisite for firms to engage.

Achieving more sustainability could however create vulnerability in production networks. Some materials needed in the green transition, e.g. for energy storage, are sourced or processed from only a few countries. Most of the world's lithium and graphite, which are key elements for electric vehicle batteries, is sourced from a couple of countries. Argentina, Australia, Bolivia and Chile have the largest world reserves of lithium in 2022 (U.S. Department of the Interior, 2023[117]). Sixty-five percent of world production of graphite is made in China and 80% of natural graphite is refined in China. About 70% of the world's cobalt is extracted in the Democratic Republic of the Congo. Chile and Indonesia account for about 30% of the world's Copper and nickel respectively. In Japan, 60% of imported antibiotics come from China (40% for France, Germany, and Italy). The high dependency of some sectors on rare earths may encourage resource-seeking strategies in FDI, further investment in R&D to develop input of substitution and industrial partnerships to encourage product design for circularity or eco-design.

More circularity in production systems and value chains emerges as a solution for greater resilience and sustainability. More circular models could help optimise raw materials use and reuse and, combined with digital innovation (for sensing, traceability or stock management), data analytics (for greater predictive capacity) and innovation on new materials (for input diversification, product substitution), they can help firms reduce dependencies on supplies and primary commodities markets, offering options to better deal with supply disruptions and shocks along the value chains. In addition, more circularity in GVCs can help lower energy consumption during production. For instance, producing the most commonly used metals from recycled material uses 60-97% less energy than producing them from mined material (de Sa and Korinek, 2021[80]). Circular approaches could reduce carbon dioxide (CO_2) emissions from 4 major manufacturing sectors (plastics, steel, aluminium and cement) by 56% in developed economies by 2050 (Johnson et al., 2021[118]; Sharmina et al., 2021[119]; Material Economics, 2019[120]).

Circular GVCs imply a reorganisation of operations globally, including through reverse supply chains and trade of supportive services. Several circular business models rely heavily on reverse supply chains to close material loops. Remanufacturers set up reverse logistics to collect end-of-life products, channel them to recovery facilities for sorting and processing, and reinject reusable components back into the production process (or resell them). Products can be collected at different stages in the value chain but, for products to be better recycled, they need to be designed for easy dismantling and to be free of hazardous substances to the extent possible. This means promoting eco-design and preventing planned obsolescence for products (OECD, 2020[121]), and for certain firms rethinking the entire value chain, by revisiting the full spectrum of value chain tiers, investing in transparency and traceability across the chain, and by making greater use of supportive services, such as design, engineering, R&D, maintenance and digital services (Ellen MacArthur Foundation, 2022[122]). Finally, resilience and sustainability, if they can alter the terms of cost efficiency, are also a factor of economic performance. Environmental degradation, human rights violation and poor working conditions have a cost (e.g. reputation, commodities availability, access to skills, bans and penalties). GVC risk when it materialises has a cost (e.g. supply delays, price volatility, uncertainty, transaction costs, losses of partners and markets). At the same time, reshuffling production networks and changing partners, as well as coping with new regulatory and market conditions, will also have a non-negligible cost. For instance, new sustainability-related regulations in maritime transportation, such as the new reporting requirements set by the International Maritime Organisation (IMO) and the inclusion of maritime emissions in the EU Emissions Trading System (ETS) are likely to raise logistics fees. Industrial production systems and business models are therefore likely to be rethought with a double objective of improving economic efficiency and reducing negative externalities.

If business actors are ready to concede on immediate economic performance to improve resilience and sustainability, the production networks could transform even faster. A recent survey shows that 93% of global supply chain leaders plan to increase resilience in the future and 44% of executives are willing to increase resilience even at the expense of short-term savings (Lund et al., 2020[123]).

However, there are some limits to the way GVCs could effectively be restructured (OECD, 2021[3]) and GVCs of the future may not differ so much from GVCs pre-pandemic. The terms and conditions of GVC

integration are defined by structural factors, such as industrial structure and specialisation, technological advantages, skills composition, the absorptive capacity of domestic SMEs and their ability to build arm-length relationships with MNEs, the performance of national and regional innovation systems, etc., with a strong legacy of past economic and policy choices. These structural factors are overall difficult to reverse or alter in the short term. For instance, technology lock-ins can raise barriers to extensive industrial reshuffling. Likewise, frontier R&D increasingly requires large investments and the accumulation of knowledge, technology and data, in proportions that often exceed the capacity of a single country and, *a fortiori*, a single region. In some resource-intensive and extractive industries, which are constrained to certain geographic locations, obtaining new raw materials is a long-term (more than a decade) prospect (IEA, 2021[124]). Ultimately, the transformation of global production systems may have a substantial cost that the final consumers may not be ready to bear.

This heterogeneity in endowment and capacity, as well as inertia in technological and industrial patterns, are major limitations to a radical transformation of GVCs. Simulations suggest that the economic case for reshoring GVCs (and indeed the reshoring case for resilience) is weak (OECD, 2021[125]; Bonadio et al., 2020[126]; Cadestin et al., 2019[36]). This also means that there is no one-size-fits-all approach to managing supply chain risk. In addition, most "global" supply chains are of a regional rather than global nature (Miroudot and Nordström, 2019[115]; Antràs, 2020[116]).

The extent to which GVCs will transform to address these pressures and long-term objectives remains an open question, though these changes will likely depend on industry-specific characteristics. GVCs are heterogeneous and complex networks of production. GVCs have different structures, are affected by a range of policies and regulations, and have different degrees of strategic importance and substitutability. GVCs in strategically important sectors – such as semiconductors, mining and pharmaceuticals – might be affected more rapidly.[5] GVCs in industries with many suppliers and networks may diversify production across regions. Conversely, resource-intensive industries like mining may require longer time to transform.

References

ADB (2021), *Global Value Chain Development Report 2021: Beyond Production*, Asian Development Bank, Manila, Philippines, https://www.adb.org/publications/global-value-chain-development-report-2021 (accessed 12 June 2023). [67]

Andrenelli, A. et al. (2019), *Micro-Evidence on Corporate Relationships in Global Value Chains: The Role of Trade, FDI and Strategic Partnerships*, OECD Publishing, Paris, https://doi.org/10.1787/f6225ffb-en. [41]

Antràs, P. (2020), "De-globalisation? Global value chains in the post-COVID-19 age". [116]

Australian Government (2023), "Joint statement on the Supply Chain Resilience Initiative by Australian, Indian and Japanese trade ministers", https://www.dfat.gov.au/news/media-release/joint-statement-supply-chain-resilience-initiative-australian-indian-and-japanese-trade-ministers (accessed on 5 April 2023). [99]

Baldegger, R. and P. Schueffel (2010), "Measuring the performance of international SMEs – A scoping study", Institute for Entrepreneurship & SME, School of Business Administration Fribourg, Switzerland, https://www.kmu-hsg.ch/rencontres/Renc2010/Topics_2010/C/Rencontres_2010_Topic_C_Baldegger_Schueffel_f.pdf. [9]

Barrie, J. et al. (2022), "The role of international trade in realizing an inclusive circular economy", Royal Institute of International Affairs, https://doi.org/10.55317/9781784135393. [84]

Bas, M. and V. Strauss-Kahn (2015), "Input-trade liberalisation, export prices and quality upgrading", *Journal of International Economics*, Vol. 95/2, pp. 250-262, https://doi.org/10.1016/j.jinteco.2014.12.005. [14]

Bas, M. and V. Strauss-Kahn (2014), "Does importing more inputs raise exports? Firm-level evidence from France", *Review of World Economics*, Vol. 150/2, pp. 241-275, https://doi.org/10.1007/s10290-013-0175-0. [15]

Becker, B. et al. (2020), "FDI in hot labour markets: The implications of the war for talent", *Journal of International Business Policy*, Vol. 3/2, pp. 107-133, https://doi.org/10.1057/s42214-020-00052-y. [44]

Bolwijn, R. et al. (2020), "Global value chain transformation to 2030: Overall direction and policy implications", VoxEU, https://cepr.org/voxeu/columns/global-value-chain-transformation-2030-overall-direction-and-policy-implications. [65]

Bonadio, B. et al. (2020), "Global supply chains in the pandemic", *NBER Working Paper*, No. 27224. [126]

Cadestin, C. et al. (2019), "Multinational enterprises in domestic value chains", *OECD Science, Technology and Industry Policy Papers*, No. 63, OECD Publishing, Paris, https://doi.org/10.1787/9abfa931-en. [36]

Charbit, C. and C. Gatignol (2021), "Territorial attractiveness strategies for a resilient development. The case for reshoring policies". [92]

Choudhary, N. et al. (2022), "Does reshoring affect the resilience and sustainability of supply chain networks? The cases of Apple and Jaguar Land Rover", *British Journal of Management*, https://doi.org/10.1111/1467-8551.12614. [93]

Council of the European Union (2022), "Council gives final approval to tackling distortive foreign subsidies on the internal market", https://www.consilium.europa.eu/en/press/press-releases/2022/11/28/council-gives-final-approval-to-tackling-distortive-foreign-subsidies-on-the-internal-market/. [95]

Crespo, N., M. Fontoura and I. Proenca (2009), "FDI spillovers at regional level: Evidence from Portugal", *Papers in Regional Science*, Vol. 88/3, pp. 591-607. [16]

Criscuolo, C. and J. Timmis (2018), "GVC centrality and productivity: Are hubs key to firm performance?", *OECD Productivity Working Papers*, No. 14, OECD Publishing, Paris, https://doi.org/10.1787/56453da1-en. [45]

Criscuolo, C. and J. Timmis (2017), "The relationship between global value chains and productivity", *International Productivity Monitor*, Vol. 32, pp. 61-83. [18]

Dadush, U. (2022), "The future of GVCs and the role of the WTO", *Staff Working Paper ERSD-2022-11*, Economic Research and Statistics Division, World Trade Organization, https://www.wto.org/english/res_e/reser_e/ersd202211_e.pdf. [51]

Danish Ministry of the Environment (2021), *Action Plan for Circular Economy - National Plan for Prevention and Management of Waste 2020-2032*. [103]

De Backer, K. and D. Flaig (2017), "The future of global value chains: Business as usual or "a new normal"?", *OECD Science, Technology and Industry Policy Papers*, No. 41, OECD Publishing, Paris, https://doi.org/10.1787/d8da8760-en. [63]

de Sa, P. and J. Korinek (2021), "Resource efficiency, the circular economy, sustainable materials management and trade in metals and minerals", *OECD Trade Policy Papers*, No. 245, OECD Publishing, Paris, https://doi.org/10.1787/69abc1bd-en. [80]

Du, M. (2020), "Voluntary ecolabels in international trade law: A case study of the EU ecolabel", *Journal of Environmental Law*, Vol. 33/1, pp. 167-193, https://doi.org/10.1093/jel/eqaa022. [100]

EC (2022), "REPowerEU: A plan to rapidly reduce dependence on Russian fossil fuels and fast forward the green transition", European Commission, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_3131 (accessed on Working Paper). [96]

EC (2022), *Updated In-Depth Review of Europe's Strategic Dependencies*, European Commission, https://ec.europa.eu/docsroom/documents/48878. [111]

EC (2019), *Masterplan for a Competitive Transformation of EU Energy-intensive Industries Enabling a Climate-neutral, Circular Economy by 2050*, Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs, European Commission, https://data.europa.eu/doi/10.2873/854920. [105]

E-commerce Europe (2020), "Extended producer responsibility policies that work for SMEs in Europe", https://ecommerce-europe.eu/press-item/extended-producer-responsibility-policies-that-work-for-smes-in-europe/. [101]

Ellen MacArthur Foundation (2023), *Circular Economy Growth Potential by Sector*, https://ellenmacarthurfoundation.org/topics/finance/sector-insights. [28]

Ellen MacArthur Foundation (2022), "Building reslience: The impact of the circular economy non global trade and supply chains", https://ellenmacarthurfoundation.org/articles/building-resilience. [122]

ENISA (2021), *Threat Landscape for Supply Chain Attacks*, European Union Agency for Cybersecurity, https://www.enisa.europa.eu/publications/threat-landscape-for-supply-chain-attacks. [58]

EU (2022), *Regulation of the European Parliament and the Council on Foreign Subsidies Distorting the Internal Market, PE-CONS 46/22*, Brussels, 16 November 2022, European Union, https://data.consilium.europa.eu/doc/document/PE-46-2022-INIT/en/pdf. [94]

Eurostat (2018), *Community Innovation Survey 2018*, https://ec.europa.eu/eurostat/cache/metadata/en/inn_cis11_esms.htm. [7]

Farole, T. and D. Winkler (eds.) (2014), *Making Foreign Direct Investment Work for Sub-Saharan Africa: Local Spillovers and Competitiveness in Global Value Chains*, World Bank, https://doi.org/10.1596/978-1-4648-0126-6. [22]

Free Press, N. (ed.) (1962), *Diffusion of Innovation*. [130]

Gebauer, H., C. Saul and S. Joncourt (2016), "Use-oriented product service systems in the early industry life cycle", *Ekonomiaz*, Vol. 89/1, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwirkJf1tOr9AhWHTaQEHdiVAx8QFnoECEcQAQ&url=https%3A%2F%2Fdialnet.unirioja.es%2Fdescarga%2Farticulo%2F5487068.pdf&usg=AOvVaw3URoKywaAS9acgkUPbl5c8 . [31]

Gereffi, G. and Fernandez-Stark (2016), *Global Value Chains: A Primer, 2nd Edition*, The Duke Center on Globalization, Governance & Competitiveness. [40]

Gereffi, G., J. Humphrey and T. Sturgeon (2005), "The governance of global value chains", *Review of International Political Economy*, Vol. 12/1, pp. 78-104, https://doi.org/10.1080/09692290500049805. [38]

Gereffi, G. and X. Luo (2014), "Risks and opportunities of participation in global value chains", *Policy Research Working Paper*, No. 6847, World Bank, Washington, DC. [114]

IBM (2023), *Cost of a Data Breach 2022*, https://www.ibm.com/reports/data-breach. [59]

IEA (2021), *The Role of Critical Minerals in Clean Energy Transitions*, International Energy Agency, https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions. [124]

IEA (2014), *Capturing the Multiple Benefits of Energy Efficiency*, OECD/International Energy Agency, https://www.iea.org/reports/capturing-the-multiple-benefits-of-energy-efficiency. [27]

IMF (2022), "Global trade needs more supply diversity, not less", International Monetary Fund, https://www.imf.org/en/Blogs/Articles/2022/04/12/blog041222-sm2022-weo-ch4 (accessed on 12 January 2023). [87]

Jaax, A., S. Miroudot and E. van Lieshout (2023), "Deglobalisation? The Reorganisation of Global Value Chains in a Changing World", *OECD Trade Policy Papers*, Vol. 272. [62]

Jakob, M. (2022), "Globalization and climate change: State of knowledge, emerging issues, and policy implications", *WIREs Climate Change*, Vol. 13/4, https://doi.org/10.1002/wcc.771. [107]

Javorcik, B. (2020), "Reshaping of global supply chains will take place, but it will not happen fast", *Journal of Chinese Economic and Business Studies*, Vol. 18, pp. 321–325. [47]

Johnson, O. et al. (2021), "Toward climate-neutral heavy industry: An analysis of industry transition roadmaps", *Applied Sciences*, Vol. 11/12, p. 5375, https://doi.org/10.3390/app11125375. [118]

Keller, W. and S. Yeaple (2009), "Multinational enterprises, international trade, and productivity growth: Firm-level evidence from the United States", *The Review of Economics and Statistics*, Vol. 91/4, pp. 821-831. [17]

Kergroach, S. (2019), "National innovation policies for technology upgrading through GVCs: A cross-country comparison", *Technological Forecasting and Social Change*, Vol. 145, pp. 258-272, https://doi.org/10.1016/j.techfore.2018.04.033. [102]

Komaromi, A., D. Cerdeiro and Y. Liu (2022), "Supply chains and port congestion around the world", *International Monetary Fund Working Papers*, No. WP/22/59, https://www.imf.org/en/Publications/WP/Issues/2022/03/25/Supply-Chains-and-Port-Congestion-Around-the-World-515673. [50]

Kouvelis, P. (2022), "Paradoxes and mysteries in virus-infected supply chains: Hidden bottlenecks, changing consumer behaviors, and other non-usual suspects", *Business Horizons*, Vol. 65, pp. 469-479. [60]

Kumar, A., G. Prakash and G. Kumar (2021), "Does environmentally responsible purchase intention matter for consumers? A predictive sustainable model developed through an empirical study", *Journal of Retailing and Consumer Services*, Vol. 58, p. 102270, https://doi.org/10.1016/j.jretconser.2020.102270. [108]

Lejarraga, I. et al. (2016), "Upgrading pathways in the automotive value chain", Background document for the 7th Plenary Meeting of the OECD Initiative for Policy Dialogue on GVCs, Production Transformation and Upgrading, OECD, Paris, http://www.oecd.org/dev/Upgrading-pathways-in-the-automotive-value-chain.pdf. [19]

Lembcke, A. and L. Wildnerova (2020), "Does FDI benefit incumbent SMEs?: FDI spillovers and competition effects at the local level", *OECD Regional Development Working Papers*, No. 2020/02, OECD Publishing, Paris, https://doi.org/10.1787/47763241-en. [43]

López González, J. (2016), "Using Foreign Factors to Enhance Domestic Export Performance: A Focus on Southeast Asia", *OECD Trade Policy Papers*, No. 191, OECD Publishing, Paris, https://doi.org/10.1787/5jlpq82v1jxw-en. [12]

López González, J. and M. Jouanjean (2017), "Digital Trade: Developing a Framework for Analysis", *OECD Trade Policy Papers*, No. 205, OECD Publishing, Paris, https://doi.org/10.1787/524c8c83-en. [13]

Love, J. and S. Roper (2015), "SME innovation, exporting and growth: A review of existing evidence", *International Small Business Journal*, Vol. 33/1, pp. 28-48, https://doi.org/10.1177/026624261455. [128]

Lund, S. et al. (2020), "Risk, resilience, and rebalancing in global value chains", McKinsey Global Institute. [123]

Material Economics (2019), *Industrial Transformation 2050 - Pathways to Net-Zero Emissions from EU Heavy Industry*, University of Cambridge Institute for Sustainability Leadership (CISL), https://materialeconomics.com/publications/industrial-transformation-2050. [120]

McCarthy, A., R. Dellink and R. Bibas (2018), "The Macroeconomics of the Circular Economy Transition: A Critical Review of Modelling Approaches", *OECD Environment Working Papers*, No. 130, OECD Publishing, Paris, https://doi.org/10.1787/af983f9a-en. [34]

McKinsey & Company (2022), *Taking the Pulse of Shifting Supply Chains*, https://www.mckinsey.com/capabilities/operations/our-insights/taking-the-pulse-of-shifting-supply-chains. [77]

McKinsey & Company (2020), *Resetting Supply Chains for the Next Normal*, https://www.prideindustries.com/wp-content/uploads/2021/09/Resetting-supply-chains-for-the-next-normal.pdf. [68]

McKinsey & Company (2020), *Risk, Resilience, and Rebalancing in Global Value Chains*, https://www.mckinsey.com/capabilities/operations/our-insights/risk-resilience-and-rebalancing-in-global-value-chains#/. [54]

Miroudot, S. (2020), "Reshaping the policy debate on the implications of COVID-19 for global supply chains", *Journal of International Business Policy*, Vol. 3/4, pp. 430-442, https://doi.org/10.1057/s42214-020-00074-6. [72]

Miroudot, S. and C. Cadestin (2017), "Services In Global Value Chains: From Inputs to Value-Creating Activities", *OECD Trade Policy Papers*, No. 197, OECD Publishing, Paris, https://doi.org/10.1787/465f0d8b-en. [66]

Miroudot, S. and H. Nordström (2019), "Made in the world revisited", *Robert Schuman Centre for Advanced Studies Research Paper*, No. 84. [115]

Munten, P., J. Vanhamme and V. Swaen (2021), "Réduire les pratiques d'obsolescence du point de vue des systèmes produit–service orientés produit : un agenda de recherche", *Recherche et Applications en Marketing (French Edition)*, Vol. 36/2, pp. 45-80, https://doi.org/10.1177/0767370120984755. [32]

New York Fed (2022), *Global Supply Chain Pressure Index (GSCPI)*, Federal Reserve Bank of New York, https://www.newyorkfed.org/research/policy/gscpi#/overview. [52]

OECD (2023), *Fostering FDI-SME ecosystems to boost productivity and innovation*, https://www.oecd.org/cfe/smes/fdi-sme.htm (accessed on 21 June 2023). [97]

OECD (2023), *Keys to Resilient Supply Chains: Policy Tools for Preparedness and Responsiveness*, OECD, Paris, https://www.oecd.org/trade/resilient-supply-chains/ (accessed on 5 April 2023). [85]

OECD (2023), *OECD Data Lake on SMEs and Entrepeneurship*, https://www.oecd.org/cfe/datalake.htm (accessed 21 April 2023). [98]

OECD (2023), *OECD Data Lake on SMEs and Entrepreneurship*, https://www.oecd.org/cfe/datalake.htm (accessed 12 June 2023) (accessed on 21 April 2023). [127]

OECD (2023), *Policy Toolkit for Strengthening FDI and SME Linkages*, OECD Publishing, Paris, https://doi.org/10.1787/688bde9a-en. [23]

OECD (2023), *Policy Toolkit for Strengthening FDI and SME Linkages*, OECD Publishing, Paris, https://doi.org/10.1787/688bde9a-en. [5]

OECD (2023), *Regional Industrial Transitions to Climate Neutrality*, OECD Regional Development Studies, OECD Publishing, Paris, https://doi.org/10.1787/35247cc7-en. [78]

OECD (2023), "Risks and opportunities of reshaping global value chains", Working Party No. 1 on Macroeconomic and Structural Policy Analysis (CPE/WP1(2023)8), OECD Economics Department, OECD, Paris. [70]

OECD (2023), *Unleashing SME potential to scale up*, https://www.oecd.org/cfe/smes/sme-scale-up.htm (accessed on 21 June 2023). [90]

OECD (2022), *FDI in Figures - April 2022*, OECD, Paris, https://www.oecd.org/investment/investment-policy/FDI-in-Figures-April-2022.pdf. [53]

OECD (2022), *FDI Qualities Indicators: Measuring the Sustainable Development Impacts of Investment*, OECD, Paris, https://www.oecd.org/investment/fdi-qualities-indicators.htm. [20]

OECD (2022), *FDI Qualities Policy Toolkit*, OECD Publishing, Paris, https://doi.org/10.1787/7ba74100-en. [11]

OECD (2022), *Financing Growth and Turning Data into Business. Helping SMEs Scale Up*, OECD Publishing, Paris, https://doi.org/10.1787/81c738f0-en. [2]

OECD (2022), "Financing Growth and Turning Data into Business: Helping SMEs Scale Up", *OECD Studies on SMEs and Entrepreneurship*, OECD Publishing, Paris, https://www.oecd-ilibrary.org/industry-and-services/financing-growth-and-turning-data-into-business_6962c7a9-en (accessed on 11 October 2022). [91]

OECD (2022), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/81c738f0-en. [83]

OECD (2022), *OECD Economic Outlook, Interim Report March 2022: Economic and Social Impacts and Policy Implications of the War in Ukraine*, OECD Publishing, Paris, https://doi.org/10.1787/4181d61b-en. [104]

OECD (2022), "Securing reverse supply chains for a resource efficient and circular economy: What role for trade facilitation mechanism and standards?", COM/TAD/ENV/JWPTE(2021)1/FINAL, OECD, Paris, https://one.oecd.org/document/COM/TAD/ENV/JWPTE(2021)1/FINAL/en/pdf. [89]

OECD (2022), "The supply of critical raw materials endangered by Russia's war on Ukraine", *OECD Policy Responses on the Impacts of the War in Ukraine*, OECD Publishing, Paris, https://doi.org/10.1787/e01ac7be-en. [110]

OECD (2022), *Translating a Risk-based Due Diligence Approach into Law: Background Note on Regulatory Developments concerning Due Diligence for Responsible Business Conduct*, OECD, Paris, https://mneguidelines.oecd.org/translating-a-risk-based-due-diligence-approach-into-law.pdf. [24]

OECD (2021), *Building More Resilient and Sustainable Global Value Chains through Responsible Business Conduct*, OECD, Paris, https://mneguidelines.oecd.org/Building-more-resilient-and-sustainable-global-value-chains-through-responsible-business-conduct.pdf. [4]

OECD (2021), *Fostering Economic Resilience in a World of Open and Integrated Markets*, Report prepared for the UK Presidency of the G7, OECD, Paris, https://www.oecd.org/newsroom/OECD-G7-Report-Fostering-Economic-Resilience-in-a-World-of-Open-and-Integrated-Markets.pdf. [74]

OECD (2021), "Global value chains: Efficiency and risks in the context of COVID-19", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://doi.org/10.1787/67c75fdc-en. [125]

OECD (2021), "Measuring distortions in international markets: Below-market finance", *OECD Trade Policy Papers*, No. 247, OECD Publishing, Paris, https://doi.org/10.1787/a1a5aa8a-en. [106]

OECD (2021), "No net zero without SMEs: Exploring the key issues for greening SMEs and green entrepreneurship", *OECD SME and Entrepreneurship Papers*, No. 30, OECD Publishing, Paris, https://doi.org/10.1787/bab63915-en. [46]

OECD (2021), *OECD Economic Outlook, Volume 2021 Issue 2*, OECD Publishing, Paris, https://doi.org/10.1787/66c5ac2c-en. [48]

OECD (2021), *OECD SME and Entrepreneurship Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/97a5bbfe-en. [3]

OECD (2021), *The Digital Transformation of SMEs*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/bdb9256a-en. [37]

OECD (2020), "COVID-19 and global value chains: Policy options to build more resilient production networks", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://www.oecd.org/coronavirus/policy-responses/covid-19-and-global-value-chains-policy-options-to-build-more-resilient-production-networks-04934ef4/. [56]

OECD (2020), "International trade and circular economy - Policy alignment", COM/TAD/ENV/JWPTE(2020)2/FINAL, OECD, Paris, https://one.oecd.org/document/COM/TAD/ENV/JWPTE(2020)2/FINAL/en/pdf. [33]

OECD (2020), *OECD Workshop on International Trade and Circular Economy – Summary Report*, OECD, Paris, https://www.oecd.org/env/workshop-trade-circular-economy-summary-report.pdf. [121]

OECD (2019), *Business Models for the Circular Economy: Opportunities and Challenges for Policy*, OECD Publishing, Paris, https://doi.org/10.1787/g2g9dd62-en. [29]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [1]

OECD (2019), *Roundtable on Hub-and-Spoke Arrangements – Background Note*, OECD, Paris, https://one.oecd.org/document/DAF/COMP(2019)14/en/pdf. [75]

OECD (2016), *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, https://doi.org/10.1787/sti_in_outlook-2016-en. [64]

OECD (2011), *Attractiveness for Innovation: Location Factors for International Investment*, OECD Publishing, Paris, https://doi.org/10.1787/9789264104815-en. [109]

OECD (2008), *Enhancing the Role of SMEs in Global Value Chains*, OECD Publishing, Paris, https://doi.org/10.1787/9789264051034-en. [6]

OECD.Stat (2023), *ICT Access and Usage by Businesses (database)*, OECD, Paris, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS. [69]

OECD/APO (2022), *Identifying the Main Drivers of Productivity Growth: A Literature Review*, OECD Publishing, Paris, https://doi.org/10.1787/00435b80-en. [10]

OECD-UNIDO (2019), *Integrating Southeast Asian SMEs in Global Value Chains: Enabling Linkages with Foreign Investors*, OECD, Paris, http://www.oecd.org/investment/Integrating-Southeast-Asian-SMEs-in-global-value-chains.pdf. [21]

Pla-Barber, J., C. Villar and R. Narula (2021), "Governance of global value chains after the Covid-19 pandemic: A new wave of regionalization?", *BRQ Business Research Quarterly*, Vol. 24/3, pp. 204-213, https://doi.org/10.1177/23409444211020761. [71]

Rizos, V. et al. (2015), "The circular economy: Barriers and opportunities for SMEs", *CEPS Working Document*, No. 412, Centre for European Policy Studies, https://www.ceps.eu/ceps-publications/circular-economy-barriers-and-opportunities-smes/. [81]

Rizos, V. et al. (2021), "Barriers and enablers for implementing circular economy business models", https://www.ceps.eu/ceps-publications/barriers-and-enablers-for-implementing-circular-economy-business-models/. [82]

Schneider, J. (2020), *Future of Business Survey Methodology Note*, mimeo. [61]

Schneider-Petsinger, M. (2021), "US and European strategies for resilient supply chains. Balancing globalisation and sovereignty", Chatham House, https://www.chathamhouse.org/sites/default/files/2021-09/2021-09-10-us-european-supply-chains-schneider-petsinger.pdf. [86]

Schwellnus, C. et al. (2023), "Global value chain dependencies under the magnifying glass", *OECD Science, Technology and Industry Policy Papers*, No. 142, OECD Publishing, Paris, https://doi.org/10.1787/b2489065-en. [112]

Sharmina, M. et al. (2021), "Decarbonising the critical sectors of aviation, shipping, road freight and industry to limit warming to 1.5–2°C", *Climate Policy*, Vol. 21/4, pp. 455-474, https://doi.org/10.1080/14693062.2020.1831430. [119]

Sheffi, Y. (2015), "The power of resilience. How the best companies manage the unexpected", MIT Press, Cambridge, MA. [76]

St-Pierre, J. (2003), “Relations entre l"exportation, le développement organisationnel et la situation financière des PME canadiennes”, *Revue Internationale PME*, Vol. 16/2, pp. 61-82, https://doi.org/10.7202/1008439ar. [8]

Sun, X., F. Lettow and K. Neuhoff (2021), “Climate neutrality requires coordinated measures for high quality recycling”, *DIW Weekly Report*, Vol. 6, https://doi.org/10.18723/diw_dwr:2021-26-1. [79]

Szczepański, M. (2021), “Resilience of global supply chains. Challenges and solutions”, European Parliamentary Research Service, https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/698815/EPRS_BRI(2021)698815_EN.pdf (accessed on 12 January 2023). [88]

Tamminen, S. et al. (2020), *Trading Services for a Circular Economy*, Ministry for Foreign Affairs of Finland and the International Institute for Sustainable Development, https://www.iisd.org/system/files/2020-10/trading-services-circular-economy.pdf. [35]

Tsvetkova, A. et al. (2020), “The spatial dimension of productivity: Connecting the dots across industries, firms and places”*, OECD Regional Development Working Papers*, No. 2020/01, OECD Publishing, Paris, https://doi.org/10.1787/ba5edb47-en. [113]

U.S. Department of the Interior (2023), *Mineral Commodity Summaries 2023*, https://pubs.usgs.gov/periodicals/mcs2023/mcs2023.pdf. [117]

UNCTAD (2022), *Review of Maritime Transport: Navigating stormy waters*, https://unctad.org/rmt2022 (accessed 12 June 2023). [49]

UNCTAD (2013), *World Investment Report 2013: Global Value Chains: Investment and Trade for Development*, United Nations Conference on Trade and Development, https://unctad.org/en/PublicationsLibrary/wir2013_en.pdf. [39]

UNCTAD (2011), *World Investment Report 2011: Non-equity Modes of International Production and Development*, United Nations Conference on Trade and Development, https://unctad.org/en/PublicationsLibrary/wir2011_en.pdf. [42]

UNEP (2010), *PRE-SME - Promoting Resource Efficiency in Small & Medium Sized Enterprises*, United Nations Environment Programme, https://www.unep.org/resources/report/promoting-resource-efficiency-small-and-medium-sized-enterprises-industrial. [26]

Van Ostaeyen, J. et al. (2013), “A refined typology of product–service systems based on functional hierarchy modeling”, *Journal of Cleaner Production*, Vol. 51, pp. 261-276, https://doi.org/10.1016/j.jclepro.2013.01.036. [30]

Vlaanderen Circulair (2020), *Circulaire economie biedt bedrijven toekomstperspectief*, https://vlaanderen-circulair.be/nl/veerkracht. [25]

Wall Street Journal (2021), “Texas freeze triggers global plastics shortage”, https://www.wsj.com/articles/one-week-texas-freeze-seen-triggering-monthslong-plastics-shortage-11615973401. [57]

WMO (2021), “Weather-related disasters increase over past 50 years, causing more damage but fewer deaths”, World Meteorological Oganisation, https://public.wmo.int/en/media/press-release/weather-related-disasters-increase-over-past-50-years-causing-more-damage-fewer. [55]

Wright, M. et al. (2015), "Joining the dots: Building the evidence base for SME growth policy", *International Small Business Journal: Researching Entrepreneurship*, Vol. 33/1, pp. 3-11, https://doi.org/10.1177/0266242614558316. [129]

Zhan, J. et al. (2022), "Global value chain transformation to 2030: Overall direction and policy implications", VoXEU, https://cepr.org/voxeu/columns/global-value-chain-transformation-2030-overall-direction-and-policy-implications. [73]

Notes

[1] The quality of infrastructure in the host country, local labour-market conditions and limitations to capital flows, among other factors, can significantly alter FDI benefits for the host country.

[2] There is a considerable body of empirical literature suggesting a positive link between innovation and exporting (Love and Roper, 2015[128]). SMEs, which have a track record of innovation, are more likely to export, more likely to export successfully and more likely to grow from exporting than non-innovating firms (Wright et al., 2015[130])

[3] Adopters are early adopters when adoption rates are below 16% of the total business population. Early majority refer to adoption rates of 16-50%, late majority to rates of 50-66% and laggard to rates over 66% of the total business population. See Rogers (1962[130])) and OECD (2021[37]) for conceptual aspects.

[4] Data for this year's survey were collected from 113 supply chain leaders worldwide, representing organisations from a broad range of industries. The survey was conducted over a three-week period from the end of March to the middle of April 2022 (McKinsey & Company, 2022[77]).

[5] A case study in the semiconductor industry suggests that a 10-day disruption in production from a key foreign supplier caused additional supply chain problems that lasted 300 days.

5 Knowledge and innovation networks for SMEs and start-ups

Small and medium-sized enterprises (SMEs) need to transform and innovate, and their participation in global and local knowledge and innovation networks is essential to leapfrog. This chapter aims to provide a forward-looking view on how SME networks may evolve in the current global context, how governments can support small businesses to participate in different networks to source the strategic assets they need, and where further policy attention could be placed. The chapter first explores the notion of networks and their impact on SME innovation, resilience and growth. It then looks at structural and emerging trends across different types of SME knowledge and innovation networks, including strategic partnerships and clusters, highlighting disruptions of increasing magnitude that these networks have experienced in recent years. The last section presents an overview of key policy orientations in the field, based on an experimental mapping of 601 national policies and 150 institutions in support of SME network expansion across the OECD.

In Brief

- Small- and medium-sized enterprises (SMEs) need to transform and innovate, and their participation in global and local knowledge and innovation networks is essential to leapfrog. Recent years have seen network disruptions of increasing magnitude and SMEs' capacity to be reliable and resilient nodes in these emerging networks is critical, both for SMEs and networks.
- Clusters are increasing SME connections. Cluster management organisations play important roles in building groups of SMEs and start-ups in related sectors and activities and developing networking among them and with large firms and research organisations.
- For a few high-performing SMEs, dynamic venture capital (VC) markets provide networking opportunities, although there are recent signs of inflexion and integration in disruptive research and development (R&D) networks has intensified. The global R&D system has shown extraordinary resilience during the recent downturn, as actors, small and large alike, aimed to preserve their research capacities. SMEs in these increasingly interconnected and globalised networks are more R&D-intensive and conduct more risky and disruptive research.
- Open innovation and partnership continue to spread, bringing a broader population of SMEs into innovation, digitalisation and related networks. Universities and public research institutions (PRIs) play a key role in technology transfer. The providers of knowledge-intensive business services (KIBS) increasingly act as co-producers of innovation for SMEs lacking internal capacities.
- Digital platforms are increasingly used by small firms to access and drive innovation. The smallest gaps between small and large enterprises in sourcing knowledge relate to the use of digital platforms (e.g. social media, open source software, open business-to-business [B2B] platforms).
- SMEs have seen a massive migration to cloud and platform technologies. In 2021, the use of social media had become mainstream, with adoption by 59% of small and 70% of medium-sized firms (83% for large firms). The share of SMEs purchasing cloud computing services has doubled in less than six years. This acceleration reflects the increasing value of data for business intelligence and firms moving to the cloud not only for technology upgrading but also, increasingly, for sourcing and instilling business innovation.
- However, despite progress, SME integration into knowledge and innovation networks remains uneven and fragile. There is a growing risk of exclusion for those that do not perform R&D, do not access professional networks or equity finance, or do not use platform technologies. Most SMEs lag in R&D and in accessing VC, and large digital gaps remain, in particular with respect to capacities to react to increasing risks of cyberattacks.
- Rising cybersecurity risks have made exposure and risk management capacity key factors in partnership decisions. The preparedness of SMEs to respond to data breaches remains low, turning them into potential gateways to infiltrate broader networks. The growing number of digital incidents in KIBS is particularly alarming, because of their role in bridging specialised knowledge gaps of SMEs. There is an urgent need to secure cloud connections, software supply chains and customer networks.
- There are also signs that breaches in advanced innovation networks could enlarge. The global R&D system is organised into regionalised and specialised blocks, reducing SMEs' chances to evolve across different networks, or to differentiate. The concentration of activities, investments

and interests could increase territorial and industrial inequalities, innovation capacity and benefits accumulating in a few firms, sectors and places.

- Governments deploy a broad range of measures – some targeted directly at specific actors, others more generic – to support SME integration into (global) knowledge and innovation networks. Indeed, about one-third of policies aim at connecting SMEs to those networks. Moreover, the current distribution of public efforts highlights a preference for more "traditional" innovation channels, notably contractual or collaborative R&D, thus suggesting a possible misalignment with the "innovation reality" that many SMEs face, as most of them tend to rely on other mechanisms – notably KIBS – to carry out innovation activities.
- Innovation-related network policies also display a strong international orientation, with about half aiming to strengthen SME connections to international innovation partners. At the same time, less than 15% of policies across the OECD leverage digital platforms to expand SME innovation networks, pointing to significant untapped potential. In addition, efforts to connect the potentially most promising firm populations – e.g. start-ups or high-potential SMEs – to innovation networks are spread unevenly and do not feature in the policy mix of all countries.

Introduction and background

To build back better after COVID-19, restore productivity and economic growth, and move towards more sustainability and resilience, SMEs need to transform and innovate. Through their networks, they can overcome size-related barriers to accessing knowledge, technology, data and skills, finding new business partners, diversifying markets and sources of finance, and capturing knowledge spillovers. Networks enable them to create external economies of scale through process optimisation and more cost-efficient sourcing and knowledge creation. Networks are therefore strategic assets for smaller businesses to achieve greater innovation, resilience and growth (OECD, 2019[1]; 2022[2]) (see Chapter 2).

In a global environment where actors are increasingly interconnected and interdependent, it is critical that SMEs gain adaptative capacity and operate as reliable and resilient nodes in changing networks. This is critical for SMEs, networks and all actors in those networks. The massive disruptions that hit global business and knowledge networks during the COVID-19 crisis and following Russia's war of aggression against Ukraine, as well as the growing frequency and magnitude of the other shocks, e.g. natural disasters and cyberattacks, call for a better understanding of the risks, challenges and opportunities presented by networks for SMEs and in particular their possible impact on SME transformations.

Networks for SMEs, described here as SME networks, can take different forms and are not limited to buyer-supplier relationships. While Chapter 3 of this report discusses the reconfiguration of global production networks and their ability to generate innovation and knowledge spillovers, this chapter looks more closely at networks that are often leveraged on, by design, to drive or foster innovation spillovers, including strategic partnerships and clusters, and their policy implications. Knowledge and innovation networks connect SMEs with actors of global, national and regional innovation systems through collaborative R&D, open innovation and technology transfer. KIBS and digital platforms and technologies (such as cloud computing) are instrumental in connecting SMEs to these knowledge and innovation networks. Strategic partnerships link SMEs with business partners through contractual agreements, joint ventures, consortia, etc., often for innovation or commercialisation purposes. Clusters operate as networks of networks, with strong specialisation and spatial concentration features (see Chapter 2 for more detailed definitions).

This chapter aims to provide a forward-looking view on how SME networks may evolve in the current global context, how governments can support smaller businesses to participate in networks to source the strategic assets they need and where further policy attention could be placed. The first section briefly explores the notion of networks and their impact on SME innovation, resilience and growth, based on a literature review and joint EC/OECD work on network expansion for helping SMEs scale up (OECD, 2023[3]) (see also Chapter 2). The second section looks at structural and emerging trends in SME knowledge networks, focusing on innovation networks, strategic partnerships and clusters, combining empirical, survey and case study evidence. The last section presents an overview of key policy orientations in the field, based on an experimental mapping of 601 national policies and 150 institutions in support of SME network expansion across the OECD.

Issue: The importance of knowledge and innovation networks for SMEs and start-ups

Accessing knowledge networks is critical for SMEs to innovate and transform. Firms seldom innovate in isolation and networks of innovation involving multiple actors are the rule rather than the exception (DeBresson, 1996[4]). Collaborative firms, even smaller ones, tend to be more innovative than non-collaborative ones, even larger firms (see Chapter 2) (OECD, 2004[5]; Eurostat, 2022[6]). This is because innovation results from the accumulation of increasingly specialised knowledge and knowledge-based capital that calls for co-operating and opening innovation to gain efficiency and reduce time to market

(Chesbrough, 2003[7]). Indeed, networks are increasingly seen as an innovation asset (Corrado et al., 2005[8]; OECD/Eurostat, 2018[9]).

The shift towards "open innovation" has considerably reduced the investments needed to access innovation assets, making the innovation endeavour more accessible to SMEs (OECD, 2010[10]; 2019[1]). Firms source knowledge from outside, including from their customers, investors and suppliers, as well as from internal resources (Kratzer, Meissner and Roud, 2017[11]). Strong networks are, for instance, fundamental for driving business development and innovation in the cultural and creative sectors (CCS) (i.e. design, music, dance, videogames, architecture, advertising and museums), where the majority of firms are micro firms (Box 5.1). The importance of networks and collaboration is indeed often considered a defining characteristic of this sector (Potts et al., 2008[12]).

Box 5.1. Innovation networks in cultural and creative sectors and effects on the wider economy

Strong networks are fundamental for driving business development and innovation in the CCS. Firms in CCS are smaller than in the rest of the economy, with a higher proportion of micro enterprises (96.1% vs. 88.9%). They rely more on freelance workers and engage more in project-based, temporary forms of organisation and work. Workers there are more than twice as likely to be self-employed (29% vs. 14%) and are also more likely to have multiple jobs (7% vs. 5%).

Networking and collaboration take place between firms in the same CCS subsector, between firms in different CCS, as well as with other sectors of the economy. CCS firms tend to "cluster" in particular locations (Casadei et al., 2023[13]) to enable stronger horizontal and vertical linkages and share resources and capabilities. The labour pool is particularly important, considering the heavy use of freelance workers, who tend to move between different CCS sectors and non-CCS companies and work on different projects at different times. As such, freelancers can be thought of as the bees who help to cross-pollinate ideas between firms within a cluster.

CCS businesses tend also to rely more on intangible assets and have less formal R&D structures, meaning that they can struggle more to access finance and grow.

CCS have important spillovers to other economic activities, through the diffusion of ideas, skills and knowledge developed in the CCS.

CCS employment accounts for around 1 in 25 jobs on average in the OECD area and as many as 1 in 10 in some major cities. Yet around 40% of CCS employment can be found outside of CCS (e.g. industrial designers working in the automotive industry), highlighting their pervasive importance throughout the economy.

Moreover, CCS businesses are highly innovative and contribute directly to innovation in other sectors through collaboration, interdisciplinary research projects and "soft innovation" across supply chains (i.e. innovations which are primarily aesthetic). The previous decade saw a surge in interdisciplinary projects and business models, with CCS businesses feeding into health, education and high-technology sectors.

Source: OECD (2022[14]), *The Culture Fix: Creative People, Places and Industries*, https://doi.org/10.1787/991bb520-en.

Networks can enable leapfrogs, to compensate for limited internal capacities (Hilmersson and Hilmersson, 2021[15]). For example, networks, linking SMEs among themselves, SMEs with small and large players of the digital industry, or with public actors (e.g. through accelerators, digital innovation hubs, etc.), can be efficient channels for the digital transformation of SMEs (OECD, 2021[16]) and were extensively mobilised or reinforced during the COVID-19 pandemic to help SMEs move online quicker (OECD, 2021[17]).

Networks can be a source of resilience. Indeed, networks that have a certain degree of redundancy and diversification in their linkages, enable flexibility to cope with uncertainty and reduce interdependencies, and promote a risk management culture are more likely to avoid disruptions (anticipation), reduce the costs of the shocks (mitigation) and bounce back faster after (adaptation) (Brende and Sternfels, 2022[18]; OECD, 2004[5]; 2023[19])(see also Chapter 2 and Chapter 4 for production networks). Knowledge networks in particular channel skills, data, technology and finance contribute to SME agility, reactivity and innovation.

Knowledge and innovation networks are also key to the digital and green transition of SMEs. They support the creation and wide diffusion of digital solutions and green and eco-tech innovation (WTO, 2021[20]; OECD, 2021[16]).

However, despite the benefits of network integration, smaller businesses have a more limited number of business partners, suppliers and customers and are less likely to co-operate on R&D and innovation activities with external partners (OECD/Eurostat, 2018[9]). Moreover, despite considerable progress in recent years, they continue to lag behind larger firms in the use of digital platforms and digital tools that could support networking (OECD, 2019[1]; 2021[16]; 2023[19]). In addition, SMEs have more limited capacities to take advantage of their integration. In fact, a key challenge for SMEs is to identify and connect to appropriate knowledge partners and networks and to develop the necessary skills and management practices for co-ordinating and integrating external knowledge in in-house practices and innovation processes (OECD, 2015[21]; 2004[5]).

SME integration into knowledge and innovation networks will increasingly depend on their ability to comply with evolving sustainability standards and other regulatory requirements such as environmental, social and governance (ESG) criteria and responsible business conduct (RBC) requirements.

SMEs amidst shifting innovation networks: Structural and emerging trends

Even before the COVID-19 pandemic, SME networks were continuously adapting to transformations in the global economy, transformations driven by technological change, shifting patterns of trade, the rise of open innovation, geopolitics and the imperatives of achieving climate neutrality. The same networks have also adapted to systemic shocks, e.g. economic crises, cyberattacks, natural disasters, etc. There are various examples of innovation and production networks mutating in search of greater resilience and efficiency across places and industries (Box 5.2).

The COVID-19 pandemic and, more recently, Russia's war of aggression against Ukraine have created new conditions for firms, large and small alike, to reassess their networks in virtually all stages of their business – from the development of new technologies, or innovation, to their production and commercialisation. SME preparedness and capacity to be reliable, innovative and resilient nodes in these emerging networks is critical, for the SMEs, the networks and the global economy.

The next section discusses structural and emerging trends that may affect SME innovation networks, partnerships and clusters. Shifts in production networks and global value chains (GVCs) are explored in more detail in Chapter 3. In the absence of timely and comprehensive data, or data at all, the analysis presents complementary empirical, survey and case study evidence to understand the magnitude and direction of these changes and explore their possible impact on SMEs and SME policies.

Box 5.2. How networks transform for greater efficiency and resilience: Selected examples

The city of Pittsburgh (US): From steel city to "Roboburgh"

To adapt to technological and market changes, beginning in the mid- to late-20th century, Pittsburgh's economy has transformed from a declining steel industry that used to benefit from proximity to regional coal reserves to a hotbed for robotics and artificial intelligence. Success factors included a wide network of small suppliers and enterprises with expertise in engineering and manufacturing robot components and software, the presence of large multinationals with operations, research offices and investments locally, a dense network of incubators, accelerators and technology transfer offices, co-operation with a world-class university in computer science and an ecosystem of multidisciplinary colleges and universities.

Fukushima (Japan): Rebuilding after the triple disaster

To rebuild the area of Fukushima after the devastating earthquake, tsunami and nuclear meltdown in 2011, local SMEs, governments, research institutions, universities, schools and communities and the Tokyo Electric Power Company have deployed collective efforts to create a new cluster around the decommissioning industry (and the dismantling of the Daiichi Nuclear Power Station). Action includes developing local SME capacity for creating local supply chains, engaging them in world-class technology developments with universities and research institutions, and diversifying the local economy.

Brainport (Netherlands): Opening innovation

To recover after the departure of Philips corporation, the largest local employer and a dominant firm in Eindhoven (the largest city of Zuid-Nederland), more dynamic and open approaches to innovation were adopted, with the establishment of a knowledge campus and the creation of spinoffs from existing activities. The strengthening of the "knowledge triangle" was exemplified by new governance arrangements bringing together the mayor of Eindhoven, the president of the Eindhoven University of Technology, and the president of the chamber of commerce in order to combine efforts of the three sectors and mobilise stakeholders in the fields of health, mobility, energy and food high technology (tech).

Cybersecurity Tech Accord: Building safer online communities through collaboration

During a period of escalating cyberattacks (e.g. WannaCry and NotPetya) that significantly disrupted business operations worldwide, a group of leading tech companies developed and signed the Cybersecurity Tech Accord (April 2018) with the aim of empowering users, customers and developers to strengthen cybersecurity protection. A key principle of the accord was to create partnerships between companies and like-minded groups to enhance collective cybersecurity. As of 2023, the accord has been signed by over 150 companies from all over the world (Dobrygowski, 2019[22]).

Source: OECD (2022[23]), "From recovery to resilience: Designing a sustainable future for Fukushima", https://doi.org/10.1787/e40cbab1-en; OECD (2019[24]), *Second Japan/OECD Policy Dialogue Decommissioning Industry Cluster Development*, OECD, Paris; Dobrygowski, D. (2019[22]), "Why companies are forming cybersecurity alliances", https://hbr.org/2019/09/why-companies-are-forming-cybersecurity-alliances.

Clusters are increasing SME connections

Clusters play an important role in supporting the network expansion and integration of SMEs in support of their innovation development. Clusters tend to be seen as local concentrations of interconnected firms and organisations in a related field, such as a key industry for a regional economy but there is an increasing focus on embedding the players in regional clusters in broader national and international networks, and in promoting the diversification of clusters into higher-value-added activities (see OECD (2021[25])). Entrepreneurship and innovation policies may support multiple clusters in a region, if the region has a sufficiently diversified and specialised economy, and there are large numbers of local clusters in the world. For example, the European Union (EU) Cluster Collaboration Platform (ECCP) includes over 1 500 clusters across more than 200 EU-27 regions, accounting for 25% of total EU employment, with SMEs accounting for 75% of their members (ECCP, 2022[26]).

There has been an increase in the number of formal cluster organisations created in recent years. The number of formal cluster organisations participating in the ECCP almost doubled across Europe in the period 2010-22, growing to 541 cluster associations in total. More than 70% of these organisations are concentrated in 3 sectors: digital, environmental and logistic services, though there has been a more recent increase in the number of clusters focusing on biopharmaceuticals and medical services (ECCP, 2022[26]). At a more disaggregated industry level, around 40% of clusters (with industry information available) are linked to the manufacturing sector.

Clusters are a key channel for promoting knowledge flows. SMEs in clusters benefit from access to knowledge from other firms and organisations with related activities within the cluster, such as universities and research organisations, specialised suppliers, sophisticated customers and trade bodies. SMEs will often increase their innovation capabilities by attracting skilled labour from other firms or institutions in a cluster and by undertaking R&D and other innovation collaborations with other firms and universities in the cluster. Cluster policies support these knowledge flows by brokering and incentivising local and global knowledge networks. Of particular importance is connecting SMEs and start-ups with research organisations and universities to exploit knowledge generated by research. Cluster policy often includes support for cluster management organisations, which are formal organisations with cluster management agents who play the role of account managers who work with specific firms and research organisations to their development needs and collaboration opportunities. Cluster management organisations are most effective when they have relatively long-term and free funding to provide relevant budgets for joint research and skills development projects and offer start-up support in their clusters, as well as operational support for brokerage.

A key development area for cluster policies is to generate stronger global connections across cluster members, as evidenced by efforts to “internationalise” clusters. The European Union and United States signed in 2015 a co-operation arrangement to facilitate transatlantic linkages between clusters in both regions and help SMEs find strategic partners. More recently, the European Union launched 30 joint cluster initiatives (Euroclusters), with more than 170 European cluster organisations from 22 different EU member states and including all 14 industrial ecosystems identified for the EU industrial policy. The ClusterXchange pilot programme also exemplifies how the EU aims to promote transnational co-operation, peer learning, networking and innovation uptake between actors of industrial clusters located in different countries (ECCP, 2023[27]). These cross-border exchanges aim to identify growth opportunities and strengthen connections between industrial ecosystems.

Cluster policies are also increasingly aiming at actions to help transition clusters towards higher-value activities by creating linkages across industries. Cluster policies are increasingly seeking to create new industry path development opportunities through related and unrelated diversification, i.e. either diversifying the cluster into a new related industry building on competencies and knowledge of existing industries in the region, or diversifying into a new industry based on unrelated knowledge combinations. Cluster management organisations can build this type of diversification by creating connections among

firms and research organisations across industry boundaries. For example, policy is seeking to generate a high-value functional food cluster in Chiang Mai and Chiang Rai in northern Thailand by connecting advanced applied research undertaken in national research laboratories and universities to start-ups and existing SMEs with innovation capabilities through innovation and entrepreneurship projects supported by Northern Science Park (OECD, 2021[25]). Similarly, cluster actors in Cambridgeshire are supporting the diversification of engineering firms in medical devices to nuclear containers by supporting interactions with researchers and customers with these related knowledge and competencies (OECD, 2021[28]).[1] A key tool for success involves cluster management organisations supporting networking across the boundaries of sectors as well as building links across different cluster management organisations, including collaborations on joint visions as well as specific innovation initiatives.

Clusters are also changing to respond to the imperatives of the twin transition, often driven by public action. If policy makers continue to view clusters as catalysts for entrepreneurship and innovation, their priorities are shifting, from promoting the creation and strengthening of existing clusters to enabling them to adapt to the requirements of digitalisation and Industry 4.0, the transitioning to a circular economy and the need for reducing carbon emissions (Kuberska and Mackiewicz, 2022[29]).

At the national level, some countries have aimed to consolidate their clusters into superclusters to drive innovation in strategic areas and broad industrial ecosystems, e.g. Denmark has opted to channel public support to fewer but stronger clusters, following the model of the Canadian super clusters (OECD, 2022[30]). The expectation is to reach a world-class level and capacity more effectively than what smaller, specialised clusters can achieve (Denmark Cluster Excellence, 2022[31]).

For a few high-performing SMEs, dynamic VC markets provide strong network spillovers

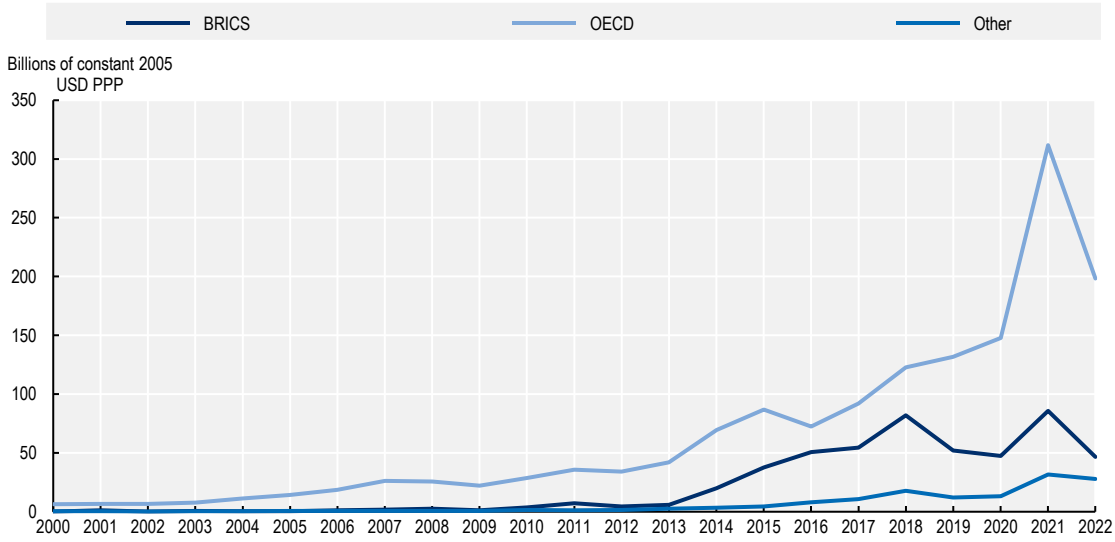
Although most SMEs do not or are unable to tap into VC, VC firms and investors are key strategic partners for promising start-ups. Beyond financing, venture capitalists, business angels and VC funds help the firm develop a strategy and provide managerial advisory and network connections in exchange for shared ownership of the business (Gompers and Lerner, 2001[32]). Mentoring, business advice and access to networks offered with equity finance improve the success rate of start-ups and SMEs while providing them with resources to better adapt to new business conditions and changes in consumer behaviour (OECD, 2022[33]). More generally, VC markets provide opportunities for SMEs to network with a broader innovative ecosystem. In the business angel market, for instance, public action has largely focused on improving information flows and networking opportunities between financiers and entrepreneurs (OECD, 2015[34]). Although only a small share of SMEs across OECD countries are supported by equity means, the analysis of VC investments and firms provides a glimpse of how business applications of disruptive technologies are being financed and the role of strategic partners in start-up growth.[2]

VC investments doubled in 2021, expanding the professional network potentially available to start-ups, albeit slowing in 2022. VC markets have rapidly grown across OECD countries in the last decade. After a sharp decline at the beginning of the pandemic, equity finance recovered fast (OECD, 2021[17]). SMEs in health, science and engineering, telecommunications, agriculture and farming, and education experienced the largest increase in funding relative to the year before (2019-20). Following Russia's war against Ukraine, VC funding in 2022 significantly increased for firms operating in energy and sustainability, agriculture and farming and government and military. However, with the recent failure of the Silicon Valley Bank, VC capitalists have become more cautious. This trend is likely to continue in the first half of 2023, limiting access to VC and VC networks in the coming months (Grabow, 2023[35]).

The growth in VC funding has come with an effective increase in start-up networks. On average, the number of investors per funding round has been increasing over the last decade from 2.13 investors in 2012 to around 3.3 investors in 2022. While this may be suggestive of risk sharing among investors and an increase in the popularity of VC markets, this trend may open many new networking opportunities for innovation and financing of these SMEs.

Figure 5.1. OECD VC investments surged in 2021 but slowed in 2022, back to historical trends

Total VC investments in OECD and Brazil, Russia, India, and China (BRIC) countries, 2000-22



Note: VC funding in OECD countries for the period 2000-20. VC deals include pre-seed, seed, angel, series funding, convertible bonds, growth funding, late-stage funding and other, less conventional sources of funding such as media for equity and product crowdfunding. They exclude mergers and acquisitions, initial public and coin offerings, post- initial public offering (IPO) funding rounds, debt finance, secondary market finance and investments in more mature and established firms.
Source: Based on Crunchbase.

StatLink https://stat.link/tai80q

For a few high-performing SMEs, integration in – often more disruptive – R&D networks is intensifying

SME expenditures in R&D provide a broad measure of the degree of SME integration into global innovation networks.[3] While firms perform R&D on the basis of the technology, equipment, human capital and knowledge-based capital (e.g. data, patents, software) they have accumulated, many, especially SMEs, given more limited capacities, source R&D from external providers and partners, including increasingly through co-creations. The R&D endeavour has increasingly become a co-operative activity requiring partnering and sharing in order to access increasingly specialised knowledge and bear the growing costs of research.

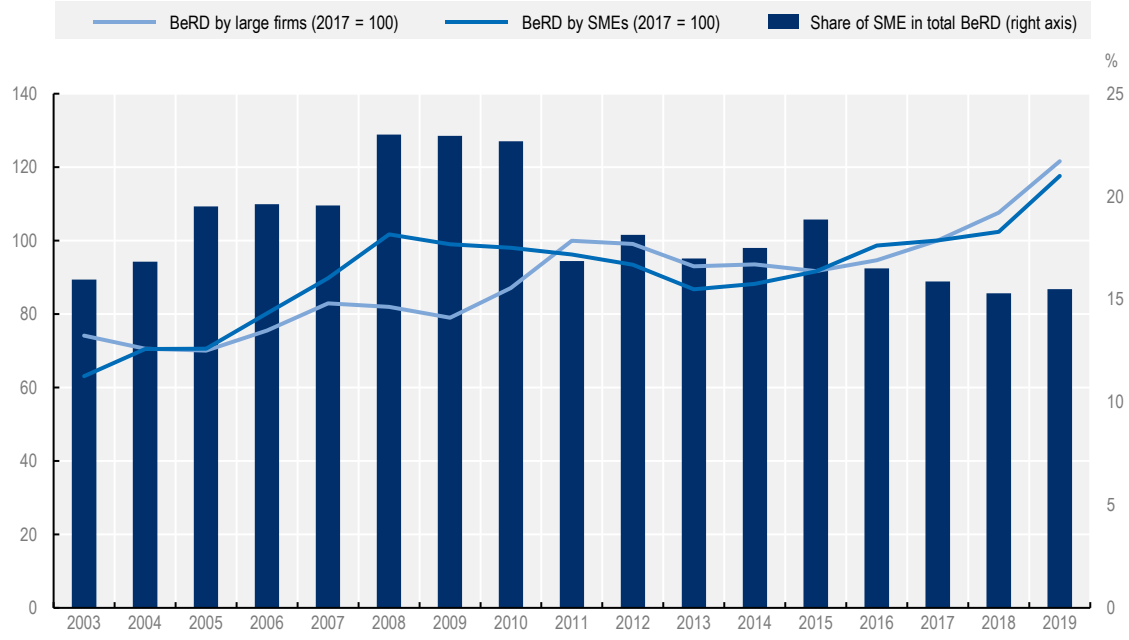
SME R&D investment is intensifying, now as rapidly as large firms. SME expenditures in R&D have accelerated since 2013, following the decline in the wake of the global financial crisis, with growth in recent years keeping pace with larger firms (Figure 5.2). The growing R&D investment by SMEs is partly related to the decline in the industrial concentration of R&D in countries, meaning more R&D is performed in services sectors where SMEs are in the majority, as well as greater adoption of more generous R&D tax (Appelt et al., 2022[36]).

Although the majority of SMEs do not engage in R&D, smaller and younger performers have high levels of R&D intensity, compared to their size, and they invest the largest share of their business R&D expenditure into basic and applied research, which is riskier but can bring more disruptive outcomes (Appelt et al., 2022[36]) (Figure 5.3). In fact, growth in strategic sectors such as software, nanotechnology, biotechnology and clean technologies, is largely driven by new and small firms, which often bear the risks and costs of early market developments (OECD, 2019[1]).

These results are consistent with more recent data from the EU Industrial R&D Investment Scoreboard that monitors investment by the top 2 500 R&D investors – companies that invested the largest sums in R&D worldwide (Grassano et al., 2022[37]). Among these 2 500 world leaders, around 5-8% of companies in the list are SMEs and this share is fairly stable at 7-8% since 2016. A pooled cross-section analysis over the period 2014-21 shows that SMEs have a significantly higher intensity than larger firms (defined as R&D per employee) and the volume of their R&D and their R&D intensity increased significantly in the period of analysis. In financial terms, SMEs generally spend between EUR 100 000 to EUR 200 000 more on R&D per employee than larger firms. However, further analysis indicates that in 2021 the R&D intensity gap between SMEs and larger firms actually decreased.

Figure 5.2. SMEs' R&D spending has accelerated in recent years, catching up with large firms

Business R&D expenditure growth, by firm size, OECD cross-country average, index (2017=100)

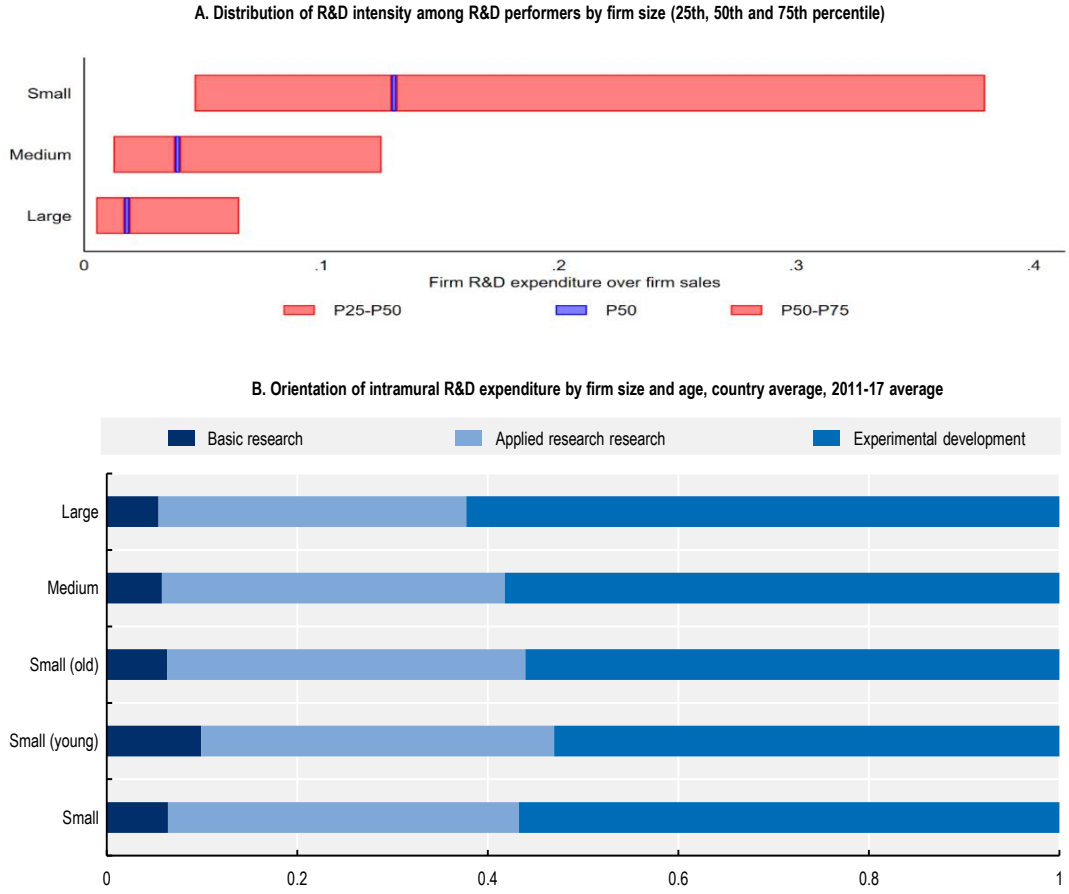


Note: Cross-country average of R&D expenditure performed in the business enterprise sector in 2015 USD constant PPPs. Data include total business enterprise intramural expenditure on R&D by size class. Some missing values, mainly due to the timing of data collection, were interpolated for Austria, Belgium, Canada, Denmark, Estonia, Germany, Greece, Ireland, Luxembourg, Norway, New Zealand, Sweden and Switzerland.

Source: OECD (n.d.[38]), *Research and Development Statistics (RDS) (database)*, https://www.oecd.org/sti/inno/researchanddevelopmentstatisticsrds.htm.

StatLink https://stat.link/pj1bgc

Figure 5.3. Smaller R&D performers tend to spend relatively more on R&D and do more basic and applied research



Note: Panel A. The figure displays averages across countries. It is based on average values across all years available for a given country in the period 2011-16. Countries: AUS, AUT, BEL, CHL, CZE, FRA, DEU, IRL, ISR, JPN, NZL, PRT, ESP, SWE. The micro-aggregated statistics reported for Ireland are based on tax relief microdata and are not directly comparable with the R&D survey-based results reported for other countries.
Panel B. The figure displays averages across countries. Country-specific effects have been removed by subtracting country-specific means and replacing them with the overall population mean. The figure is based on average values across all years available for a given country-industry in the period 2011-2016. Countries: AUS, AUT, BEL, CHE, CHL, CZE, FRA, DEU, ISR, ITA, JPN, NLD, NOR, PRT, ESP, SWE.
Source: OECD (2021[39]), *The OECD micro BeRD Project*, https://oe.cd/microberd.

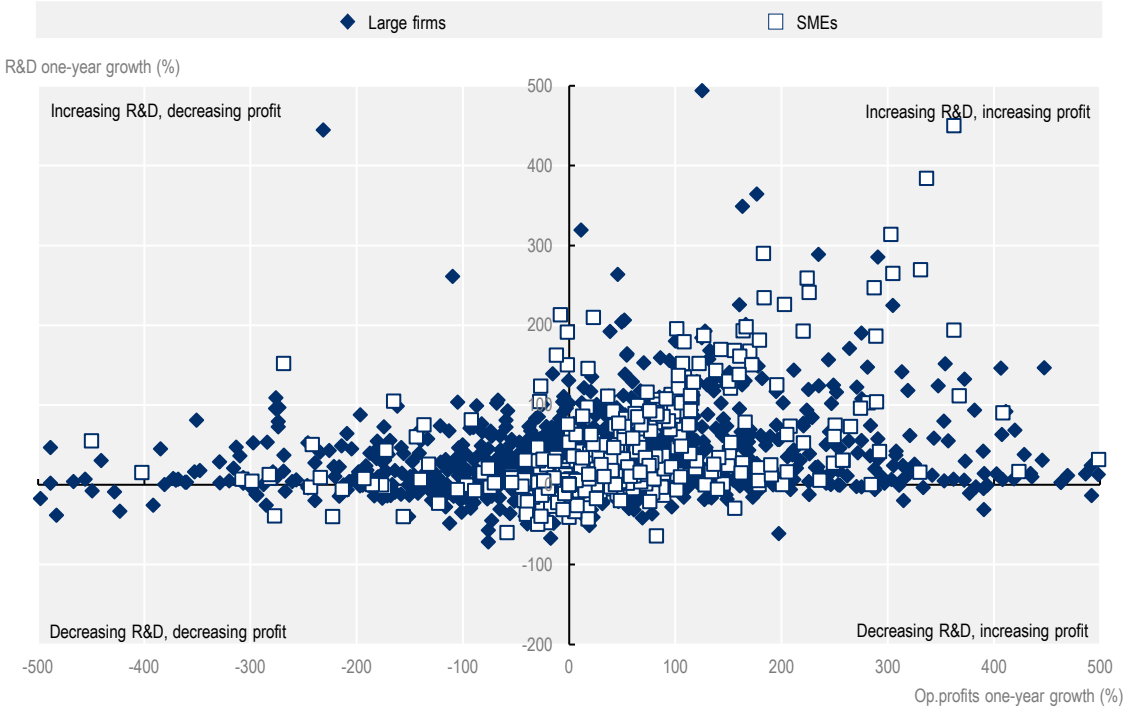
StatLink https://stat.link/mb4lk8

Growing spending by the top global R&D investors has accelerated, for both small and large firms. The COVID-19 crisis was the first time on record in which a global recession did not lead to a drop in global R&D expenditures. R&D expenditure in the OECD area grew by 1.5% in real terms in 2020 (OECD, 2022[40]), outpacing gross domestic product (GDP) growth in all major economies. The top 2 500 global R&D investors, equivalent to 86% of the world's business-funded R&D, passed the EUR trillion mark for the first time in 2021 (Grassano et al., 2022[37]), with R&D investment increasing by 83.4%, in the previous 10 years, compared to an increase of 33.5% of net sales and 17.7% in employment. The fastest increases were observed in the automotive and transport manufacturing sectors for EU firms and the information and communication technology (ICT) manufacturing and services and health industries for US firms. The resilience of R&D networks during the COVID-19 pandemic reflects that they were an integral part of the

response to the crisis (Figure 5.4). Moreover, short-term indicators signal a significant recovery in business R&D spending (7% for 2021, compared to 2% in 2020) (OECD, 2022[40]).

Figure 5.4. Most influential R&D actors, small and large alike, have kept growing R&D capacity despite difficult economic conditions

R&D and operational profits, one-year growth (%), top 2 500 world R&D investors, by firm size, 2020-21



Note: Each dot represents one enterprise. SMEs are defined as enterprises with net sales below USD 500 million. SME definition employment-based.
Source: Based on Grassano, N. et al. (2022[37]), *The 2022 EU Industrial R&D Investment Scoreboard*, https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard.

StatLink https://stat.link/7k4mtu

Open innovation and partnerships continue to spread including to a broader population of SMEs

SMEs are participating in knowledge and innovation networks that have become more international and collaborative in nature. Co-patenting and co-authorship are common indicators to monitor co-operation in knowledge and innovation networks, including across borders. The share of patents invented outside the United States in the total filed in the United States Patent and Trademark Office (USPTO) increased significantly over the past decade, from 11.3% in 2001 to 18.6% in 2019 (OECD, 2019[1]). A similar, albeit more modest, trend is observed in the European Patent Office (EPO).

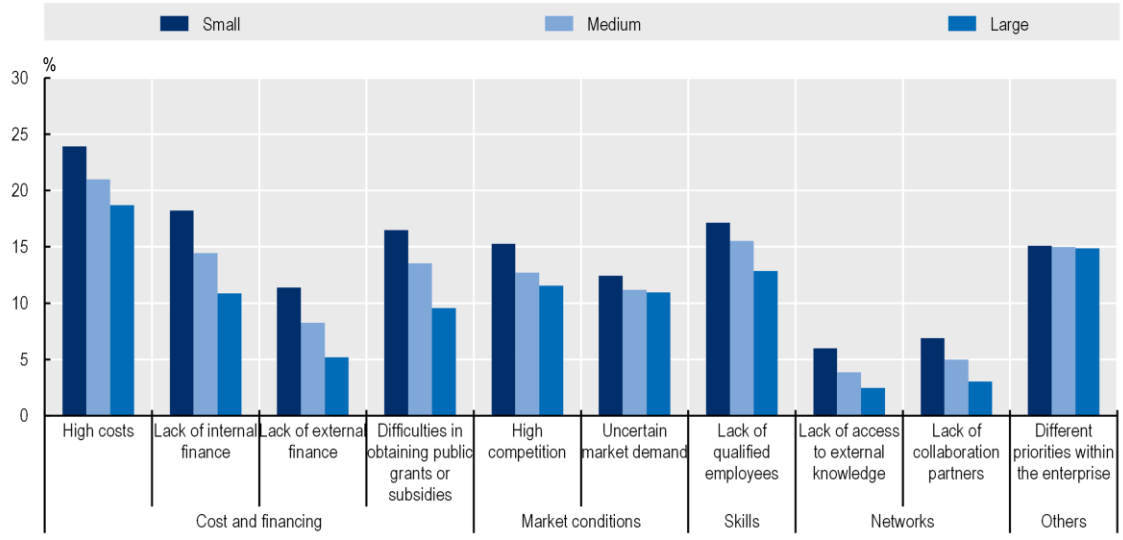
Before the COVID-19 crisis, access to knowledge and collaboration networks was the least of business concerns for innovating, for firms across all size classes (Figure 5.5). In 2020, only 5.3% and 6.2% of firms (with 10 employees or more) across EU countries reported a lack of collaboration partners and a lack of access to external knowledge as hampering their innovation activities. These numbers increase slightly as

the average firm size decreases (2.5% and 3.0% for large firms, 3.9% and 5.9% for medium-sized firms 6.0% and 6.9% for small firms) but remain overall inferior to those reported for other barriers.

The COVID-19 crisis gave new impetus to open innovation and partnering. Over the past year and a half, at the time of drafting, many institutions have opened up R&D and innovation, on a massive scale and at record speed, in order to cope with health and societal emergencies (OECD, 2021[17]). The COVID-19 pandemic fostered collaboration between governments, the scientific community and firms to inform and limit the spread of the virus and to develop effective vaccines (OECD, 2021[41]). National and international collaborative platforms for technology have revolutionised vaccine design and production. Public-private partnerships (often involving several firms) have played central roles in the fight against the pandemic.

Figure 5.5. Before COVID-19, access to knowledge and collaboration networks was the least of business concerns for innovating

Share of innovative enterprises reporting a barrier to innovation as high, as a percentage of total innovative firms, by size class, EU average, 2020



Source: Based on Eurostat (2022[6]), *Community Innovation Survey 2020 (CIS2020) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database.

StatLink https://stat.link/pwedso

Small businesses, and large ones alike, were part of these co-operation networks, combining assets and comparative advantages (Box 5.3). SMEs typically brought tailored solutions, flexibility and agility in the implementation of the responses to the crisis, and proximity to end users for diffusion, signalling once again that the terms of their competitiveness stand in their higher capacity for differentiation, specialisation and reactivity (OECD, 2019[1]).

At the same time, a collective impulse has been given to lagging SMEs to go digital faster, involving more digital-savvy SMEs and start-ups themselves, as well as business associations and large firms (OECD, 2021[17]). Players in the digital industry, in particular, have deployed services and support for helping SMEs innovate and remain in business, integrating them into their own networks of users and community of practices.

More recent evidence calls for some reservations in formulating too optimistic prognoses as the greater engagement of SMEs in innovation could be limited to more incremental and less disruptive forms of innovation. The OECD SME and Entrepreneurship (SME&E) Outlook (2021[17]) questioned whether the change in business practices triggered by the COVID-19 pandemic would be sustained over time and what their impacts in terms of economic and societal benefits would be, especially in terms of productivity and job creation. The 2022 EU Intellectual Property SME Scoreboard provides new evidence. Between 2016 and 2022, the proportion of SMEs that introduced any innovations has grown, especially among non-intellectual property right (IPR) owners – the proportion among IPR owners has remained fairly stable – and, for 70% of SMEs that introduced an innovation, this innovation was novel only to their own company. Innovations new to the market (21%) or the world (3%) were few. In the same vein, fewer SMEs have reported being highly familiar with IPRs than in 2019 (EUIPO, 2022[42]).

Box 5.3. Collaboration networks and open innovation to tackle the COVID-19 urgency

- **SME-multinational: The case of SolGent (Korea)**, a molecular diagnosis SME, that received support from the Ministry of SMEs and Startups (MSS) and Samsung Electronics to develop a COVID-19 detection kit. Through the MSS Smart Factory Supporting Project, Samsung Electronics provided SolGent with technology, know-how and infrastructure support.
- **SME-SME: The case of PlantForm (Canada)**, a privately-held biopharmaceutical SME, that develops speciality antibodies and proteins. During the pandemic, they partnered with three other companies in the Ontario Chamber of Commerce network to produce reagents for blood tests that could indicate immunity to COVID-19.
- **Multinational-public sector: The case of Siemens' Additive Manufacturing Network**. Siemens made its network available to the global medical community in order to hasten the production of medical components. Siemens designers and engineers collaborated with hospitals and medical professionals across this network in the creation of 3D printable medical equipment. 3D printers were also made available to members of the network.
- **SME-SME**: Dr Gab's, a Swiss brewery, forged a partnership with a local distillery in order to extract alcohol from its beer. This was later sold to pharmacies and medical schools for the production of sanitary gels and other disinfectants.
- **SME-multinational: The case of Ariniti (Belgium)**, a health tech start-up that uses artificial intelligence (AI) to create Healthbots. Ariniti, in co-operation with Microsoft, developed during the pandemic a self-diagnostic tool for people potentially infected to get advice depending on their symptoms. Healthbots were used to streamline the onboarding process of patients in hospitals.

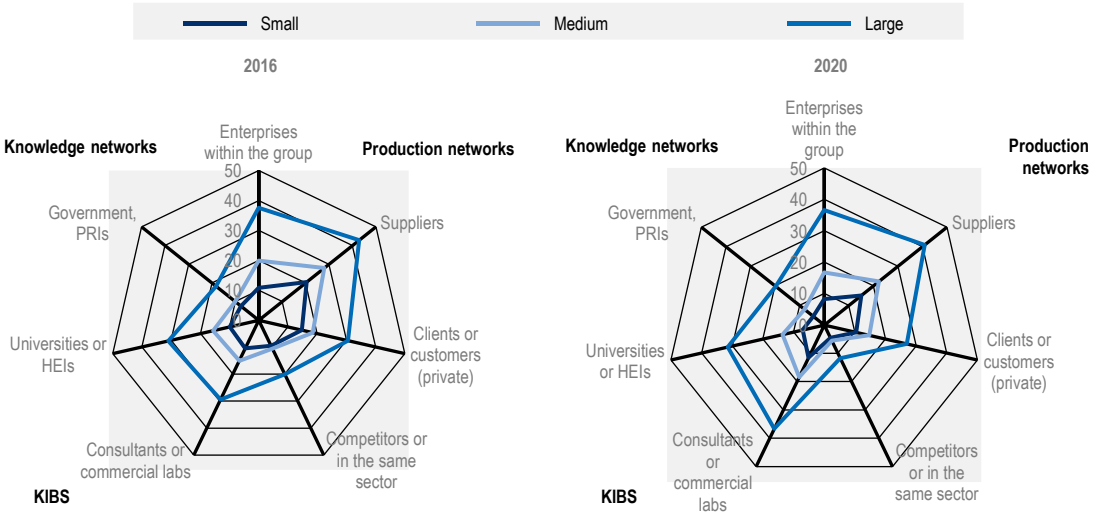
Source: Ford (2020[43]), "Ford works With 3M, GE, UAW to speed production of respirators for healthcare workers, ventilators for coronavirus patients", https://media.ford.com/content/fordmedia/fna/us/en/news/2020/03/24/ford-3m-ge-uaw-respirators-ventilators.html (accessed on 14 October 2022); ImmunityBio (2020[44]), "ImmunityBio combines supercomputing power with Microsoft Azure to target infection "doorway" of the coronavirus", https://immunitybio.com/immunitybio-combines-supercomputing-power-with-microsoft-azure-to-target-infection-doorway-of-the-coronavirus/ (accessed on 14 October 2022); Samsung (2020[45]), "Master key for manufacturing applied to virus test kits (video)", https://news.samsung.com/global/video-master-key-for-manufacturing-applied-to-virus-test-kits (accessed on 14 October 2022); Plantform (2020[46]), "PlantForm partnerships responding to COVID-19 testing and treatment needs", https://www.plantformcorp.com/file.aspx?id=e5d1cf3e-ffdb-47f4-a3a3-4b62c089f389 (accessed on 14 October 2022); Siemens (2020[47]), "Siemens connects healthcare providers and medical designers to produce components through additive manufacturing", https://press.siemens.com/global/en/pressrelease/siemens-connects-healthcare-providers-and-medical-designers-produce-components-through (accessed on 14 October 2022); Bivona, E. and M. Cruz (2021[48]), "Can business model innovation help SMEs in the food and beverage industry to respond to crises? Findings from a Swiss brewery during COVID-19", https://doi.org/10.1108/BFJ-07-2020-0643; OECD (2022[49]), *OECD Digital for SMEs Global Initiative (D4SME)*, https://www.oecd.org/digital/sme/.

Knowledge service providers have become key co-operation partners for many SMEs

KIBS providers are the second main co-operation partners for SMEs (Figure 5.6) (OECD, 2021[17]). The EU Community Innovation Survey (CIS) (Eurostat, 2022[6]) shows that in 2020, 11.6% of small innovative firms on average reported co-operating with consultants, commercial labs or private R&D institutes, compared to 18.4% and 36.6% of medium-sized and large firms respectively. These shares are higher than those observed in 2016[4] (10.5%, 15.0% and 29.4%).

Figure 5.6. For co-operating on innovation, SMEs turn increasingly towards KIBS providers

Enterprises that co-operate on R&D and innovation by co-operation partner and size class, as a percentage of innovative enterprises, EU average, 2020 compared to 2016



Note: EU average based on countries for which data are available. Refers to firm responses to the question: "Did your enterprise co-operate with other enterprises or organisations (Yes/No)? And what type of innovation co-operation partner?". CIS data may not be fully comparable across different rounds of surveys. The different vintages of the CIS surveys can be compared up to and including the 2016 CIS, modulo possible changes in question wording. The evolution of adjustment methods may affect certain developments at the margin. See INSEE (2023[50]).
Source: Based on Eurostat (2022[6]), *Community Innovation Survey 2020 (CIS2020) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database; and Eurostat (2016[51]), *Community Innovation Survey 2016 (CIS2016) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database.

StatLink https://stat.link/7n0wgb

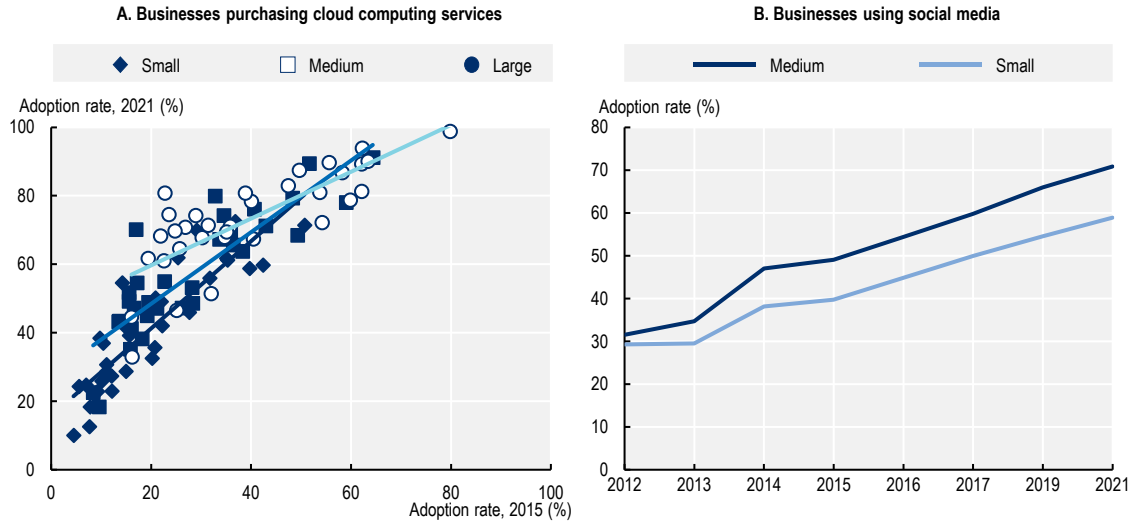
SMEs are operating a massive migration to the cloud and platform technologies

The COVID-19 crisis gave a big push to SME digitalisation and served as an accelerator of digital innovation. Smart working solutions, including teleworking and video conferencing, online selling and digital platforms have blossomed (OECD, 2021[17]). Evidence from the OECD-World Bank-Meta Future of Business Survey of 2020 showed that the crisis sped up SME digital uptake, especially among medium-sized firms, and that the changes were likely to be permanent for 60-80% of them. For instance, European SMEs selling online on Amazon's marketplace increased average sales from EUR 70 000 to EUR 90 000 between June 2019 and June 2020 (OECD, 2021[52]). Digital adoption (especially e-commerce) was a predictor of greater resilience.

Three digital technologies are of particular relevance for increasing SME networking capacity and achieving network effects: social media, (more broadly) digital platforms and cloud computing (Jiang, Yang and Gai, 2023[53]) (Figure 5.7). Other digital technologies contribute to network expansion and can increase the scope for SMEs to achieve external economies of scale, such as customer relationship management (CRM) and supply chain management (SCM) software. Those technologies are however not covered in this analysis for lack of recent data (with respect to SCM) and limited changes in adoption rates over the past six years (with respect to CRM) (Annex Figure 5.A.2). The information on trends given below is based on the most recent ICT use surveys and SME testimonies (OECD.Stat, 2023[54]; OECD, 2022[49]).

Figure 5.7. Smaller businesses are catching up in the adoption of platform technologies

Percentage of firms purchasing cloud computing services, by firm class, 2015 and 2021 or nearest year available (Panel A), and percentage of firms using social media, 2012-21 (Panel B)



Note: Firms with ten or more employees. Micro firms are not covered in ICT surveys. The trendlines (Panel A) mark an acceleration in cloud computing (CC) adoption, the higher the slope, the faster the diffusion. There are no data available in 2020 to compute the average percentage of businesses using social media. Set of countries changes from year to year.
Source: OECD.Stat (2023[54]), *ICT Access and Usage by Businesses (database)*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS.

StatLink https://stat.link/6bik8d

In 2021, the use of social media had become broadly mainstreamed, with over 60% of the total business population reporting using them (Datareportal, 2021[55]) (Figure 5.7). Over 2020-21, adoption by SMEs has kept momentum, following past trends. The average adoption rate has increased continuously across OECD countries for which data are available over the past decade (2012-21), doubling or more than doubling- across all firm size categories. In 2021, there were still imbalances between small (59%) and medium-sized (70%) and large firms (83%).

More generally, digital platforms keep increasing audience and revenues. During lockdowns, platforms played an instrumental role in connecting users to markets, suppliers or resources, which mitigated the economic impact of the crisis on SMEs (OECD, 2021[17]). The use of online platforms increased by about 20% in the first half of 2020, especially mobile payments, marketplaces to consumers, professional services and restaurant delivery (OECD, 2021[56]). In areas requiring physical proximity (such as accommodation, restaurant bookings and transport), platform activity declined markedly, by around 90%.

Box 5.4. Platform technologies: Expanding networks, creating network effects and achieving external economies of scale

Social media

Social media include "social networks, blogs, file sharing, wikis" (OECD, 2015[57]). They can reduce costs on marketing and customer services, and improve customer relations and information accessibility (Ainin et al., 2015[58]; Chatterjee and Kumar Kar, 2020[59]). The presence of hundreds of millions/billions of users on line makes appearing on the search algorithms of the larger search engines or social media platforms a crucial marketing tool for SMEs, especially since the cost of setting up a social media profile or an account on a large platform is usually very low, most platforms offering "free to use" model or services for relatively small fees. These "basic accounts" are also usually designed to be user-friendly and do not require particular skills to be operated (OECD, 2021[16]). Prior to COVID-19, ICT surveys showed that SMEs tend to start their digital journey with basic functions, primarily general administration and marketing operations, and the digital gap between SMEs and large firms is smaller in their online interactions with the government, in electronic invoicing or in using social media.

Digital platforms

Digital platforms provide a means to access new markets, sourcing channels and a multitude of digital networks. They serve to optimise business functions and have been transforming a wide range of them, from advertising and marketing (e-commerce) to service delivery, financing, human resources, administration (payments), R&D and design, etc. Digital platforms enable SMEs to partly compensate for weak internal capacity through access to external digital (software) solutions and systems, and require low (to no) digital skills. Machine-learning techniques are for instance extensively integrated into social media and marketplace algorithms, providing scope to benefit from "state-of-the-art" technologies at relatively low cost. For managing digital security risks, SMEs also rely on external consultants or the security-by-design features of the products and services they use. Online platforms also allow SMEs to capitalise on large network effects. Network effects arise as the number of users on each "side" of the platforms increases, increasing the benefits for all users to operate on the same platform. The larger the user base,[5] the more likely SMEs are to find a match (e.g. with service providers, suppliers, clients), which in turn can reduce transaction costs and information asymmetry. Digital platforms can help substantially lower a broad range of costs: search costs, replication costs, distribution costs, tracking costs and verification costs (Goldfarb and Tucker, 2019[60]). Empirical evidence converges in stressing the positive impact of digital platforms on the productivity of SMEs, or on business dynamics and the reallocation of workers to more productive firms (Bailin Rivares et al., 2019[61]; Costa et al., 2021[62]). Experimental evidence suggests that the use of Natural Language Processing software such as generative language models (e.g. ChatGPT, Bard) integrated into popular search engines (i.e. Bing and Google Search) can raise average productivity while compressing the productivity distribution (i.e. benefitting low-ability workers more), complementing workers' skills (Noy and Zhang, 2023[63]).

Cloud computing

Cloud computing (CC) helps enhance information technology (IT) systems and capacity along a "pay-as-you-go" model.[6] CC refers to services accessed over the Internet, including servers, storage, network components and software applications (OECD, 2019[64]). SMEs can access extra processing power or storage capacity, as well as databases and software, in quantities that suit and follow their needs. In addition to its flexibility and scalability, CC reduces costs of technology upgrading by exempting firms from upfront investments in hardware and regular expenses on maintenance, IT team and certification. CC services for instance allow AI solutions to be sourced from knowledge markets and, in turn, the ability to leapfrog to new AI systems with CC-based software as a service (SaaS), with no prerequisite of technical knowledge and digital security features directly embedded in the software (OECD, 2019[1]).

Source: Abridged from OECD (2021[16]), *The Digital Transformation of SMEs*, https://dx.doi.org/10.1787/bdb9256a-en.

Recent years have also witnessed a massive migration to the cloud. Relocation to the cloud consists in moving business data and IT processes to data centres. Increasingly more businesses aim to infuse enterprise applications with multi-cloud and hybrid cloud architectures, edge computing, "anything-as-a" service and serverless computing (TechTarget, 2020[65]). A main rationale for faster cloud adoption is the value that can be created from data and business analytics, the cloud becoming, in addition to a means for technology upgrading, a driver of business innovation (OECD, 2022[2]; Gartner, 2023[66]). In 2021, almost 43% of all businesses were purchasing CC services, ranging from 39.3% for small firms, to 55.5% for medium-sized firms and 72.5% for large firms across OECD countries for which data are available. This represents a doubling of small-size users compared to 6 years before. The share of CC users doubled in almost half the time as it did to double social media shares.

Networks as a service (NaaS) have emerged as a solution for SMEs to operate within secure digital networks. There is indeed a rising demand for digital networks to evolve, driven by the deployment of remote work and cloud adoption. The main challenges firms face today as regards the management of their networks are to connect to multiple clouds, secure networks, users and applications, and ensure they can deal quickly with digital security issues (CISCO, 2022[67]). NaaS have appeared as an alternative to maintaining own networks, embedding different elements, such as network management platforms (e.g. wired and wireless LANs), security components (e.g. virtual private networks or VPNs), data centres, and multi-cloud and hybrid cloud environments (CISCO, 2022[67]; WEF, 2022[68]).

A number of threats weigh on future SME capacity to build and expand linkages

A first threat to SME network expansion is related to multiple risks of exclusion for those SMEs that are lagging today. The likelihood of SMEs to network depends on their awareness of the existence and benefits of these networks and on their internal capacities to adapt to the standards, requirements and practices prevailing in these networks. The gap to integrate could be large and further widening as networks evolve with the technological changes and structural transformations at play. Laggards will lose ground in the race, dragged back by their current productivity gaps and lack of absorptive capacities.

R&D and VC remain the prerogative of a few high-performing SMEs and start-ups. Even if small R&D performers have performed well in recent years, the vast majority of SMEs are foreign to the world of research. Likewise, VC financing remains inaccessible – and an inappropriate funding mechanism – to many SMEs (OECD, 2022[69]). R&D and VC prospects, and the consolidation of innovation networks, are also strongly related to macroeconomic conditions. High inflation and tightening market conditions (Chapter 1) are likely to weigh on firm profits and incentives to invest in R&D, negatively affecting R&D networks and systems, and in particular smaller firms.

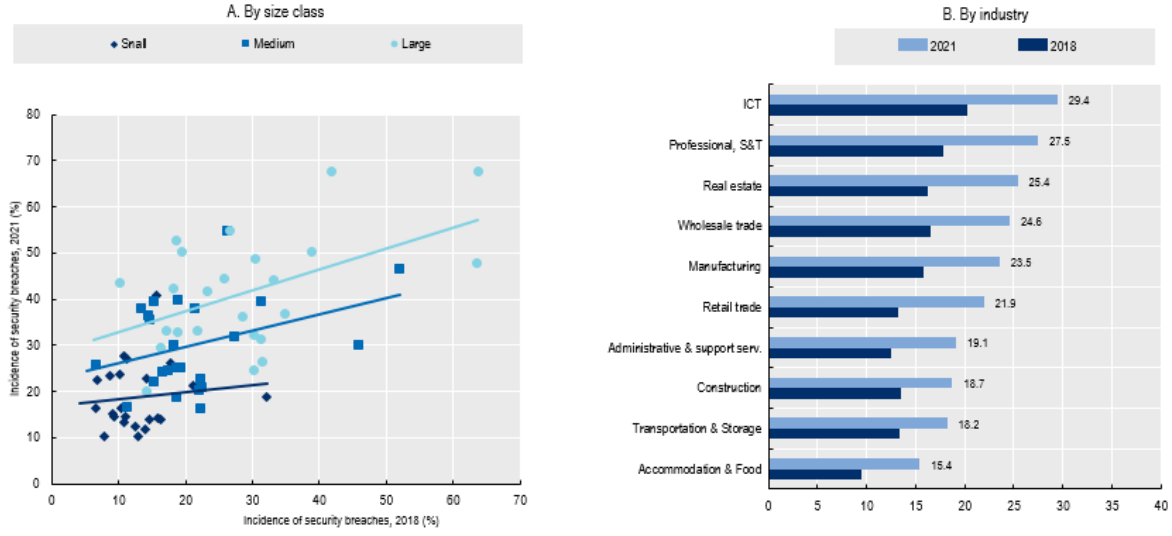
The SME digital gap is still a reality. Still, many SMEs use digital technologies mainly for advertising and communication (6 in 10 users) (Facebook/OECD/World Bank, 2022[70]). Digital adoption is often limited to basic business functions and the digital gap tends to increase as technologies become more sophisticated (OECD, 2021[16]). Little progress has been made for instance in closing the gap in CRM adoption (Annex Figure 5.A.2), while some progress made, e.g. in CC adoption, comes with "lock-in" risks. Low interoperability, standardisation and portability of cloud computing services result in SMEs finding themselves unable to switch providers – and networks – without incurring hefty costs or losing proprietary data (Opara-Martins, 2018[71]; Opara-Martins, Sahandi and Tian, 2016[72]; OECD, 2021[16]), or having *de facto* to manage multiple cloud environments. SME lags with more advanced use of ICT has consequences not only on their ability to transition to new business models, adapt to the reconfiguration of production networks and global value chains (see Chapter 3), turn data into business and achieve greater resource efficiency (OECD, 2022[69]) but it also limits their capacity to respond to cyberattacks. Firms using AI and automation are in fact better prepared to react, which results in making the breach lifecycle shorter and cutting the average cost, by two according to an IBM survey (2023[73]).[7]

A second threat to SME networks is therefore related to rising cybersecurity risks and the low preparedness of SMEs. As the attack surface keeps growing with digital adoption, remote work and cloud migration, data breaches are becoming more common and affect all types of firms across virtually all industries. Even if still less often victims of attacks, SMEs are particularly vulnerable as they rarely have the dedicated resources and awareness to mitigate digital security risks (OECD, 2021[16]). In 2021, 17.6%, 27.4% and 36.9% of small, medium-sized and large firms reported having experienced ICT issues in the past 12 months across the OECD area (Figure 5.8). This represents 6 to 13 percentage points more than only 3 years before (2018). It is estimated that the cost of a data breach has also reached an all-time high in 2022, at an averaged USD 4.35 million, i.e. a 2.6% increase from the year before (IBM, 2023[73]).[8]

The increased number of digital incidents in KIBS is particularly alarming, because of the role they play in bridging specialised knowledge to SMEs and as key knowledge partners. The sectors that experienced the highest numbers of security breaches in 2021 and topped the ranking in 2018 as well, are highly digitalised and knowledge-intensive services, including IT, professional, science and technology, and financial and insurance services, and commerce (i.e. wholesale and retail trade) (Figure 5.8). The potential for malicious actors to compromise the software supply chain from early stages could have far-reaching consequences on smaller actors that are particularly dependent on their services (from software to infrastructure, platform and network as a service), emphasising the need to secure the supply chain by design (ENISA, 2021[74]).

Figure 5.8. SMEs face increasing security breaches, especially medium-sized ones and those operating in KIBS

Percentage of firms having experienced security breaches in the past 12 months (%), by size class (Panel A) and by industry (Panel B), 2018 and 2021



Note: Firms with ten or more employees. Micro firms are not covered in ICT surveys. The trendlines (Panel A) mark an acceleration in the occurrence of ICT incidents: the higher the slope, the higher the increase.
Source: OECD.Stat (2023[54]), *ICT Access and Usage by Businesses (database)*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS.

StatLink https://stat.link/krtxqe

Financial services are traditionally a preferred target for hackers and have been under continuous fire in 2022. Akamai (2023[75]) notes a staggering surge in the number of attacks against financial technology (fintech) web applications and application programming interfaces (API), estimated to have grown by 257% in 2022 compared to the year before. These are typically banking applications. Within 24 hours, the

exploitation of newly discovered vulnerabilities can reach multiple thousands of attacks per hour and peak quickly, leaving little time to react.

Cybersecurity risks are endangering interconnected networks and have made exposure and risk management capacity key factors in partnership decisions. An in-depth security analysis of 58 web applications across different sectors over 2020-21 shows vulnerabilities in 98% of the cases studied, most often due to flaws in web application code (Positive Technologies, 2022[76]). SMEs have become *de facto* gateways for attackers to infiltrate larger and more profitable targets, especially through their supply chains (Chapter 3). Alternately, knowledge networks and platforms can provide "by design" solutions that suit the needs of smaller firms and contribute through information sharing to developing their digital risk management culture.

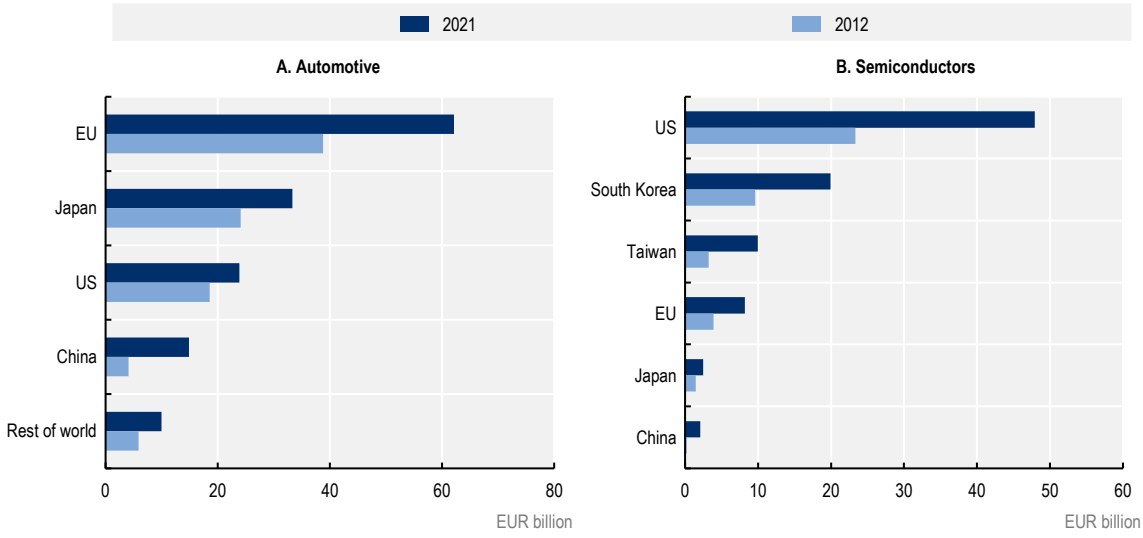
A third threat to SME networks is related to growing signs of fragmentation and breaches in innovation networks. First, innovation, especially disruptive innovation, is highly concentrated in a few sectors. SMEs account for around half of total business R&D expenditure (BERD) in scientific R&D services and information and communication services, but for only around 10% of total BERD in pharmaceuticals and transport equipment. At the same time, around 90% of SMEs that make the top 2 500 global R&D investors work in the pharmaceutical industry and this concentration has increased over the years, reaching a peak of 96% in 2020 (Grassano et al., 2022[37]). Historically, equity capital is also highly concentrated in ICT and biotechnology, with no sign of any redeployment towards new sectors. This may reduce SMEs' chances to evolve across different networks or to differentiate.

Second, innovation within OECD countries is highly concentrated in a few regions, often capital city regions (OECD, 2018[77]). Likewise, VC is concentrated within a few regions and the signs of a possible democratisation of capital that emerged during COVID are fading. Around half of all VC investment made globally between 2010 and 2022 was allocated to companies headquartered in a few cities such as Beijing, Bengaluru, Cambridge, Hangzhou, London, New York, San Francisco and Shanghai (China).[9] COVID-19 had enabled the spread of capital outside of technology hubs (PitchBook, 2023[78]). In fact, the median distance in miles between a company and the lead investor in its seed round grew from 151 miles in 2019 to 401 miles in 2021, a consequence of lockdowns and remote work (PitchBook, 2023[78]). However, since 2022, it is estimated that 73% of all US VC commitments went to firms located in only 2 markets, New York City and the San Francisco Bay Area. All in all, the high sectoral and geographical concentration of innovation activities, investment and interests raises risks of growing territorial and industrial inequalities if efficient diffusion channels are not in place to enable transfers. Innovation capacity and benefits to accumulate. During the COVID-19 pandemic, as digital adoption increased, the digital gap increased between sectors that were already digital-intensive before the crisis and those that were lagging (OECD, 2021[17]).

There are also signals that the global R&D networks could crack into regionalised and specialised blocks. Trends in the investment of the top 2 500 largest R&D spenders between 2012 and 2021 show a further specialisation and concentration of advanced business research in large world regions (Figure 5.9) (Grassano et al., 2022[37]). Likewise, geopolitical tensions between China and the United States are affecting global research co-operation. Data on collaboration based on scientific publications show that international collaboration between China and the United States grew rapidly over the last decades, with even more US co-authorship with China than with the United Kingdom between 2017 and 2019 (OECD, 2023[79]). This has since fallen sharply, mostly due to the decline – which started in 2020, accelerated in 2021 and could further accelerate – in engineering and natural sciences. These two fields account for the bulk of China-US bilateral collaboration. Meanwhile, collaboration in other research fields, such as life and health sciences and social sciences and humanities, continued to grow.

Figure 5.9. R&D networks are organised into regionalised and specialised blocks

R&D investment by the top 2 500 largest investors, automotive and semiconductors industries, 2012 and 2021



Source: Grassano, N. et al. (2022[37]), *The 2022 EU Industrial R&D Investment Scoreboard*, https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard.

StatLink https://stat.link/ayh2ds

The role of public policy in shaping and strengthening SME knowledge and innovation networks

Governments deploy a broad range of measures – some targeted directly at specific actors, others more generic – to support SME integration into (global) knowledge and innovation networks.

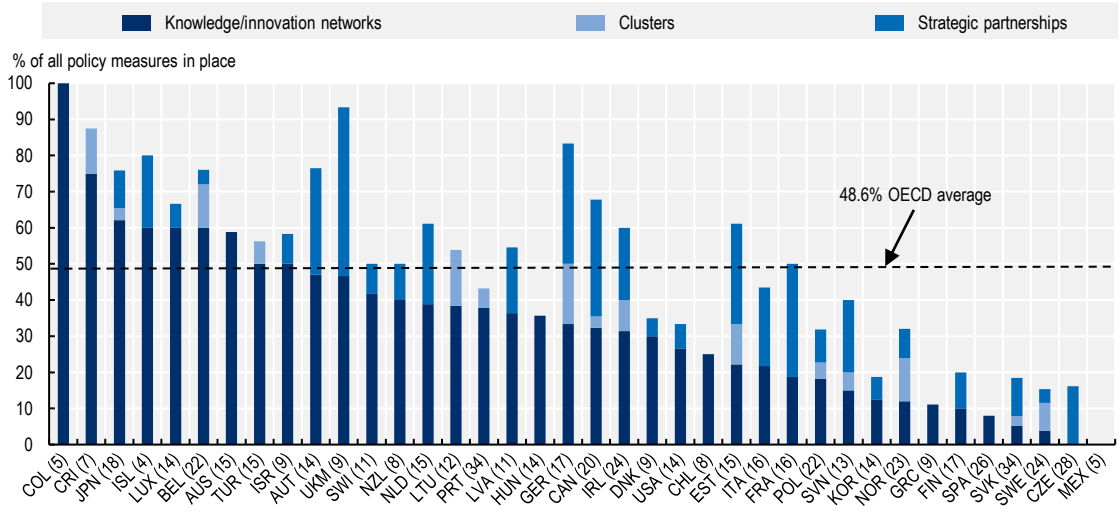
The following section provides a more granular view of the character and intensity of government efforts to strengthen SME linkages to R&D and innovation networks, their integration into clusters and/or the formation of strategic partnerships involving SMEs. The analysis highlights emerging patterns, similarities and differences across countries, as well as relevant policy examples. This section builds on several large-scale mappings of institutions and policy initiatives in place across OECD countries that were conducted as part of the multiannual EC/OECD projects on Unleashing *SME potential to Scale up* (OECD, 2023[80])and *Fostering FDI-SME ecosystems to boost productivity and innovation* (OECD, 2023[81]), and forms part of the OECD Data Lake on SMEs and Entrepreneurship[10] (OECD, 2023[82]). On that basis, a total of 280 policies were identified, seeking to expand SME linkages with knowledge and innovation networks.

About one-third of policies aim at connecting SMEs to knowledge and innovation networks, with a more complementary role for other types of linkages

While most OECD governments place the strongest focus on integrating SMEs into (global) production and supply chain networks (see Chapter 3 for a more detailed discussion), the rise of the open innovation paradigm, along with the increasing internationalisation of innovation activities, is clearly reflected in national policy mixes, with about one-third of network expansion policies across the OECD dedicated to connecting SMEs to knowledge and innovation networks (Figure 5.10).

Figure 5.10 About one-third of policies aim at connecting SMEs to knowledge and innovation networks, with a more complementary role for other types of linkages

Distribution of national policies for SME network expansion by network type, in % of all policy measures in place



Note: OECD average refers to the cumulated average share that the three depicted network types represent in national policy mixes. Shares are calculated on the basis of a total of 280 policies related to strengthening SME linkages to knowledge and innovation networks and/or their integration into clusters, and/or the formation of strategic partnerships.
Source: Estimates based on an experimental mapping of 601 national policies and 150 institutions supporting SME network expansion across OECD countries ((OECD, 2023[80]), EC/OECD project on Helping SMEs Scale Up – Phase II).

StatLink https://stat.link/j5yrmn

The formation of strategic partnerships and connecting SMEs to clusters feature less prominently in national policy mixes, with only 12% and 3% of dedicated measures respectively. Still, when considering the important complementary role that these mechanisms can play in fostering both SME trade and innovation via connections to relevant partners, the share of innovation network-related measures rises to about half (48.6%) of policies in place across the OECD. Box 5.5 provides a few examples from selected OECD countries, highlighting the diverse forms of partnerships that clusters and strategic alliances can support.

Box 5.5. Expanding SME networks via clusters and strategic partnerships: Selected policy examples across the OECD

Strategic partnerships

- **Czech Republic**: CzechInvest's CzechLink StartUp project brings domestic and foreign investors together with Czech start-ups and thus supports the development of innovative businesses in the country.
- **Ireland**: The InterTradeIreland Venture Capital Conference brings together entrepreneurs, venture capitalists, business angels, investors and anyone with an interest in venture capital. It allows different actors to get up to date on the current investment scene in Ireland, network with active investors in the country and learn about the fundamentals of VC.

- **Netherlands**: The Top Consortia for Knowledge and Innovation (TKI) programme is a key initiative for organising co-operation between business, science and government around 12 strategic top sectors. Dedicated mechanisms allow for the participation of entrepreneurs, SMEs and research organisations to share knowledge, risks and investments.
- **Slovak Republic**: The Slovak Matchmaking Fair is the largest international B2B event organised by the Slovak Investment and Trade Development Agency (SARIO). The event focuses on bilateral talks among individual companies, as well as on the presentation of subcontracting partnership offers, tenders, available production capacities, joint venture creation demands with foreign partners, and search for co-operation partners.
- **United States**: The Small Business Innovation Research (SBIR) programme encourages domestic small businesses to engage in federal research and R&D activities with the potential for commercialisation. Small businesses may apply as joint ventures if all the partners involved meet the eligibility criteria.

Clusters

- **Germany**: Clusters4Future (*Zukunftscluster*) seek to contribute to the emergence of outstanding next-generation clusters in emerging fields of innovation with excellent growth potential through cross-thematic, technology and inter- and transdisciplinary co-operation. The initiative is based on the creation of a new, innovation-oriented cluster approach with an explicit focus on emerging topics and a faster transfer of fundamental research results into application.
- **Norway**: Norwegian Innovation Clusters is a government-funded cluster programme that aims to contribute to value creation through sustainable innovation. This is achieved by triggering and reinforcing collaborative development activities in the clusters, with the aim of increasing the clusters' dynamics and attractiveness, as well as increasing the individual companies' ability to innovate.
- **Canada**: The Innovation Superclusters Initiative (ISI) invites industry-led consortia to lead and invest in bold and ambitious proposals to boost regional innovation ecosystems. The programme supports new partnerships between large firms, SMEs and industry-relevant research institutions, promoting the development of globally competitive technology. A small number of high-value, strategic investments will be made to build on shared private sector commitment, demonstrated through matched industry funding, to position firms for global leadership.

Source: Based on an international mapping of national policies and institutions supporting SME network expansion (OECD, 2023[80]), EC/OECD project on Helping SMEs Scale Up (data extracted on 21 April 2023). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[82]).

Moreover, in nearly a quarter of OECD countries, the innovation agenda clearly prevails over trade and GVC issues, with half of policies or more dedicated to engaging SMEs in collaborative innovation activities. This can take the form of more infrastructure-oriented measures, like the Cooperative Research Centres in Australia, which aim to facilitate industry-research collaboration, and targeted financial support as in Türkiye's Artificial Intelligence Ecosystem Call, which funds AI projects carried out by consortia composed of at least one SME as a technology provider, one university, research centre or PRI, and the TÜBİTAK Artificial Intelligence Institute.

There is a clear policy focus on "traditional" innovation channels and more accessible forms of strategic partnerships

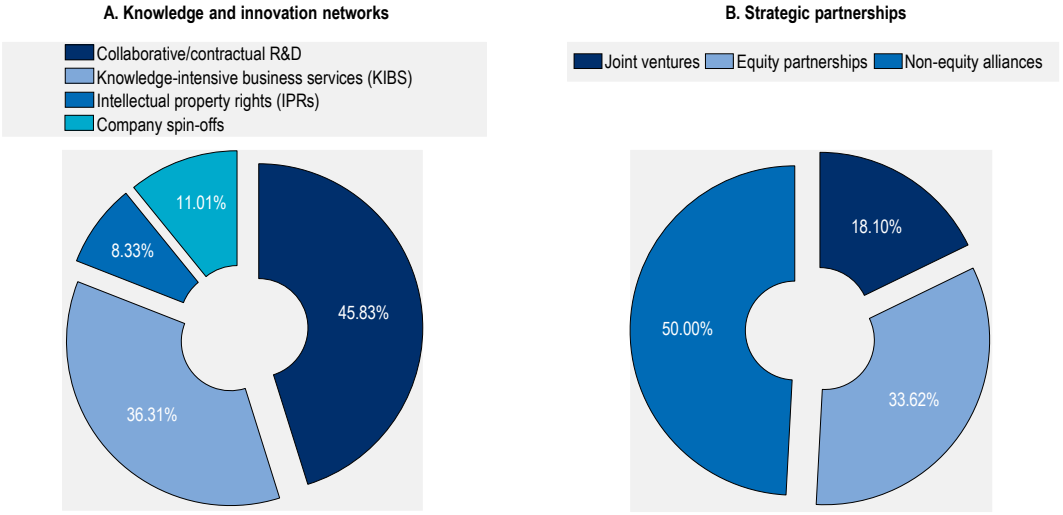
Zooming further into the specific channels that receive policy attention across different innovation-related network types, a clear focus on more 'traditional' innovation channels emerges, with nearly half (46%) of measures aiming to connect SMEs to knowledge and innovation networks dedicated to involving them in collaborative or contractual R&D activities (Figure 5.11). While this is closely followed by efforts to link SMEs with providers of KIBS, with a little over one-third of measures dedicated to this area, this distribution does suggest a possible misalignment with the "innovation reality" that most SMEs face, including the fact that R&D remains out of reach for most of them and that they tend to rely on other mechanisms – including KIBS – to carry out innovation activities.

Given that knowledge service providers have indeed become key co-operation partners for SMEs, this may call for more targeted measures that could help orient SMEs toward relevant actors that can provide support in specific areas. Such measures would likely need to go beyond "classic" innovation vouchers, which certainly allow purchasing most of these types of services but which frequently lack the complementary service of identifying relevant partners that may fit a firm's particular business needs.

Table 5.1 provides a structures overview of the different types of measures that governments deploy to connect SMEs to knowledge and innovation networks via different channels, including the level of targeting, geographic scope and policy instrument(s).

Figure 5.11. Across innovation networks, policy efforts focus on SME co-operation through R&D and via non-equity alliances

Share of policy initiatives across network linkages, in % of all policy measures in place by network type



Note: Shares are calculated on the basis of a total of 280 policies related to strengthening SME linkages to knowledge and innovation networks and/or their integration into clusters, and/or the formation of strategic partnerships.
Source: Estimates based on an experimental mapping of 601 national policies and 150 institutions supporting SME network expansion across OECD countries ((OECD, 2023[80]), EC/OECD project on Helping SMEs Scale Up – Phase II).

StatLink https://stat.link/5bkt4e

In the area of strategic partnerships, on the other hand, policy efforts clearly focus on non-equity alliances, with half of the measures in this category dedicated to this type of arrangement. Non-equity alliances indeed make up the vast majority of business alliances and come in many forms and shapes, including

outsourcing arrangements, licensing agreements, distribution agreements and supply contracts for example. They also play a central role in the context of joint R&D, production and sales and marketing activities. Importantly, though, they have an overall much less formal character than joint ventures (when two or more parent companies form a separate entity) or equity alliances (when one company purchases equity in another business) and are therefore generally considered more accessible to SMEs, as the partnership is usually formed on some sort of contractual basis, which does not involve making a direct financial investment in each other.

Still, the importance of SME network expansion via joint ventures and equity partnerships should not be underestimated, in particular for the financial resources that these linkages can unlock. As a result, many governments have implemented measures that aim to facilitate connections between SMEs and different actors in the financial market, including notably private investors and investment funds.

Business accelerators and incubators are a case in point. These support programmes – of a private or public nature in fact – have become increasingly important for enhancing SME networking and financing opportunities, as they create direct or indirect social connections with potential funders, and can facilitate information transfer between investors and entrepreneurs. Their success is evidenced by their rapid deployment in recent years. The number of US-based accelerators increased by an average of 50% each year between 2008 and 2014 only (Hathaway, 2016[83]). Out of firms that received investments from VC between 2015 and 2020 in OECD countries, around 20-25% received at least 1 investment from accelerators, incubators or universities (Crunchbase, 2021[84]). Recent empirical evidence suggests that participation in such communities (including open source) may help firms reach funding milestones.

Table 5.1. Selected examples of policies to enhance SME integration into knowledge and innovation networks

Policy instruments	Policy targeting	Country initiative	Timing	Geographic dimension	Overlap with other networks
	Collaborative/contractual R&D				
Financial support	Targeted (technology)	**Spacelabs (Belgium):** Collaborative project between at least two companies and a knowledge institution aimed at the demonstration and further development of space technology for downstream applications.	2023-until now	Domestic	No
Financial support	Targeted (all SMEs)	**Propyme+Clústeres (Costa Rica):** Provides funding for R&D and technology and knowledge transfer actions between SMEs participating in clusters or value chains.	2022-until now	Domestic	Yes (clusters)
Platforms & networking infrastructure	Generic	**Business Partnership Facility (Luxembourg):** The facility aims to encourage the Luxembourg and European private sector to join forces with partners in developing countries to set up sustainable and innovative business projects.	2015-until now	Domestic and international	Yes (strategic partnerships)
Non-financial support	Generic	**Innovation Network (Netherlands):** Stimulates international co-operation between companies, research institutes and public authorities through the provision of knowledge of innovation, technology and science developments around the world, the organisation of innovation missions, workshops, matchmaking events and seminars abroad, the identification of funding mechanisms for bi- and multilateral co-operation and connecting to potential collaboration partners abroad.	2015-until now	International	No
Financial support	Targeted	**International Technology Partnership Diagnosis (France):** The aim of the programme is to encourage French SMEs to participate in international collaborative research, development, and innovation (RDI) programmes. Eligible expenditures include all external expenses for preparing a partnership: search for partner(s), negotiation of the consortium agreement, use of specialised advice or service providers, preparation of responses to calls for projects, consortium agreements, and legal advice.	2020-until now	International	Yes (strategic partnerships)

Policy instruments	Policy targeting	Country initiative	Timing	Geographic dimension	Overlap with other networks
		KIBS			
Non-financial support	Targeted (SMEs)	**Certified Management Innovation Support System (Japan):** Provides specialised support for SMEs by certifying individuals, corporations and management innovation support organisations with a certain level of professional expertise related to tax, finance and corporate finance in order to diversify and revitalise support mechanisms available to small businesses.	2012-until now	Domestic	No
Non-financial support	Generic	**Development co-operation experts (Estonia):** Help companies find and contact the best experts, testing and certification institutions, researchers and R&D organisations around the world, whom companies need to develop or bring their product or service to the market.	n.a.	Domestic and international	No
Financial support	Targeted (SMEs)	**Small value incentives through vouchers (Slovenia):** A system for allocating small value incentives, which allow micro, small and medium-sized enterprises significantly simplified access to co-financing of individual services, through which companies can strengthen their competitiveness and competencies. Vouchers are available for a variety of purposes, including among other things intellectual property (IP) protection, quality certificates and internationalisation.	2021-2023	Domestic	Yes (production/supply chain networks)
		Intellectual property rights			
Public governance	Generic	**Intellectual Property Strategy (Canada):** A strategy to help Canadian entrepreneurs better understand and IP and reduce barriers to accessing shared IP.	2018-until now	Domestic	No
Financial support	Generic	**Technology Development Fund (Iceland):** Provides funding for innovation projects, including the preparation and submission of patent application procedures.	2004 – until now	Domestic and international	No
		Company spinoffs			
Financial support, platforms & networking infrastructure	Targeted (regions and technology)	**Houses of Emerging Technologies (Italy):** Combine the scientific skills of universities and research institutions with the needs of businesses and promote SME adoption of emerging technologies, including blockchain, AI and Internet of Things (IoT). The "houses" are also aimed at supporting the creation of start-ups and their involvement in (experimental) R&D projects, which could promote technology transfer to traditional SMEs.	2021-until now	Domestic	No
Financial support	Targeted (start-ups and universities/ research institutes)	**Start-ups from science – EXIST Potentiale (Germany):** The EXIST programme is aimed at improving the entrepreneurial environment at universities and research institutions and at increasing the number of technology and knowledge-based business start-ups. It also awards funds to universities and clusters to support the internationalisation of their start-ups and networks. Partners include India and countries from Asia, Eastern Europe and South America.	1998-until now	Domestic and international	Yes (strategic partnerships and clusters)
Financial and non-financial support, platforms & networking infrastructure	Targeted (start-ups, entrepreneurs)	**Commercialization Reactor (Latvia):** An acceleration programme with a focus on deep-tech start-ups. Business ideas should be science or technology-based with novelty and clear origin from the IP ownership position. Businesses must have an minimum viable product (MVP) or working prototype and a scalable business model on the B2B market.	2009 – until now	Domestic	No

Source: Based on an experimental mapping of 601 national policies and 150 institutions supporting SME network expansion across OECD countries ((OECD, 2023[80]), EC/OECD project on Helping SMEs Scale Up – Phase II). The mapping forms a building block of the OECD Data Lake on SMEs and Entrepreneurship (OECD, 2023[82]).

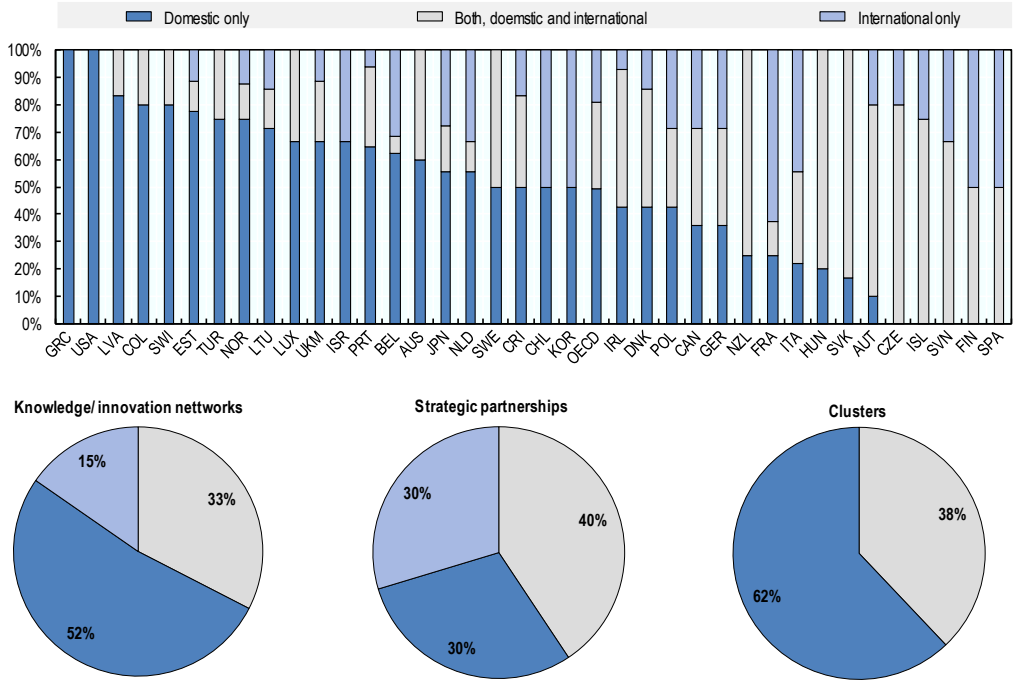
Innovation-related network policies have a strong international orientation

Innovation-related support mechanisms have a strong international orientation, with about half of the policies aiming to strengthen SME integration into knowledge and innovation networks being either fully or

at least partially dedicated to connecting SMEs to international innovation partners (Figure 5.12). This includes initiatives like Beyond Europe in Austria, which provides grants to domestic companies, research and university institutes and other organisations for carrying out co-operative R&D projects that involve at least one partner from a list of target countries outside of Europe. Similarly, the Canadian International Innovation Program (CIIP) supports domestic companies in pursuing collaborative innovation activities with a foreign partner on projects that have the potential for commercialisation. Support is provided for R&D partnerships in the following countries: Brazil, China, India, Israel and Korea.

Figure 5.12. About half of the innovation-related network policies are (at least partially) international in scope, with strategic partnerships having the strongest cross-border orientation

Geographic scope across SME network expansion policies, in % of all policy measures in place, by country and network type



Note: Shares are calculated on the basis of a total of 280 policies related to strengthening SME linkages to knowledge and innovation networks and/or their integration into clusters, and/or the formation of strategic partnerships.
Source: Estimates based on an experimental mapping of 601 national policies and 150 institutions supporting SME network expansion across OECD countries ((OECD, 2023[80]), EC/OECD project on Helping SMEs Scale Up – Phase II).

StatLink https://stat.link/ywsdhx

Across network types, strategic partnerships display a stronger international orientation than knowledge and innovation networks or clusters, with more than two-thirds of policies being either international only or both domestic and international in scope. This likely reflects the importance of leading innovation hubs around the world, and public efforts to establish more long-lasting co-operation mechanisms between their industry and science base and specific geographic regions or even cities. A case in point is Spain's Challenge (*Desafía*) programme, which aims to connect start-ups to the most innovative technology ecosystems in the world. The programme is currently run in partnership with Berlin, London, San Francisco, Singapore, Tel Aviv and the Netherlands. It selects highly innovative start-ups through a competitive

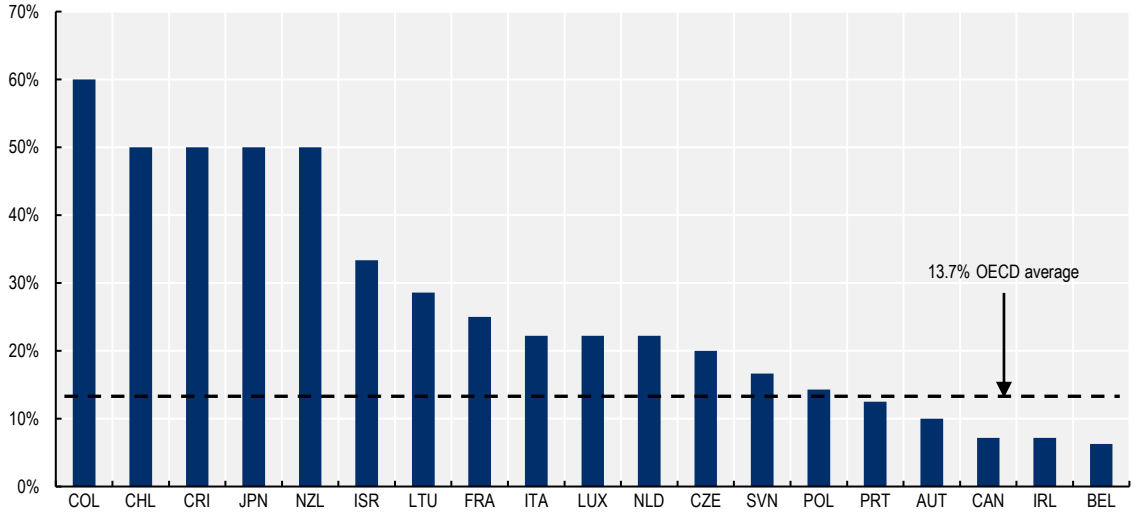
process and connects them to an international network of founders, investors and corporates following a two-week immersion process, consisting of seminars, workshops, meetings and site visits.

Governments could use digital platforms more to strengthen SME integration into knowledge and innovation networks

On average, only 13.7% of policies in place across the OECD to facilitate SME integration into knowledge and innovation networks leverage the potential of digital platforms, albeit with significant differences among countries (Figure 5.13). Between 50% and 60% of policy measures in place in Chile, Colombia, Costa Rica and Japan use online platforms to strengthen SME linkages with relevant innovation actors in their ecosystem, compared to 10% or less in Austria, Belgium, Canada and Ireland. These platforms can serve a variety of purposes – from dealing with IP rights (e.g. patents, trademarks, designs, etc.), to connecting SMEs with investors or other strategic partners in their ecosystem, to facilitating the setup and implementation of co-operative innovation projects.

Figure 5.13. On average, less than 15% of policies across the OECD leverage digital platforms to expand SME innovation networks

Share of national policies for SME network expansion using digital platforms, in % of all policy measures in place



Note: Shares are calculated on the basis of a total of 280 policies related to strengthening SME linkages to knowledge and innovation networks and/or their integration into clusters, and/or the formation of strategic partnerships.
Source: Estimates based on an experimental mapping of 601 national policies and 150 institutions supporting SME network expansion across OECD countries ((OECD, 2023[80]), EC/OECD project on Helping SMEs Scale Up – Phase II).

StatLink https://stat.link/dym0gt

At the same time, half of OECD countries do not leverage online platforms at all for network expansion purposes or solely in the context of trade-related support measures (e.g. to support SME engagement in e-commerce), suggesting that there is still significant potential to exploit their benefits in the context of collaborative innovation activities in national policy mixes. Box 5.6 provides a few examples from selected OECD countries, highlighting the diverse range of actors that such initiatives can aim to connect to advance joint knowledge and innovation projects.

Box 5.6. Expanding SME innovation networks via digital platforms: Selected examples

Euroquity Platform (Belgium and France) – a search engine created by BPIfrance to support the growth of SMEs by connecting them to potential future partners for their investment needs, according to areas of interest, including the amount of investment sought, geographical area, sectors of activity, etc. Alerts inform members in real time of new subscribers and an internal messaging service facilitates exchange with other members. The service is offered in partnership with Sowalfin in Belgium.

Source : Bpifrance (n.d.[85]), *EuroQuity*, https://www.bpifrance.fr/catalogue-offres/generaliste/euroquity.

AWS Connect (Austria) – an online platform helping to connect start-ups, SMEs, innovative, established companies, (international) investors and research institutions to facilitate networking in the Austrian innovation ecosystem. It provides matching services for innovation co-operation, investments and internationalisation.

Source: aws (n.d.[86]), *aws Connect*, http://www.aws.at/en/aws-connect-1/.

Open R&D (Lithuania) – an online platform of co-operation between open access R&D centres and laboratories of 12 Lithuanian universities, 13 PRIs as well as 7 science and technology parks. The objective of the network is to bring together high-level R&D intellectual potential, infrastructure and resources to provide scientifically based solutions to problems raised by businesses and society.

Source: Open R&D (n.d.[87]), *Homepage*, https://openlithuania.com/.

Business and Technology Exchange Platform (Portugal) – an online database of partnership opportunities at the national and international levels, providing information on R&D projects, innovative products and services for the transfer of technology, as well as matchmaking services to access new partnerships and markets. Through the platform, any entity can introduce its technological problem, look for technologies that meet its needs, as well as research patents and trademarks registered in Portugal.

Source: ANI (n.d.[88]), *Technology and Business Exchange*, https://www.ani.pt/en/knowledge-valorization/interface/technology-and-business-exchange/.Agência Nacional de Inovação, S.A.

J-GoodTech (Japan) – an online business matching platform aiming to simplify and support the creation of partnerships between Japanese SMEs and companies worldwide. Japanese members are vetted by the SME support agency and gain access to an international business network composed of well-established companies covering a wide range of industries, which have in turn been screened by a competent authority in the respective countries.

Source: J-GoodTech (n.d.[89]), *About J-GoodTech*, https://jgoodtech.smrj.go.jp/pub/en/about/.

While public action displays an overall high degree of targeting, specific firm populations may fall off the radar

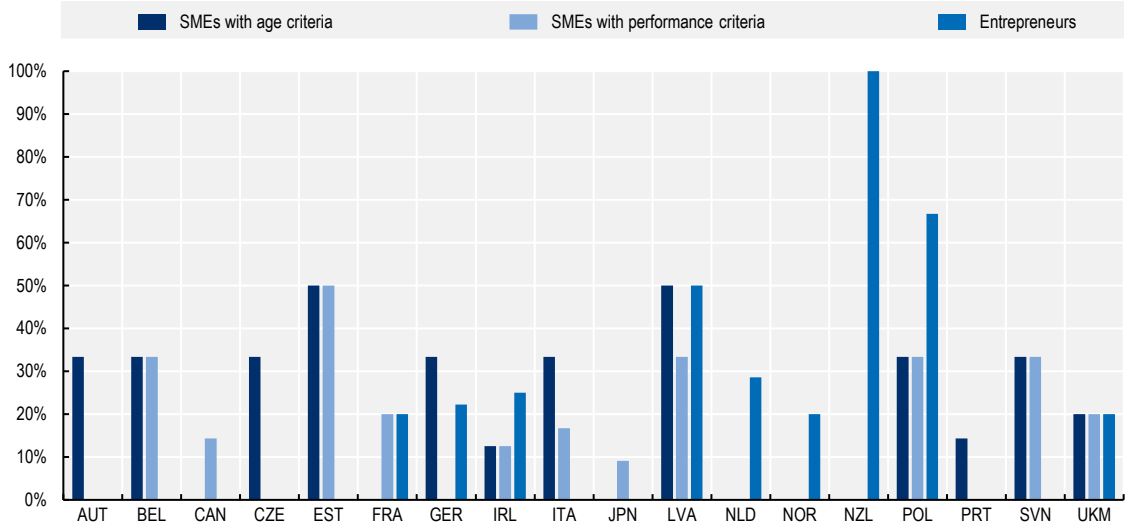
As in many other policy areas, OECD countries typically combine generic policies with more targeted measures to connect SMEs or certain segments of the SME and entrepreneur population with (global) knowledge and innovation networks. Overall, public action is highly targeted in this area (65% of policies), with the majority of targeted initiatives (86%) aiming at one (or several) specific firm populations or other

organisations. Moreover, while SMEs as a whole remain the most important target group (42% of population-targeted policies), there is also a significant (and relatively evenly distributed) share of initiatives directed at specific subpopulations, such as universities or PRIs, investors and specific firm segments, such as start-ups or innovative/high-growth firms.

Still, there are significant cross-country differences as to the degree to which specific firm segments, including the potentially most promising ones, receive government attention to support their connections to relevant innovation partners and infrastructures. Only half of OECD countries have dedicated measures in place to support entrepreneurs, start-ups or high-growth firms (Figure 5.14), and those who do typically target them in combination with other actors. An example of such "multiple targeting" includes the Knowledge Transfer Partnerships (KTPs), a programme implemented by Innovate UK, the United Kingdom's Innovation agency, which aims to build long-lasting and mutually beneficial collaborations between the working and learning worlds by matching the right businesses and institutions to work together. Both SMEs and large firms can be part of these partnerships, but also universities and PRIs, entrepreneurs and individual researchers.

Figure 5.14. Efforts to connect start-ups or high-potential SMEs to innovation networks are spread unevenly and do not feature in the policy mix of all countries

Share of population-targeted measures that are designed towards specific firm segments



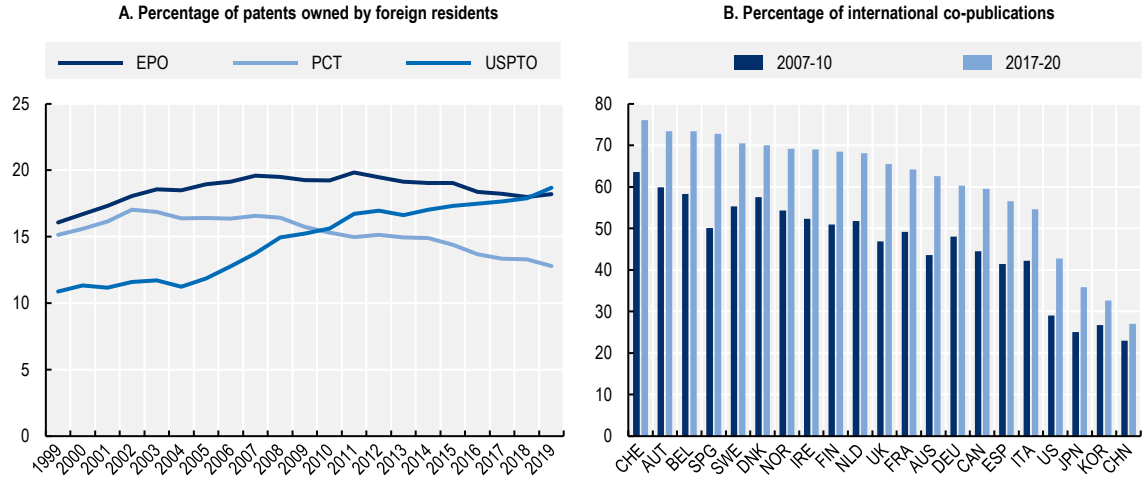
Note: Shares are calculated on the basis of a total of 280 policies related to strengthening SME linkages to knowledge and innovation networks and/or their integration into clusters, and/or the formation of strategic partnerships. SMEs with age criteria include young firms and start-ups but incumbents as well. SMEs with performance criteria include high-growth firms, scalers but also laggards.
Source: Estimates based on an experimental mapping of 601 national policies and 150 institutions supporting SME network expansion across OECD countries ((OECD, 2023[80]), EC/OECD project on Helping SMEs Scale Up – Phase II).

StatLink https://stat.link/wd3rny

Annex 5.A. Additional statistical material

Annex Figure 5.A.1. International co-patenting has tapered off, co-authorship keeps expanding

Percentage of patents with foreign co-inventors, applications filed at the EPO, USPTO and under the Patent Cooperation Treaty (PCT), 2000-19 (Panel A), and percentage of international co-publications, 2007-10 compared to 2017-20 (Panel B)



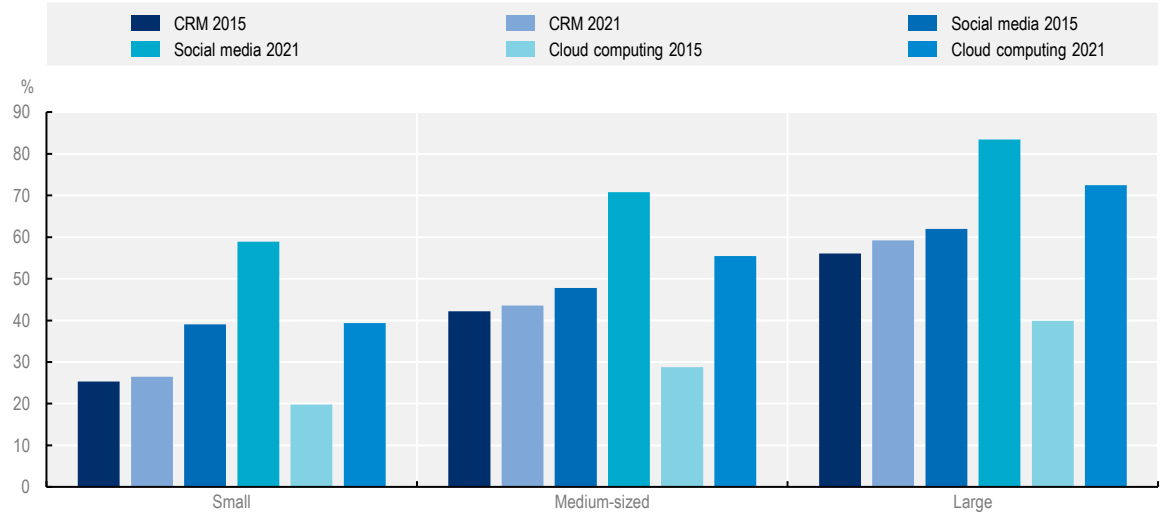
Note: World average of the share of patents with at least one foreign co-inventor in total patents invented by resident(s) of the country (inventor). Patents with at least a foreign co-inventor refer to the number of patents invented by a resident of country x with at least one foreign inventor from country y.

Source: OECD (n.d.[90]), *OECD Patents Statistics (database)*, https://doi.org/10.1787/patent-data-en (extracted in February 2023); Rathenau Institute (2022[91]), *Share of International Co-publications*, https://www.rathenau.nl/en/science-figures/process/collaboration/share-international-co-publications-international; Clarivate Analytics/WoS database, extraction by Centre for Science and Technology Studies (CWTS) and analysis by Rathenau Institute.

StatLink https://stat.link/ywfjz9

Annex Figure 5.A.2. The past six years have witnessed a massive migration to the cloud and social media platforms

Average adoption rates, OECD countries for which data are available, 2015 and 2021



Source: OECD.Stat (2023[54]), *ICT Access and Usage by Businesses (database)*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS.

StatLink https://stat.link/doe7sx

References

Ainin, S. et al. (2015), "Factors influencing the use of social media by SMEs and its performance outcomes", *Industrial Management and Data Systems*, Vol. 115/3, pp. 570-588, https://doi.org/10.1108/IMDS-07-2014-0205. [58]

Akamai (2023), *Enemy at the Gates Analyzing Attacks on Financial Services*, State of the Internet, Volume 8, Issue 3, https://www.akamai.com/resources/state-of-the-internet/enemy-at-the-gates-analyzing-attacks-on-financial-services. [75]

ANI (n.d.), *Technology and Business Exchange*, Agência Nacional de Inovação, S.A., https://www.ani.pt/en/knowledge-valorization/interface/technology-and-business-exchange/. [88]

Appelt, S. et al. (2022), "Micro-data based insights on trends in business R&D performance and funding: Findings from the OECD microBeRD+ project", *OECD Science, Technology and Industry Working Papers*, No. 2022/04, OECD Publishing, Paris, https://doi.org/10.1787/4805d3f5-en. [36]

aws (n.d.), *aws Connect*, Austria Wirtschaftsservice Gesellschaft mbH, http://www.aws.at/en/aws-connect-1/. [86]

Bailin Rivares, A. et al. (2019), "Like it or not? The impact of online platforms on the productivity of incumbent service providers", *OECD Economics Department Working Papers*, No. 1548, OECD Publishing, Paris, https://doi.org/10.1787/080a17ce-en. [61]

Bivona, E. and M. Cruz (2021), "Can business model innovation help SMEs in the food and beverage industry to respond to crises? Findings from a Swiss brewery during COVID-19", *British Food Journal*, Vol. 123/11, https://doi.org/10.1108/BFJ-07-2020-0643. [48]

Bpifrance (n.d.), *EuroQuity*, https://www.bpifrance.fr/catalogue-offres/generaliste/euroquity. [85]

Brende, B. and B. Sternfels (2022), "Resilience for sustainable, inclusive growth", McKinsey & Company, https://www.mckinsey.com/capabilities/risk-and-resilience/our-insights/resilience-for-sustainable-inclusive-growth (accessed on 24 January 2023). [18]

Casadei, P. et al. (2023), "Mapping the state of the art of creative cluster research: A bibliometric and thematic analysis", *European Planning Studies*, pp. 1-21, https://doi.org/10.1080/09654313.2022.2158722. [13]

Chatterjee, S. and A. Kumar Kar (2020), "Why do small and medium enterprises use social media marketing and what is the impact: Empirical insights from India", *International Journal of Information Management*, Vol. 53, p. 102103, https://doi.org/10.1016/j.ijinfomgt.2020.102103. [59]

Chesbrough, H. (2003), *Open Innovation: The New Imperative for Creating and Profiting from Technology*, Harvard Business School Press, Boston, MA. [7]

CISCO (2022), *2022 Global Networking Trends*, https://www.cisco.com/c/en/us/solutions/enterprise-networks/networking-technology-trends.html?ccid=cc001911&oid=rptetr025946. [67]

Corrado, C. et al. (2005), *Measuring Capital in the New Economy*, University of Chicago Press, https://www.nber.org/books-and-chapters/measuring-capital-new-economy (accessed on 7 February 2023). [8]

Costa, H. et al. (2021), "Are online platforms killing the offline star? Platform diffusion and the productivity of traditional firms", *OECD Economics Department Working Papers*, No. 1682, OECD Publishing, Paris, https://doi.org/10.1787/1e2bbe10-en. [62]

Crunchbase (2021), *Homepage*, https://www.crunchbase.com/. [84]

Datareportal (2021), *Digital 2021: Global Overview Report*, https://datareportal.com/reports/digital-2021-global-overview-report. [55]

DeBresson, C. (1996), *Economic Interdependence and Innovative Activity*, Edward Elgar. [4]

Denmark Cluster Excellence (2022), *Dilemmas of Mature Cluster Programmes: Experiences from Catalonia, Lower Austria and Denmark*, https://clusterexcellencedenmark.dk/wp-content/uploads/2022/04/Dilemmas-of-Mature-Cluster-Programmes.pdf. [31]

Dobrygowski, D. (2019), "Why companies are forming cybersecurity alliances", *Harvard Business Review*, https://hbr.org/2019/09/why-companies-are-forming-cybersecurity-alliances. [22]

ECCP (2023), *ClusterXchange*, European Cluster Collaboration Platform, https://clustercollaboration.eu/clusterxchange. [27]

ECCP (2022), *Homepage*, European Cluster Collaboration Platform, https://clustercollaboration.eu/. [26]

ENISA (2021), *Threat Landscape for Supply Chain Attacks*, European Union Agency for Cybersecurity, https://www.enisa.europa.eu/publications/threat-landscape-for-supply-chain-attacks. [74]

EUIPO (2022), *2022 Intellectual Property SME Scoreboard*, European Union Intellectual Property Office, https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/IP_sme_scoreboard_study_2022/IP_sme_scoreboard_study_2022_en.pdf. [42]

Eurostat (2022), *Community Innovation Survey 2020 (CIS2020) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database. [6]

Eurostat (2016), *Community Innovation Survey 2016 (CIS2016) (database)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database. [51]

Facebook/OECD/World Bank (2022), *The Future of Business Survey*, https://dataforgood.fb.com/global-state-of-smb. [70]

Forbes (n.d.), "The largest technology companies In 2019: Apple reigns as smartphones slip and cloud services thrive", https://www.forbes.com/sites/jonathanponciano/2019/05/15/worlds-largest-tech-companies-2019/#4de88730734f. [92]

Ford (2020), "Ford works With 3M, GE, UAW to speed production of respirators for healthcare workers, ventilators for coronavirus patients", Ford Media Center, https://media.ford.com/content/fordmedia/fna/us/en/news/2020/03/24/ford-3m-ge-uaw-respirators-ventilators.html (accessed on 14 October 2022). [43]

Gartner (2023), *The Future of Cloud Computing in 2027: From Technology to Business Innovation*, https://www.gartner.com/en/doc/768816-the-future-of-cloud-computing-in-2027-from-technology-to-business-innovation. [66]

Goldfarb, A. and C. Tucker (2019), "Digital economics", *Journal of Economic Literature*, Vol. 57/1, pp. 3-43, https://doi.org/10.1257/jel.20171452. [60]

Gompers, P. and J. Lerner (2001), "The venture capital revolution", *Journal of economic perspectives*, Vol. 15, pp. 145-168. [32]

Grabow, J. (2023), "2022 Recap: Second Highest Year for VC Investment, But Winter is Here", *Ernst & Young*, https://www.ey.com/en_us/growth/venture-capital/q4-2022-venture-capital-investment-trends. [35]

Grassano, N. et al. (2022), *The 2022 EU Industrial R&D Investment Scoreboard*, European Commission, https://iri.jrc.ec.europa.eu/scoreboard/2022-eu-industrial-rd-investment-scoreboard. [37]

Hathaway, I. (2016), "What startup accelerators really do", Harvard Business Review, https://hbr.org/2016/03/what-startup-accelerators-really-do. [83]

Hilmersson, F. and M. Hilmersson (2021), "Networking to accelerate the pace of SME innovations", *Journal of Innovation and Knowledge*, Vol. 6/1, pp. 43-49, https://doi.org/10.1016/j.jik.2020.10.001. [15]

IBM (2023), *Cost of a Data Breach 2022*, https://www.ibm.com/reports/data-breach. [73]

ImmunityBio (2020), "ImmunityBio combines supercomputing power with Microsoft Azure to target infection "doorway" of the coronavirus", https://immunitybio.com/immunitybio-combines-supercomputing-power-with-microsoft-azure-to-target-infection-doorway-of-the-coronavirus/ (accessed on 14 October 2022). [44]

INSEE (2023), "Coherence and comparability", in *Community Innovation Survey 2020*, French National Institute of Statistics and Economic Studies, https://www.insee.fr/en/metadonnees/source/operation/s1558/coherence-comparabilite. [50]

J-GoodTech (n.d.), *About J-GoodTech*, https://jgoodtech.smrj.go.jp/pub/en/about/. [89]

Jiang, H., J. Yang and J. Gai (2023), "How digital platform capability affects the innovation performance of SMEs - Evidence from China", *Technology in Society*, Vol. 72, p. 102187, https://doi.org/10.1016/j.techsoc.2022.102187. [53]

Kratzer, J., D. Meissner and V. Roud (2017), "Open innovation and company culture: Internal openness makes the difference", *Technological Forecasting and Social Change*, Vol. 119, pp. 128-138, https://doi.org/10.1016/j.techfore.2017.03.022. [11]

Kuberska, D. and M. Mackiewicz (2022), "Cluster policy in Poland - Failures and opportunities", *Sustainability*, Vol. 14/3, p. 1262, https://doi.org/10.3390/su14031262. [29]

Noy, S. and W. Zhang (2023), "Experimental evidence on the productivity effects of generative artificial intelligence". [63]

OECD (2023), *Fostering FDI-SME ecosystems to boost productivity and innovation*, https://www.oecd.org/cfe/smes/fdi-sme.htm (accessed on 21 June 2023). [81]

OECD (2023), "OECD Data Lake on SMEs and Entrepreneurship", https://www.oecd.org/cfe/datalake.htm. [82]

OECD (2023), *OECD Science, Technology and Innovation Outlook 2023: Enabling Transitions in Times of Disruption*, OECD Publishing, Paris, https://doi.org/10.1787/0b55736e-en. [79]

OECD (2023), *Strengthening FDI and SMEs Linkages and Spillovers: A Policy Toolkit*, OECD Publishing, Paris, https://doi.org/10.1787/688bde9a-en. [19]

OECD (2023), *Unleashing SME potential to scale up*, https://www.oecd.org/cfe/smes/sme-scale-up.htm (accessed on 21 June 2023). [80]

OECD (2023), *Unleashing SME Potential to Scale Up*, OECD, Paris, https://www.oecd.org/cfe/smes/sme-scale-up.htm. [3]

OECD (2022), "Financing growth", in *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Publishing, Paris, https://doi.org/10.1787/6962c7a9-en (accessed on 11 October 2022). [69]

OECD (2022), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/81c738f0-en. [2]

OECD (2022), *Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard*, OECD Publishing, Paris, https://doi.org/10.1787/e9073a0f-en. [33]

OECD (2022), "From recovery to resilience: Designing a sustainable future for Fukushima", *OECD Regional Development Papers*, No. 37, OECD Publishing, Paris, https://doi.org/10.1787/e40cbab1-en. [23]

OECD (2022), *OECD Digital for SMEs Global Initiative (D4SME)*, OECD, Paris, https://www.oecd.org/digital/sme/. [49]

OECD (2022), *OECD Main Science and Technology Indicators*, OECD, Paris, https://www.oecd.org/sti/msti.htm. [40]

OECD (2022), *Promoting Start-Ups and Scale-Ups in Denmark's Sector Strongholds and Emerging Industries*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/8f9bd7b0-en. [30]

OECD (2022), *The Culture Fix: Creative People, Places and Industries*, Local Economic and Employment Development (LEED), OECD Publishing, Paris, https://doi.org/10.1787/991bb520-en. [14]

OECD (2021), *Entrepreneurship in Regional Innovation Clusters: Case Study of Chiang Mai and Chiang Rai, Thailand*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/2a24a552-en. [25]

OECD (2021), "Local entrepreneurship ecosystems and emerging industries: Case study of Cambridgeshire and Peterborough, United Kingdom", *OECD Local Economic and Employment Development (LEED) Papers*, No. 2021/01, OECD Publishing, Paris, https://doi.org/10.1787/044ffc1d-en. [93]

OECD (2021), *OECD Science, Technology and Innovation Outlook 2021: Times of Crisis and Opportunity*, OECD Publishing, Paris, https://doi.org/10.1787/75f79015-en. [41]

OECD (2021), *OECD SME and Entrepreneurship Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/97a5bbfe-en. [17]

OECD (2021), "Policy for high-tech clusters: Lessons from Cambridge, UK", OECD-GEN Webinar - Summary of Proceedings, OECD, Paris. [28]

OECD (2021), "SME digitalisation to "Build Back Better": Digital for SMEs (D4SME) policy paper", *OECD SME and Entrepreneurship Papers*, No. 31, OECD Publishing, Paris, https://doi.org/10.1787/50193089-en. [52]

OECD (2021), *The Digital Transformation of SMEs*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/bdb9256a-en. [16]

OECD (2021), *The OECD micro BeRD Project*, OECD, Paris, https://oe.cd/microberd. [39]

OECD (2021), "The role of online platforms in weathering the COVID-19 shock", *OECD Policy Responses to Coronavirus (COVID-19)*, OECD Publishing, Paris, https://doi.org/10.1787/2a3b8434-en. [56]

OECD (2019), *Measuring the Digital Transformation: A Roadmap for the Future*, OECD Publishing, Paris, https://doi.org/10.1787/9789264311992-en. [64]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [1]

OECD (2019), *Second Japan/OECD Policy Dialogue Decommissioning Industry Cluster Development*, OECD, Paris. [24]

OECD (2018), *OECD Regions and Cities at a Glance 2018*, OECD Publishing, Paris, https://doi.org/10.1787/reg_cit_glance-2018-en. [77]

OECD (2015), *Frascati Manual 2015: Guidelines for Collecting and Reporting Data on Research and Experimental Development*, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris, https://doi.org/10.1787/9789264239012-en. [94]

OECD (2015), *New Approaches to SME and Entrepreneurship Financing: Broadening the Range of Instruments*, OECD Publishing, Paris, https://doi.org/10.1787/9789264240957-en. [34]

OECD (2015), *Skills and Learning Strategies for Innovation in SMEs*, Working Party on SMEs and Entrepreneurship (WPSMEE), OECD, Paris, https://one.oecd.org/document/CFE/SME(2014)3/REV2/en/pdf (accessed on 6 June 2018). [21]

OECD (2015), *The OECD Model Survey on ICT Usage by Businesses, 2nd Revision*, OECD, Paris, https://www.oecd.org/sti/ieconomy/ICT-Model-Survey-Usage-Businesses.pdf. [57]

OECD (2010), *SMEs, Entrepreneurship and Innovation*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/9789264080355-en. [10]

OECD (2004), *Networks, Partnerships, Clusters and Intellectual Property Rights: An Opportunity and Challenges for Innovative SMEs in a Global Economy*, OECD, Paris, https://www.oecd.org/cfe/smes/31919244.pdf. [5]

OECD (n.d.), *OECD Patents Statistics (database)*, OECD, Paris, https://doi.org/10.1787/patent-data-en. [90]

OECD (n.d.), *Research and Development Statistics (RDS) (database)*, OECD, Paris, https://www.oecd.org/sti/inno/researchanddevelopmentstatisticsrds.htm. [38]

OECD.Stat (2023), *ICT Access and Usage by Businesses (database)*, OECD, Paris, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS. [54]

OECD/Eurostat (2018), *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation, 4th Edition*, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg, https://doi.org/10.1787/9789264304604-en. [9]

Opara-Martins, J. (2018), "Taxonomy of cloud lock-in challenges", in *Mobile Computing*, IntechOpen, https://doi.org/10.5772/intechopen.70979. [71]

Opara-Martins, J., R. Sahandi and F. Tian (2016), "Critical analysis of vendor lock-in and its impact on cloud computing migration: A business perspective", *Journal of Cloud Computing*, Vol. 5, https://doi.org/10.1186/s13677-016-0054-z. [72]

Open R&D (n.d.), *Homepage*, https://openlithuania.com/. [87]

PitchBook (2023), *PitchBook Analyst Note: Capital Concentration and Its Effect on the VC Ecosystem*, https://eur02.safelinks.protection.outlook.com/?url=https%3A%2F%2Furl6380.news.pitchbook.com%2Fls%2Fclick%3Fupn%3D-2B0Jlug6i80mluh5Xp2-2BZsfdSR-2BbC0M2D2Pkba6hdCew4p-2BNWhaVdYgMw2yxg7I6FC8scwr3qS3QCVeOVbQ9szg-3D-3DyuBD_gKkoqS4P3mH2D5VAOVaDqhb6CdBwLf235WrY. [78]

Plantform (2020), "PlantForm partnerships responding to COVID-19 testing and treatment needs", https://www.plantformcorp.com/file.aspx?id=e5d1cf3e-ffdb-47f4-a3a3-4b62c089f389 (accessed on 14 October 2022). [46]

Positive Technologies (2022), *Threats and Vulnerabilities in Web Applications 2020-2021*, https://www.ptsecurity.com/ww-en/analytics/web-vulnerabilities-2020-2021/. [76]

Potts, J. et al. (2008), "Social network markets: A new definition of the creative industries", *Journal of Cultural Economics*, Vol. 32/3, pp. 167-185, https://doi.org/10.1007/s10824-008-9066-y. [12]

Rathenau Institute (2022), *Share of International Co-publications*, https://www.rathenau.nl/en/science-figures/process/collaboration/share-international-co-publications-international. [91]

Samsung (2020), "Master key for manufacturing applied to virus test kits (video)", https://news.samsung.com/global/video-master-key-for-manufacturing-applied-to-virus-test-kits (accessed on 14 October 2022). [45]

Siemens (2020), "Siemens connects healthcare providers and medical designers to produce components through additive manufacturing", https://press.siemens.com/global/en/pressrelease/siemens-connects-healthcare-providers-and-medical-designers-produce-components-through (accessed on 14 October 2022). [47]

TechTarget (2020), “Top cloud migration and adoption trends for 2022 and beyond”, https://www.techtarget.com/searchcloudcomputing/feature/Follow-these-top-cloud-migration-trends. [65]

WEF (2022), “2 tech trends that will shape networks and the future of connectivity”, World Economic Forum, https://www.weforum.org/agenda/2022/01/connectivity-is-evolving-to-address-the-biggest-global-challenges-here-s-how. [68]

WTO (2021), *Global Value Chain Development Report: Beyond Production*, World Trade Organization, Geneva/Asian Development Bank, Manila/University of International Business and Economics, Beijing/IDE-JETRO/China Development Research Foundation, Beijing, https://doi.org/10.30875/7eb92281-en. [20]

Notes

[1] See (OECD, 2021[93]).

[2] Interestingly, out of the largest ten public technology companies measured by market capitalisation in 2019, eight of them raised funds from venture capital firms before going public (Forbes, n.d.[92]).

[3] Although innovation captures many non-technological innovations (e.g. in organisational processes or marketing), R&D is often used as a proxy for technological and more disruptive innovation. R&D performance is measured as per the input made to R&D activities (e.g. R&D expenditure, R&D staff) and as per output created from R&D activities (e.g. patents, spin-off) (OECD, 2015[94]).

[4] 2016-20 is the largest period over which data could be compared over time (INSEE, 2023[50]).

[5] At the same time, the larger the number of SMEs on a given platform, the stiffer the competition among them, with possible negative effects on their margins.

[6] Most cloud computing services ask for a fixed monthly “subscription” payment plus a variable cost based on the specific need in the period.

[7] Based on interviews with 550 organisations impacted by data breaches that occurred between March 2021 and March 2022, across 17 countries and regions and in 17 different industries.

[8] The size of organisations in the sample is however unknown.

[9] Many firms located in large hubs do have smaller satellite offices, either in other hubs or in smaller markets. So, tagging the full size of a fund to the listed headquarter site can be problematic without proper perspective.

[10] More information available here: https://www.oecd.org/cfe/datalake.htm

6 Upskilling, reskilling and finding talent: The role of SME ecosystems

Against the backdrop of international shocks, this chapter propose a narrative concerning the skills needs of SMEs that does not focus on technical competencies but rather on bundles of transversal skills, related to the way in which SMEs and entrepreneurs develop their business, cope with digital innovations and connect to partners and customers. These bundles of skills encompass “capabilities”: entrepreneurial competencies that affect resilience and competitiveness of SMEs and entrepreneurs. The chapter also discusses the limitations for SMEs and entrepreneurs to internalise all the skills they need and argues that they can leverage their “ecosystem”. There are international examples of policies that provide SMEs and entrepreneurs with training opportunities and connections to improve their transversal skills. Several of these policy actions have an explicit spatial dimension, as they accompany SMEs and entrepreneurs, locally. However, often these policies are small in scale, or disconnected from other policy agendas

In Brief

- Skills are especially relevant for the competitiveness and resilience of small- and medium-sized enterprises (SMEs), which, compared to larger organisations, typically have a more limited ability to leverage other sources of capital and productivity. Access to skills is also critical for SMEs to adapt to rapid changes in economies, whereby value creation increasingly hinges on human capital and intangible assets.
- The green and digital transitions are changing skills demand for a broad range of jobs throughout the economy, with different challenges and opportunities within countries. The increasing demand for technical skills is paralleled by the need for broader "skills bundles", which encompass "transversal skills" that are of use in a wide variety of situations and work settings. These include cognitive skills such as digital, financial and management competencies as well as soft skills related to behavioural aspects and entrepreneurial mindsets, such as the capacity to work in a team, active learning, tolerance to uncertainty, flexibility and accountability.
- Against the background of tight labour markets and pressures to adapt to the digital and green transitions, skill gaps and shortages have become widespread. These trends amplify the challenges faced by SMEs in accessing and developing talent. SMEs typically have limited connections to networks that may give access to qualified workers and lack formalised human resource management strategies to identify skills gaps and retain trained and skilled staff. In addition, SMEs may not be able to use the numerous financial incentives available to cover training costs, either because they are not aware of these schemes, or because they do not meet eligibility criteria.
- To be able to cope with systemic change and leverage new opportunities, SMEs need to overcome the longstanding challenges to acquire or develop a broader set of skills, bundles of competencies that can help them improve reactiveness to novelty and emerging opportunities.
- Across countries, skills policies deployed to support businesses are often generic in nature. For example, skill policies remain largely focused on place-neutral support for higher education and vocational training. At the same time, innovative approaches and good practices are emerging, which propose a focus on tailored policy strategies and programmes that target both supply and demand of skills in SMEs, leveraging or strengthening skills ecosystems, and often delivered with spatial lenses.
- Skills ecosystems offer SMEs channels to access bundles of skills, including transversal ones, without the need of internalising them and fully bearing the related costs. Rather, skills can be accessed through the specialised labour pool or in the form of knowledge services. The abundance of these "positive externalities" can enable SMEs to tap more easily into relevant expertise and respond to the need for "non-core" skills in a sustainable manner. The effectiveness of these policies largely depends on their complementarities with other policy agendas, such as those related to regional development, innovation and sustainability.

SME skills needs are evolving rapidly due to the digital and green transition

Skills are key to SME competitiveness and resilience

Accessing, developing and using skills effectively is crucial for businesses to thrive in fast-changing economies, which are increasingly based on the production and use of information, knowledge, data and technologies. In the knowledge-based, globally connected and increasingly digitalised economy, value creation strongly hinges on human capital and intangible assets. Skilled workers and access to specialised expertise represent a key driver of firm competitiveness and productivity growth (OECD, 2019[1]; Marchese et al., 2019[2]).

Skills are especially relevant for the competitiveness and resilience of SMEs, which, compared to larger organisations, typically have a more limited ability to leverage other sources of capital and productivity. Access to skills is also critical for SMEs to adapt to rapidly changing business and technology environments. Research shows that skills upgrading represents a key competitive strategy adopted by small businesses to scale up innovative efforts, adjust to rising competition or grow by accessing new markets, whether through developing new product niches or entering new geographical destinations (Jansen and Lanz, 2013[3]; Brambilla, Lederman and Porto, 2012[4]; Love and Roper, 2015[5]).

Skills needs are evolving rapidly, with the increasing prominence of "transversal skills"

The transition to a green and digital economy and the rapid changes in the trade environment and configuration of local and global value chains, are profoundly impacting the skills needs of businesses and entrepreneurs. The increasing demand for technical skills is paralleled by the need of developing broader "skills bundles". As adopting data-intensive technologies requires complementary investments in human capital, alongside the technical skills required to perform specific jobs and tasks, these bundles need to encompass "transversal skills", that is to say, skills that are not specifically related to a particular job, task, academic discipline or area of knowledge but can be used in a wide variety of situations and work settings (UNESCO, 2015[6]) (OECD, 2021[7]).

Transversal skills include cognitive skills such as digital, financial and management competencies as well as soft skills, which are more related to behavioural aspects such as the capacity to work in a team, tolerance to uncertainty and accountability. These soft skills are at least as important as cognitive skills for individual development and labour market success (Brunello and Schlotter, 2011[8]) and represent key features of entrepreneurial mindsets (Box 6.1).

Recent employee surveys highlight the importance of these "skills bundles" to thrive in the digital and green economy in the coming years. For instance, the World Economic Forum (WEF) Future of Jobs Survey 2020 found that critical thinking and analysis, as well as problem solving, were the most sought-after skills across sectors. Furthermore, in the aftermath of the COVID-19 pandemic, skills in self-management, such as active learning, resilience, stress tolerance and flexibility, have increased in importance in skills demand (Figure 6.1) (WEF, 2020[9]).

Box 6.1. Defining the entrepreneurial mindset

Learning new skills is essential to cope with transformation but it is not enough. Entrepreneurs and employees must also be motivated to use their skills to create new opportunities. They need an entrepreneurial mindset, where "mindset" is intended as a way of thinking and orienting to the world that shapes how individuals perceive, feel and act (Neeley and Leonardi, 2022[10]). In a highly volatile setting, in which innovation is the main driver to increase productivity, entrepreneurship is increasingly

viewed as an important characteristic of individuals because it provides them with the capacity to transform ideas into new and sustainable processes, products and services.

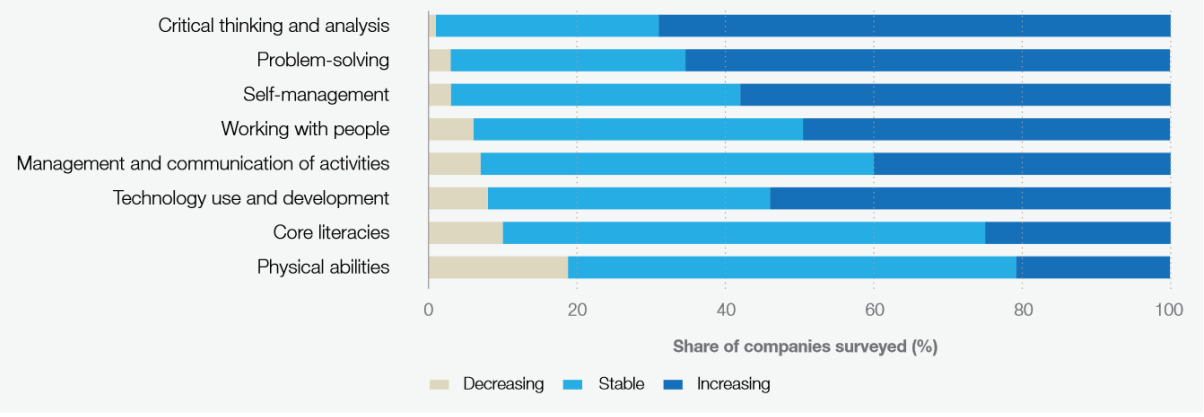
Entrepreneurship, also embodying intrapreneurship when individuals operate in an organisation that they did not create or own, provides individuals with a capacity to identify and solve problems, have more tolerance to uncertainty, mobilise resources and manage creation and value realisation processes (OECD, 2023[11]). Many of these aptitudes can be linked to cognitive competencies such as logic and reasoning and memorisation of information and procedural experience. However, there are a number of wider non-cognitive characteristics that can enhance value-creating endeavours. Acquiring such skills can be beneficial to all individuals and in particular to entrepreneurs and SMEs, regardless of their sectoral specialisation.

Importantly, the entrepreneurial mindset can be learned and taught. While not all non-cognitive skills are entrepreneurial in nature, entrepreneurship-focused education can support the development of non-cognitive skills. In particular, the entrepreneurial mindset as described above can be developed through the application and experimentation of entrepreneurship pedagogies and practices and non-formal learning provisions (OECD/EU, 2018[12]).

Source: Neeley, T. and P. Leonardi (2022[10]), "Developing a digital mindset. How to lead your organization into the age of data, algorithms, and AI", https://hbr.org/2022/05/developing-a-digital-mindset; OECD (2023[11]), *The Geography of Higher Education in Québec, Canada*, OECD Publishing, Paris; OECD/EU (2018[12]), *Supporting Entrepreneurship and Innovation in Higher Education in The Netherlands*, https://doi.org/10.1787/9789264292048-en.

Figure 6.1. Employers increasingly seek critical thinking and analysis, problem-solving and self-management skills

Perceived skills and skills groups with growing demand by 2025, by share of companies surveyed



Note: The 2020 OECD-World Bank-Meta Future of Business Survey was administered in the first half of 2020. The final respondent sample is composed of multinational (65%) and national companies (35%) with at least 100 employees. It includes responses from chief executive officers (12%), top executives (59%), middle-level executives (25%) and other respondents such as consultants (3%).
Source: Based on WEF (2020[9]), *The Future of Jobs Report 2020*, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf.

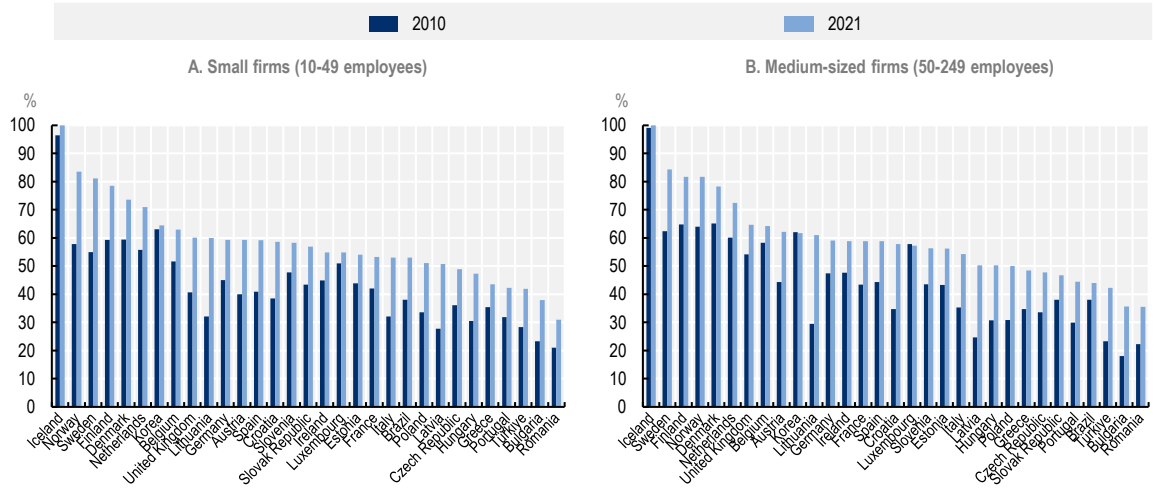
The accelerated digitalisation of economies and the pressure for achieving sustainability are the main drivers of changing skill needs

Beyond particular sectors and occupations that develop and provide digital goods and services, digital skills are becoming a transversal requirement, across sectors, occupations and firm sizes (Cedefop,

2021[13]). This includes SMEs, where the use of digital tools by employees has increased significantly over the past decade, concerning a majority of jobs, although cross-country differences remain (Figure 6.2). For instance, over 2010-21, across OECD economies, the share of employees using a computer with Internet access at work increased on average from 43% to 58% in small firms, and from 45% to 59% in medium-sized companies.

Figure 6.2. SME employees are increasingly using digital tools

Persons employed using a computer with Internet access



Note: Data for Austria, Iceland, Korea and UK refer to 2020; data for Brazil refer to 2019.
Source: Based on OECD.Stat (n.d.[14]), *ICT Access and Usage by Businesses (database)*, https://stats.oecd.org/OECDStat_Metadata/ShowMetadata.ashx?Dataset=ICT_BUS&ShowOnWeb=true&Lang=en.

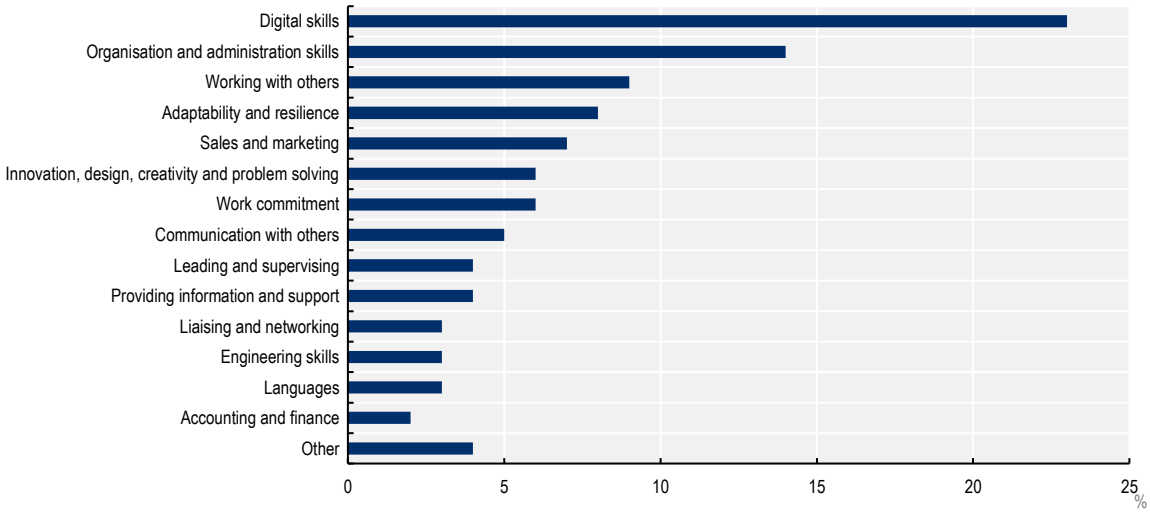
StatLink https://stat.link/6t3o4n

The demand for digital skills further accelerated with the COVID-19 pandemic. As remote work, driven by necessity, took off with businesses across sectors, the effective use of digital skills proved to be a critical component of resilience. Analysis of the skills demand composition of online job advertisements posted in 2020 in Europe shows that the digital skills cluster recorded the most pronounced shift compared to 2019, growing from 20% to 23% of total skill demand (Figure 6.3.) (Cedefop, 2020[15]).

Emerging digital technologies exacerbate the need for skills bundles integrating technical and transversal skills (Box 6.2). As a case in point, OECD analysis of the skills bundles demanded in artificial intelligence (AI)-related job postings shows that, in addition to technical skills in the digital area (e.g. skills related to open-source programming, management of big data and data analysis, machine learning and robotics), there is a growing demand for transversal skills including written communication, problem-solving skills, teamwork skills and creativity. In particular, over the past decade, communication skills have gained relative importance, reflecting the need for effective communication within teams involved in the development and adoption of AI, as well as among the different parts of the firm or institution developing or adopting AI, for AI to be correctly deployed (Samek, Squicciarini and Cammeraat, 2021[16]).

Figure 6.3. Demand for digital skills accelerated with the COVID-19 pandemic

Share of broad skill areas on total skill demand in online job advertisements, EU, 2020



Source: Based on Cedefop (2020[15]), "Coronavirus and the European job market: How the pandemic is reshaping skills demand", https://www.cedefop.europa.eu/en/news/coronavirus-and-european-job-market-how-pandemic-reshaping-skills-demand.

StatLink https://stat.link/wmuj5a

Box 6.2. Emerging digital technologies generate multidimensional skills needs

With accelerated digital transformation, intangible assets have become a more important part of nearly all firms' value, even if not recorded on balance sheets, especially data-driven firms. Indeed, improved access, use and protection of data – in short, improved data governance – is becoming a strategic issue for businesses across all sectors (OECD, 2022[17]). Effective data governance demands significant investments in a diverse set of skills, including, among others, technical skills (e.g. database or warehouse design and management, development of cybersecurity frameworks and tools), analytical skills (e.g. interpreting data and generating insights from different data sources), language skills (e.g. creating glossaries) and strategic thinking (e.g. understanding how data can serve the strategic objectives of the firm). Organisational capital and managerial skills also play an important role in improving the adoption of data-related technologies and enabling changes towards data-driven business processes within the firm (Calvino et al., 2022[18]).

In fact, the increased demand for digital skills and services relates to specialised, technical skills for the use of specific digital technologies but also importantly to transversal "soft"' skills, confirming the need for integrated skills bundles.

"Soft" skills, such as the ability to search and evaluate information, solve unexpected problems, communicate and collaborate effectively and be creative are all instrumental to the successful use of digital technologies within a firm – alongside the entrepreneurial (intrapreneurial) skills needed to make change happen. Furthermore, "critical thinking" and "ability to learn" are key to sustaining the continuous learning process – or lifelong learning – that is essential to keep pace with the evolution of digital tools.

Source: OECD (2022[17]), "Financing growth", https://doi.org/10.1787/6962c7a9-en (accessed on 11 October 2022); Calvino, F. et al. (2022[18]), "Closing the Italian digital gap: The role of skills, intangibles and policies", https://doi.org/10.1787/e33c281e-en.

The green transition represents another driver of change in skill needs for many jobs across sectors, as well as creating opportunities for occupations that may not yet exist (OECD, 2023[19]). The impact of green transition will of course have a significant impact in sectors such as energy (especially renewables), transport, manufacturing (especially automotive, steel and iron), construction, agriculture and waste management (Cedefop, 2021[20]). But nearly all sectors are affected to varying degrees, as businesses need to adjust to the green transition, such as by innovating or adapting products and processes, complying with regulations, addressing supply chain requirements or accessing sustainable finance.

Moreover, the emerging skills requirements do not only concern occupations that explicitly tackle climate change, protect the ecosystem, encourage biodiversity and reduce carbon emissions and the consumption of energy, materials and water. The green transition is expected to lead to a shift in the skills required for a broad range of jobs throughout the economy – from construction to fashion to scientific research (OECD, 2023[19]). Already, green skills demand is evolving more broadly across job profiles, including, for instance, aspects related to economics and accounting, design and construction skills, system analysis, health and safety, data management, reporting and engineering, among many others (OECD, 2023[19]). For example, analysis based on social media platform LinkedIn data shows that green skills are often required in traditional "non-green" jobs, such as sustainable fashion, fleet management and sales. Over 2016-21, the fastest-growing "greening jobs" (i.e. jobs that typically require some skills that enable the environmental sustainability of economic activities) include roles that are found in a variety of sectors and businesses, such as compliance manager, facilities manager and technical sales representative (LinkedIn, 2022[21]). However, those developments and the overall impact of the green transition on skills demand and jobs differ strongly across regions within countries. Therefore, upskilling and retraining policies should be joined up with wider local development efforts to address the specific challenges and opportunities that different regions and communities face (Box 6.3).

Box 6.3. The green transition's implications for local jobs, skills and workers

While tackling climate change and environmental degradation is one of the most formidable tasks the world faces, a lack of workers with relevant skills could hold back the green transition. This shift to a sustainable and net-zero economy will result in a significant transformation of local labour markets, as workers move into different occupations and sectors, amplifying megatrends such as digitalisation and demographic change that have also been reshaping the geography of jobs and the world of work.

The greening of the labour market has different effects on people, places and firms. New types of jobs will emerge. Some existing jobs, especially in highly polluting activities such as coal and gas extraction, will be lost. Furthermore, the green transition will lead to a shift in the skills required for many other jobs throughout the economy. Since the geography of these transitions will also differ, a place-based strategy will be vital, with local economic development and business support programmes complementing national green transition policies, particularly for SMEs.

Local economies differ in terms of the risk of job loss as well as the opportunities for "green" jobs

While the green transition is a global megatrend mainly spurred by policy, its labour market impact is inherently local. Both the risks and opportunities for workers are uneven across different places within the same country. Regions relying on high-emission sectors are more likely to see jobs disappear due to green policies. Likewise, economic opportunities and "green" job creation will not materialise equally everywhere. Therefore, aggregate effects or national data can conceal regional disparities in the labour market impact of the green transition.

Around 18% of workers in the OECD have jobs with a significant share of green tasks that directly help improve environmental sustainability or reduce greenhouse gas emissions. However, the share of those

"green-task" jobs differs across regions, ranging from 7% to more than 35%. Some regions, including many capital regions, are at the forefront of the green transition – they already have a high and increasing share of green-task jobs and a low share of "polluting" jobs at risk of disappearing. In other regions, a high share of polluting and green-task jobs coincide, which creates space for job transitions. However, there are also regions with an above-average risk of job displacement that have not yet managed to capture the benefits of the green transition. Overall, few regions with a low share of green-task jobs show signs of catching up.

The green transition may deepen divides within local labour markets

The green transition has a strong gender dimension in the labour market. Women tend to be under-represented in green-task jobs, accounting for only 28% of them, requiring policy efforts to raise female participation in the green transition. On the other hand, men will be the most affected by the disappearance of polluting jobs.

Without the right policy action, the green transition may have other significant distributional effects. Green-task jobs tend to offer up to 20% higher pay than other jobs. While future green jobs might shift towards medium- and low-skilled occupations, in activities such as waste management, retrofitting or construction, so far, high-skilled and educated workers have predominantly captured the employment opportunities brought about by the green transition. In contrast, people with lower educational attainment and in medium-skilled occupations are at higher risk of displacement due to the green transition.

Local actions will be essential in creating green jobs and supporting the development of green skills

Local actors will play an important role in managing the green, and just, transition, alongside national governments. As both the challenges and opportunities of the green transition are place-specific, local actions or national initiatives tailored to local realities are needed, in particular in the areas of employment and skills policies.

Many of the challenges brought about by the green transition can be tackled by adapting and ramping up the existing local labour market and skills systems, others will require tailored policies. Local skills systems are already struggling to keep pace with the rapid change of jobs and skills needs and, often, to reach those individuals that would benefit the most from training. Therefore, governments need to double down on adult learning and active labour market policies informed by skills assessment and anticipation systems in order to equip enough workers with the green skills that are in demand. This requires active engagement from workers, employers and public actors, and targeted measures that address the uneven risk of job losses across regions, industries and individuals.

Source: OECD (2023[19]), *Job Creation and Local Economic Development 2023: Bridging the Great Green Divide*, https://doi.org/10.1787/21db61c1-en.

In addition, the capacity of businesses to respond to the sustainability imperative depends increasingly on transversal skills. These include environmental awareness and a willingness to learn about sustainable development, systems and risk analysis, skills to identify opportunities and create new strategies to respond to green challenges, as well as soft skills, such as interpersonal competencies (e.g. management skills to facilitate holistic and interdisciplinary approaches that encompass economic, social and environmental objectives, communication and negotiation skills for addressing conflicting interests in complex contexts, marketing skills to promote greener products and services) and intrapersonal competencies (e.g. adaptability to learn and apply new technologies and processes required to green a task or a job, entrepreneurial skills to capture opportunities presented by low-carbon technologies) (Pavlova, 2018[22]). Also, skills associated with abstract reasoning and problem solving can drive the

implementation of technological and organisational changes necessary to deal with the opportunities and the challenges of the green transition (Autor, Levy and Murnane, 2003[23]), including those triggered by environmental regulation (Vona et al., 2018[24]).

Several short-term and structural factors limit SMEs' access to talent

Against the backdrop of increasing and pressing needs for bundles of transversal skills, SMEs face short- and long-term challenges to access the talent they need to compete and thrive in a digital and greener economy. The way SMEs and entrepreneurs identify and act on rapidly evolving skills needs is key to their successful adaptation to major transformation trends but also to their long-term resilience and competitiveness, capacity to drive change and contribution to societal needs and well-being. The COVID-19 crisis as well as Russia's war of aggression against Ukraine have generated economic and societal shocks that have affected labour markets and, in turn, the ability of SMEs and entrepreneurs to access skills (see Chapter 1). These short-term challenges compound structural challenges that SMEs face when hiring, upskilling or reskilling their workforce.[1]

As labour markets tighten and demand for transversal skills increases, skill gaps and shortages have become widespread and are especially pronounced for SMEs

Tight labour markets and a shortage of workers have been defining characteristics across most OECD countries in recent years, reflecting, among others, demographic trends (ageing) agglomeration dynamics (concentration of the population in urban and metropolitan areas), and technological change and skills shortages have worsened in the aftermath of the COVID-19 crisis. In 2022, in many industries and countries, the number of firms reporting labour shortages rose significantly above pre-pandemic levels (OECD, 2022[25]).

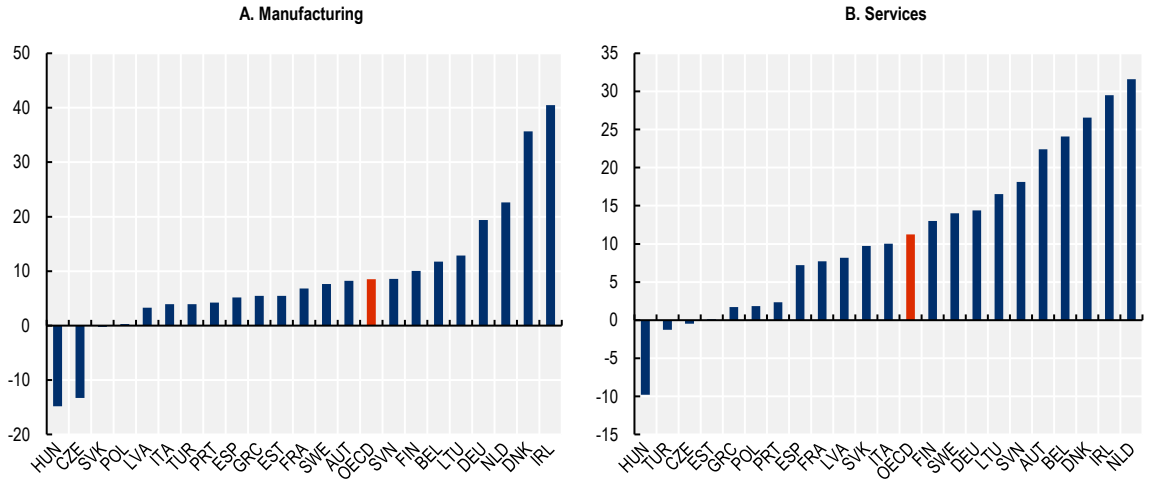
Total employment in the OECD area returned to pre-COVID crisis levels at the end of 2021, continuing to grow in the first half of 2022, before Russia's war of aggression against Ukraine threatened the strength of the recovery. The OECD unemployment rate fell from its peak of 8.8% in April 2020 to 4.9% in July 2022. Driven by the post-pandemic economic rebound and steep increase in labour demand, in the second half of 2021 and early 2022, vacancies surged to record highs in many countries. In July 2022, in the United States, more than 11 million job vacancies were posted, against a pool of less than 6 million unemployed. The number of firms reporting production constraints from labour shortages rose significantly above pre-pandemic levels across European Union (EU) countries and Türkiye, both in services and manufacturing (27.5% of services firms reported shortages, more than 11 percentage points above the pre-crisis level, and 26% of manufacturing firms, 8.5 percentage points higher than before the crisis) (Figure 6.4) (OECD, 2022[25]). In Canada, from the first quarter of 2020 to the third quarter of 2022, the proportion of long-term job vacancies rose from 28.5% to 38.4% (Lam, 2022[26]).

In some countries, resignations have increased along with labour tightness. While cyclical factors may be at play, the rapid increase in resignations in the aftermath of the pandemic also suggests the crisis may have triggered a change in workers' preferences (Causa et al., 2022[27]). In the United States, resignations increased across all sectors, reaching record highs in 2021, but were more pronounced – relative to the sector size – in manufacturing, retail trade and finance and insurance (OECD, 2022[25]).

Labour shortages have risen substantially in all sectors, including low-pay sectors, such as accommodation and food, and sectors that were under strain during the pandemic, such as health and care-related activities. Recruiting challenges have also increased in manufacturing and higher-pay industries, including the information and communication sector (ICT), where new demand triggered by accelerated digitalisation has amplified structural gaps (Figure 6.5) (OECD, 2022[25]; Causa et al., 2022[27]).

Figure 6.4. Production constraints from labour shortages have become widespread

Differences in the share of firms reporting labour shortages between the second quarters of 2016-19 and Q2 2022



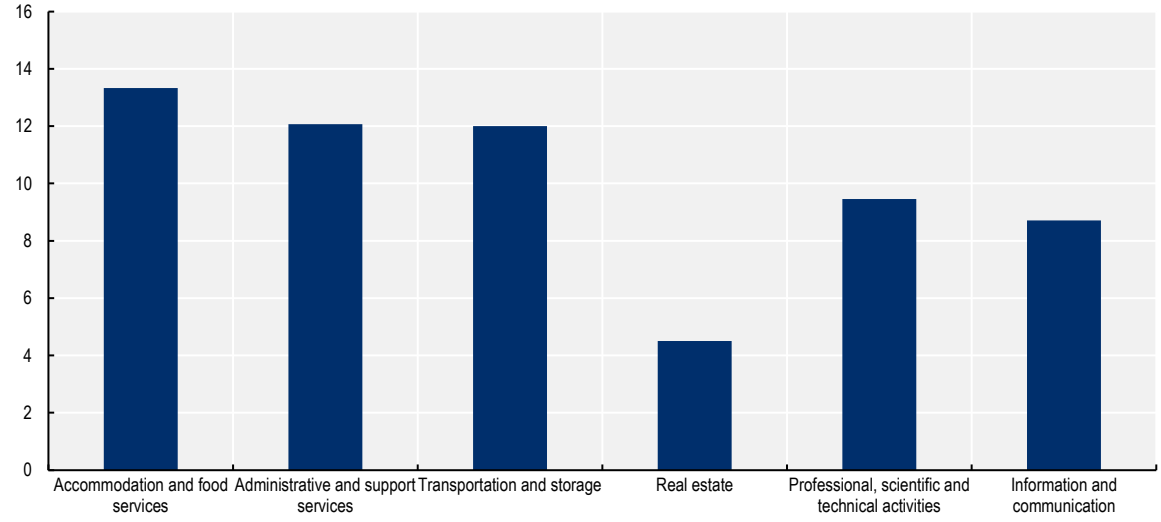
Note: Data in the second quarter of the calendar year are collected in the first two to three weeks of April. Firm responses are seasonally adjusted.

Source: OECD (2022[25]), *OECD Employment Outlook 2022: Building Back More Inclusive Labour Markets*, https://dx.doi.org/10.1787/1bb305a6-en, based on European Commission Business and Consumer Survey.

StatLink https://stat.link/3ga6d4

Figure 6.5. Recruiting challenges are acute in low-pay sectors but also in high-pay services

Percentage changes in the number of firms reporting recruiting challenges by service sector in the 27 EU member states, from Q4 2019 to Q2 2022, seasonally adjusted



Note: Industries are ranked by the median wage in 2019 in the European Structure of Earnings Survey (SES).

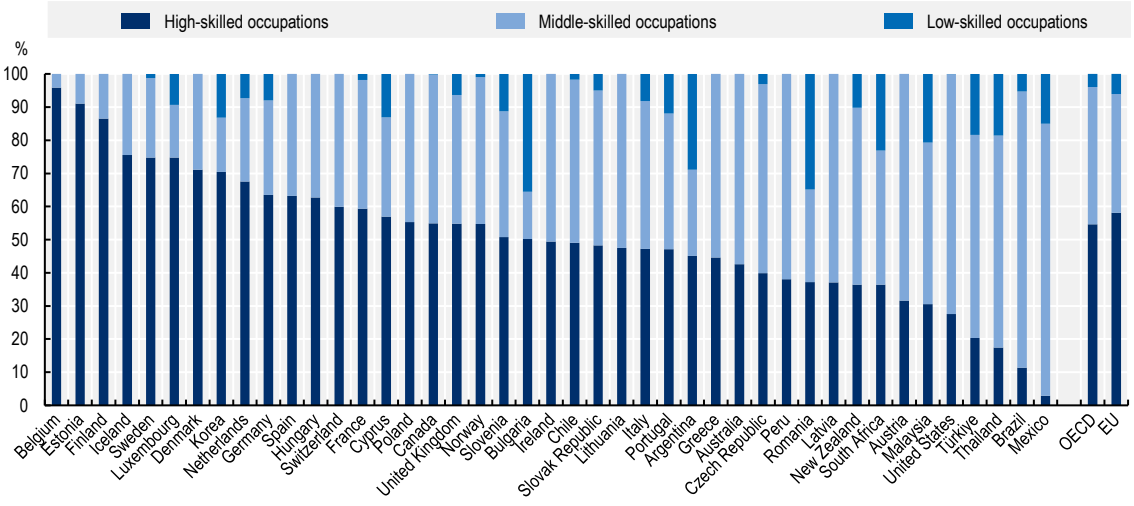
Source: OECD (2022[25]), *OECD Employment Outlook 2022: Building Back More Inclusive Labour Markets*, https://dx.doi.org/10.1787/1bb305a6-en, based on the Joint Harmonised EU Services (European Commission), Employment by sex, age and detailed economic activity from 2008 onwards, NACE Rev.2 two-digit level (Eurostat).

StatLink https://stat.link/t6o2ic

The OECD Skills for Jobs database (n.d.[28]) 2022 shows that, across countries, on average, more than half of the employment in occupations with labour shortages is highly skilled. These occupations range from managerial positions to highly skilled professionals in healthcare, teaching or ICT. A sizeable share of occupational shortages (41% of total employment in hard-to-fill jobs across OECD countries) is also found in medium-skilled occupations, such as personal service workers or electrical and electronic trades workers (Figure 6.6) (OECD, 2022[29]). The analysis of labour shortage trends in Canada in the first quarter of 2022 showed that recruiting skilled employees was expected to be an obstacle over the next three months for 36.9% of all businesses; retaining skilled employees was expected to be an obstacle for 27.6% of all businesses (Statistics Canada, 2022[30]). In Italy, the January 2023 monitoring of business recruitment forecasts by Unioncamere highlights that hiring difficulties concern 45.6% of all job postings, 7 percentage points higher than in January 2022. These shares increase to 66% for management profiles and 62% for specialised workers (Unioncamere, 2023[31]).

Figure 6.6. Shortages largely concern highly skilled occupations

Shortage occupations, by skill-level, 2019



Note: High-, medium- and low-skilled occupations are ISCO occupational groups 1 to 3, 4 to 8 and 9 respectively. Shares of employment in each skill tier are computed as the corresponding employment in each group over the total number of workers in shortage in each country. Data refer to 2019 with the following exceptions: they refer to 2018 for CHE, FRA, IRL, ITA, POL, THA; 2017 for DEU, GBR, KOR; 2016 for AUS; 2015 for BRA, TUR; and 2012 for ISL, SVN.
Source: OECD (2022[29]), *Skills for Jobs 2022. Key Insights*, OECD, Paris, https://www.oecdskillsforjobsdatabase.org/data/S4J2022_results.pdf, based on the OECD Skills for Jobs database 2022.

StatLink https://stat.link/yxmlt6

Short-term shortages disproportionally impact SMEs and entrepreneurs

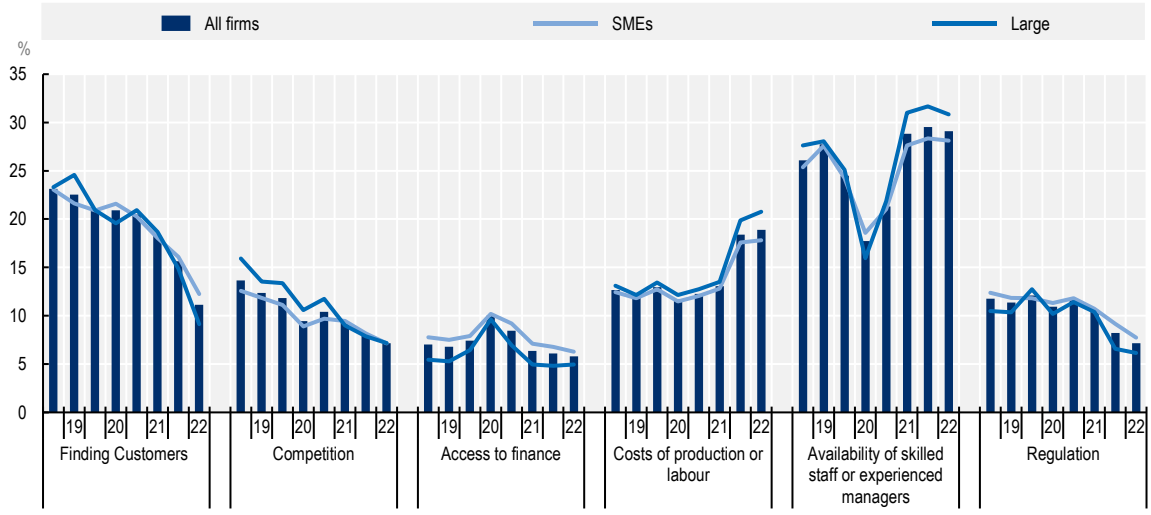
Such broad and sudden skills shortage can place SMEs at a specific disadvantage, as structural challenges to access skills are amplified by strong pressure on labour markets and increased competition for skills to cope with rapid digital transformation, transitions to more sustainable business models, disruptions in supply chains and, more generally, a more uncertain business environment. Skill shortages and recruitment difficulties also impact the well-being and motivations of overburdened employees and entrepreneurs.

Although there are limited data focusing specifically on SMEs, results from the Survey on the Access to Finance of Enterprises (SAFE) by the European Central Bank and the European Commission show that SMEs in the euro area share the same concern as large companies regarding the availability of skilled staff and experienced managers; flagged as the top challenge in April-September 2022 (Figure 6.7) (ECB, 2022[32]). In the United Kingdom, more than two-thirds (68%) of SMEs faced skills shortages in 2022, rising to 86% in large organisations (Open University/British Chambers of Commerce, 2022[33]). In Germany, around 80% of SMEs are in need of basic digital skills such as the ability to use standard software and digital devices (Arne Leifels, 2020[34]).

In the short term, SMEs and entrepreneurs tend to be more exposed to such skills imbalances, compared with large firms, which typically have the capacity to buffer skills shortages for a longer period by reducing slack, re-organising or outsourcing activities (management practices), as well as leveraging longer-term strategies for labour automation. The lack of a talent platform, and their lower attractiveness for skills and specialised workers, make SMEs more vulnerable to short-term skills imbalances, as well as representing a more structural challenge for longer-term transformations.

Figure 6.7. Lack of skilled labour represents the main challenge for enterprises in the euro area

Most important problem faced by the enterprise, 2019-2022, share of firms



Source: 27th round of the Survey on the Access to Finance of Enterprises (SAFE), European Central Bank and European Commission.

StatLink https://stat.link/ikfzc2

Short-term shortage amplify structural challenges SMEs and entrepreneurs face in accessing skills

SMEs and entrepreneurs have specific features that may impinge upon their capacity to fill skills gaps – especially when related to bundles of transversal skills.

Many SMEs, especially smaller businesses, tend to focus their activities on a specific field or a niche market, and the bulk of their employees are domain specialists, with more generic functions, often, poorly covered. This can hamper horizontal innovation and, in turn, spot new business opportunities and trends outside of their area of specialisation, such as those related to the digital and green transition.

To be able to cope with systemic change and new opportunities, SMEs need to overcome the longstanding challenges they face to acquire or develop a broader set of skills, bundles of competencies that can help them improve reactiveness to novelty and emerging opportunities.

To broaden their talent base, besides hiring workers with broader sets of skills, SMEs can upskill and reskill existing employees through training and, in particular for small organisations, access expertise in their ecosystem, in the form of services, information and exchange of formal or tacit knowledge.

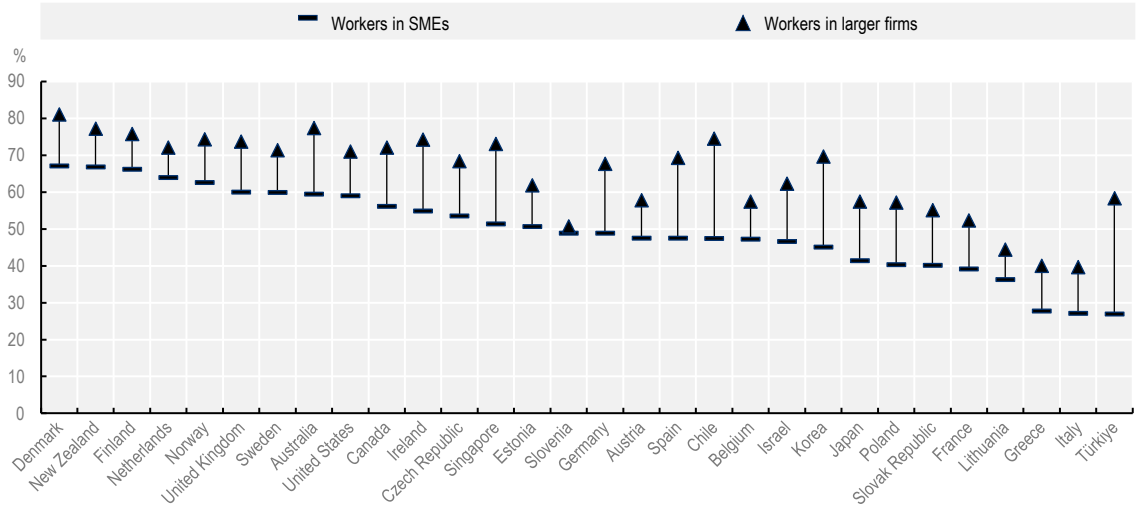
However, a sizeable share of SMEs continue to have limited active engagement in training activities. As shown by the OECD Programme for the International Assessment of Adult Competencies (PIAAC), which measures the cognitive and workplace skills of individuals, workers in SMEs participate less in formal and informal job-related training than workers in large firms, with an average 15 percentage point difference across countries (Figure 6.8) (OECD, 2019[35]). In addition, even when SME employees engage in training, the length tends to be shorter than for employees in large firms (OECD, 2020[36]).

The relatively fewer training opportunities for employees characterise SMEs at large. Formal training programmes within firms, such as learning circles and job rotation, exchanges or secondments have typically limited participation by SMEs (OECD, 2013[37]). The gap in training activities between SMEs and large enterprises is evident also when considering ad hoc on-the-job training, in the form of continuous vocational training (CVT) courses (see Figure 6.9).

SMEs also lag behind large companies in their training investments for the digital economy. In many countries, less than 10% of small firms offer ICT training to their employees, against 40% to 80% of large firms (Figure 6.10).

Figure 6.8. SME employees are typically less involved in formal and non-formal training activities

Percentage of adults participating in formal and non-formal job-related learning

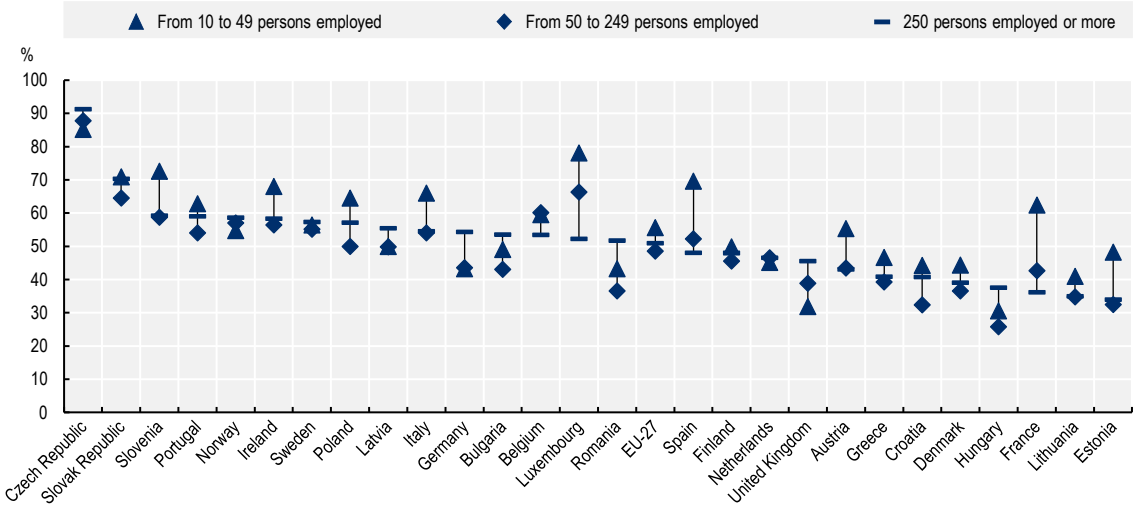


Note: Belgium refers to Flanders only, the United Kingdom to England and Northern Ireland.
Source: OECD (2019[35]), *Getting Skills Right: Future-Ready Adult Learning Systems*, https://doi.org/10.1787/9789264311756-en, based on PIAAC (2012, 2015).

StatLink https://stat.link/dlk3m6

Figure 6.9. SME employees are also less engaged in continuing vocational training

Percentage of employees that participated in at least one continuing vocational training course, 2015

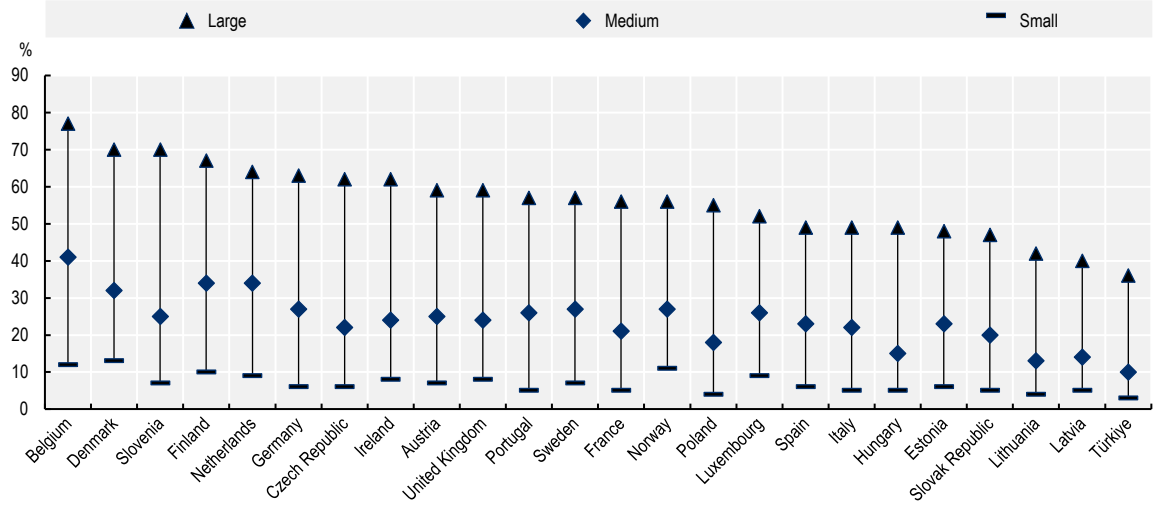


Source: OECD (2021[38]), *Training in Enterprises: New Evidence from 100 Case Studies*, https://doi.org/10.1787/7d63d210-en.

StatLink https://stat.link/672egm

Figure 6.10. Smaller firms offer less ICT training to employees

Share of firms providing training to develop/upgrade ICT skills of their personnel, 2020



Note: The figure does not include micro enterprises, i.e. companies with 1-9 employees.
Source: Eurostat (2022[39]), *Digital Economy and Society (database)*, https://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database.

StatLink https://stat.link/pkzb51

The fact that SMEs, despite their multidimensional need for skills, do not engage in training may depend on different factors, including the capacity of entrepreneurs and managers to identify skills gaps, geographical localisation and financial capacity. Limited awareness about the positive impact of training on performance and the possibilities to access training, including as offered by public programmes, also play a role.

Lack of time and limited strategic attention and awareness by entrepreneurs and managers can represent major obstacles to training engagement in SMEs (Cardon and Valentin, 2017[40]; OECD, 2021[38]). The lack of strategic attention by the entrepreneur or management may also reflect perceptions that training is a response to norms or regulatory requirements (e.g. health and safety requirements) rather than a value-generating activity (Marchese et al., 2019[2]; OECD, 2019[1]).

In addition, acquiring information about training opportunities for SMEs can be problematic, because, unlike large firms, they often do not have a dedicated human resources unit, rather performing ad hoc and informal human resources (HR) activities, and have little time to spare among existing staff (ILO, 2017[41]; Štangl Šušnjar et al., 2016[42]).

In the case of SMEs, especially micro enterprises, the entrepreneur plays a key role in the transformation of the business culture and the design and implementation of skills development strategies since knowledge and control are often centred on the entrepreneur. Many entrepreneurs, however, may not see the need for up- and re-skilling initiatives, as they are not used to continuous learning themselves, and are seldom the target of entrepreneurship training programmes, which, rather, tend to focus on young people (through initial education) or jobseekers (through the public employment services) (OECD, 2021[43]).

The upskilling and reskilling of management (where the manager may also be the firm's owner) is also particularly important when considering the functional and organisational changes faced by SMEs because of the green and digital transitions. Recent studies on how management should adapt to the digital shift for instance, stress the need for strongly developed leadership and HR skills, to foster a digital culture in the business and to ensure the workforce can cope with rapid developments and, especially for lower qualified workers, can operate in more digitalised business processes (Hamburg, 2019[44]). As a case in point, OECD research on preparing the tourism workforce for the digital future finds that managers' capability can represent a bottleneck, as they need technology-related knowledge to lead teams that may be fundamentally different in nature to those from traditional tourism employment, "conceptual level" skills and knowledge to implement digital strategies, and HR capabilities to support a flatter working structure (OECD, 2021[45]).

Even when entrepreneurs and SME managers can identify skills needs, have adequate information about the available options and develop a skills strategy, they may still find it difficult to pay for training opportunities, due to financial constraints and higher unit costs per worker relative to large firms. In addition to the direct financial costs for training, the opportunity cost is also often relatively higher for SMEs. Since they have fewer employees, they have less scope than large enterprises to release workers from revenue-generating activities for training. Furthermore, the difficulties that SMEs encounter in retaining trained and skilled staff, including due to poaching by other companies, can lower the return from training and thus discourage small businesses from undertaking the investment. This is especially the case for investments in skills that are not firm-specific and are easily transferable (ILO, 2017[41]; OECD, 2019[1]).

In addition, a large share of SMEs may not be able to use the numerous financial incentives available to cover training costs, either because they are not aware of these schemes or because they do not meet eligibility criteria (OECD, 2020[36]). A recent OECD study on SMEs in the era of hybrid retail (i.e. retailers using both offline and online sales channels) shows that, across countries, only a small share of SMEs are aware of the various programmes implemented by public authorities to foster the digital transition of the sector, often targeting business skill needs (OECD, forthcoming[46]).

The limited training opportunities offered by SMEs also weigh on their capacity to recruit talent and highly skilled workers, which represent another important channel for responding to changing skill needs. SMEs typically have greater difficulty in identifying, attracting and retaining skilled employees than large firms, largely due to a lack of a formalised HRM strategy and infrastructure, limited connection to networks that may give access to qualified workers, lower salaries, less attractive working conditions and reduced career opportunities (OECD, 2019[1]). In addition, flexibility in working models is becoming an important factor in the attraction of highly skilled workers, which can put fewer flexible businesses at a disadvantage in recruitment. For instance, SMEs that cannot fulfil requests for working from home are likely to lose attractiveness compared to those larger companies able to grant such conditions (Credit Suisse, 2022[47]).

Skills policies need to account for the specificities of SMEs

Against this backdrop, commonly deployed skills policies are mostly generic in nature

Across countries, skills policies deployed to support businesses are often generic, that is without due consideration for the specific features of companies in terms of size, productive specialisation and location. For example, skill policies remain focused on place-neutral support for higher education and vocational training (Corradini, Morris and Vanino, 2022[48]). Concerning digital skills, based on a cross-country analysis of 485 policies and 209 institutions, recent OECD work finds that governments place a relatively strong policy focus on creating a data culture and building relevant skills across the economy. However, the adoption of advanced digital technologies that are deemed important for all firms, such as the Internet of Things (IoT) or cybersecurity, is often supported by a general educational and training entry, whereas few initiatives exhibit an SME focus (OECD, 2022[17]).

In many cases, skills policies are designed and delivered assuming that SMEs and entrepreneurs will have a proactive attitude and will look for information and opportunities for upskilling and reskilling, as would larger companies. For example, many policy programmes are accessible through the Internet and offer SMEs and entrepreneurs the possibility to apply on line for grants or training opportunities, which implies prior information on the different opportunities.

In the same vein, skills policies are usually not specifically designed for SMEs, which need to compete with large companies to access policy instruments. This is the case, for example, of training funds linked to levies (i.e. levy-grant schemes), whereby registered companies are required by law to pay into a single central fund or sector-based funds. For those countries that implement such a scheme, the amount varies between 0.5% of company payroll (usually per month) and 2%. Companies apply to the fund to support the training they provide to their workers (from 50% to 100% cost recovery). However, evidence shows that such training funds are mainly used by larger employers (OECD, 2010[49]) (Johanson, 2009[50]) (Dar, Canagarajah and Murphy, 2003[51]) (CEDEFOP, 2008[52]).

The characteristics and attitudes of SMEs should also be taken into account when designing and delivering skills policies, including identifying possible beneficiaries. In this regard, it is important to distinguish between SMEs that have a passive approach and are unlikely to engage with skills policies and firms that are already implementing, by themselves, actions to improve their skills levels, and for which policy interventions would be redundant (Box 6.4). While useful to design and implement skills policies, however, this type of categorisation requires important information and a good understanding of the diverse SME populations.

Box 6.4. Are all small firms open to change?

Small firms can be categorised according to their degree of openness to change. A four-fold typology of small firms is put forward by Besant, Tsekouras and Rush (2009[53]):

- **Passive firms**: These firms do not recognise the need for change and do not know what might be improved. Policy support will evolve around making them aware of the need for change and for a more strategic framework in business operations.
- **Reactive firms**: These firms recognise the need for change but are unclear on how to go about it in an effective way. They usually have limited internal resources and external networks. They require help in developing a strategic framework, addressing priority areas, exploring new concepts and acquiring new product and process capabilities.
- **Strategic firms**: These firms have a well-developed sense of the need to change and have good implementation capability. However, as they tend to compete within the boundaries of an existing industry, they may be unable to identify new market opportunities. Policy support should be geared towards complementing existing internal skills and challenging ongoing business models.
- **Creative firms**: These firms have well-developed internal capabilities and are able to operate and lead effectively on an international basis. They have strategic frameworks for innovation, strong internal resources and established collaborations with external partners. Policy support should focus on complementing existing internal capabilities.

Source: Besant, J., G. Tsekouras and H. Rush (2009[53]), "Getting the tail to wag – developing innovation capability in SMEs", 10thInternational CINet.

Policy approaches that can leverage such level of information and deliver tailored skills services to SMEs – typically operate at the local and regional levels, where policy actions can connect to the ecosystems in which potential beneficiaries are active. This approach requires departing from space-blind approaches to skills policies, also to reflect the emerging new geographies of labour, which generate both challenges and opportunities for SMEs and entrepreneurs. The traditional challenges SMEs and entrepreneurs face in developing and accessing skills (for example a relatively low attractiveness for highly skilled workers compared with large companies) are magnified by the scale, scope and rapidity of the structural transformations – including the digital and green transitions – taking place in national and regional economies. In fact, the displacement of skilled workers and the consequent reallocation of skills and jobs in labour markets may generate new opportunities for SMEs to access highly skilled workers (with transversal skillsets) in their own communities, including through self-employed and entrepreneurs. From this perspective, providing SMEs and entrepreneurs with access to transversal skills may also be a way to tackle regional disparities depending on the availability and access to skills.

Skills ecosystems play an important role in delivering bundles of transversal skills to SMEs and entrepreneurs

To improve the capacity of (at least) reactive SMEs and entrepreneurs to access bundles of transversal skills, policies can leverage skills ecosystems. These are communities and networks in which SMEs and entrepreneurs operate and that contribute to their productivity, resilience and innovative capacity (Box 6.5).

Box 6.5. Skills ecosystems

The concept of skills ecosystems, first proposed by Finegold (1999[54]) and later elaborated by scholars from diverse disciplinary backgrounds (Hall and Lansbury, 2006[55]) (Cooney et al., 2010[56]) (Buchanan, Anderson and Power, 2017[57]) (Lotz-Sisitka and Ramsarup, 2019[58]), attempts to explain and address constraints to skills utilisation and continuous skills development, while identifying and enhancing enablers. It pushes debates on skills beyond a binary focus on supply and demand for skilled labour (Hall and Lansbury, 2006[55]) (Spours, 2019[59]). It recognises that policy focused exclusively on supplying skills through vocational training risks poor labour market outcomes, while policies driven exclusively by linking skills development to industry demand cannot address the problem of skills underutilisation in the workplace. It instead emphasises how features of the social and institutional environment constitute "ecosystems" that either support or constrain demand for skilled labour, skills utilisation, and opportunities for ongoing skills development (Hall and Lansbury, 2006[55]). It resonates with arguments in economic geography that emphasise how the institutional context shapes the outcomes of development interventions (Rodríguez-Pose, 2013[60]).

Finegold identifies the main features of a skills ecosystem as follows: i) a contingent catalyst that triggers ecosystem formation, such as a change in market dynamics or new technological innovation that stimulates demand for skills in innovative firms; ii) "fuel" that allows those firms to grow and develop their capacity – a steady supply of trained workers and finance capital, for example; iii) an environment that supports high-level skills – such as good infrastructure; and iv) high-level interdependence between firms and other supportive institutions which, as in biophysical ecosystems, gives high-skill ecosystems self-corrective mechanisms that increase their resilience. Dense social networks within these ecosystems and research-industry linkages encourage fresh ideas to circulate, leading to continual innovation and continuous demand for new, high-level skills.

Source: (Finegold, 1999[54]), (Hall and Lansbury, 2006[55]), (Cooney et al., 2010[56]), (Buchanan, Anderson and Power, 2017[57]), (Lotz-Sisitka and Ramsarup, 2019[58]), (Spours, 2019[59]), (Rodríguez-Pose, 2013[60]).

Skills ecosystems feature the presence of a pool of connected individuals and firms that specialise in a given productive sector/domain and whose proximity and continued interactions generate positive knowledge spillovers and benefits in terms of productivity and innovation (agglomeration effects).[2] Skills ecosystems offer SMEs channels to access bundles of technical and transversal skills, without the need of internalising them and fully bearing the related costs. Rather, skills can be accessed as "positive externalities", through the specialised labour pool or in the form, for instance, of knowledge services. The abundance of these "positive externalities" enables SMEs to recognise their own skills gaps and needs, to identify and tap more easily into relevant expertise and respond to the need for "non-core" skills in a sustainable manner.

An ecosystem approach presents advantages to address the longstanding challenges SMEs encounter in identifying their skills needs, attracting talent and mobilising resources for upskilling and reskilling. An ecosystem approach, as already mentioned, could help tackle regional disparities, by adopting a spatial lens to design and implement skills policies. Leveraging on skills ecosystems can be effective to promote the absorptive capacity of SMEs and entrepreneurs towards policy actions, including those supporting their transition to a greener and more digital economy. For instance, skills ecosystems can provide opportunities for SMEs and entrepreneurs to improve their managerial and entrepreneurial skills. Skills ecosystems can also generate synergies between different policy actions supporting competitiveness and innovation, because of the interconnection of all actors. For this reason, adopting a skills ecosystem approach demands that skills policy and programmes are linked with other efforts to support business innovation

and growth, such as those embodied in regional development policies (Corradini, Morris and Vanino, 2022[48]).

Recent policy developments are increasingly tailored to SMEs and delivered with spatial lenses

In recent years, governments have increasingly looked to adopt skills policy actions that are targeted at SMEs. Support measures mainly focus on raising awareness about skill needs, reducing training costs for SMEs and promoting workplace training, and adopting a range of instruments, including tax incentives and training subsidies (e.g. vouchers), often leveraging multiple public and private stakeholders, as well as relevant networks.

These approaches represent a shift from the traditional supply-side policies mainly focused on the offer of training, towards a more dynamic viewpoint targeting, in parallel, skills demand and use (Corradini, Morris and Vanino, 2022[48]).

This trend is particularly visible in the relationship with digital skills, where key objectives of building a data culture and fostering skills for the digital economy in SMEs are pursued through skills needs assessment, business advice and mentoring, targeted lifelong learning as well as financial support to commission private consulting (Table 6.1). Financial support is increasingly delivered in the form of vouchers, i.e. small grants or lines of credit to purchase services from public knowledge providers or private sector service providers. For example, the Irish Digitalisation Voucher offers SMEs up to EUR 9 000 for purchasing advisory services that could support the design and implementation of measures to move toward a data-driven business. The Slovenian Voucher for Raising Digital Competencies funds training to develop relevant managerial and workforce skills in the context of digitalisation projects within businesses (OECD, 2022[17]). The Spanish *Kit Digital* – developed by the Secretary of State for Digitisation and Artificial Intelligence in collaboration with the Spanish Chamber of Commerce and the private sector – plans to invest EUR 3 billion, between 2021 and 2023, to promote the digitisation of small businesses, micro firms, the self-employed and entrepreneurs. SMEs receive a digital voucher that they can use according to their specific needs, choosing among the different categories of digitation solutions offered by the adhered "digitation agents" that develop the services.[3] Spain also provides tailored services to SMEs through the Activa Industry 4.0 policy of the Ministry of Industry, Trade and Tourism, which offers digital transformation plans adapted to the specific needs of the individual firms and entrepreneurs.[4]

Table 6.1. Creating a data culture and building relevant skills – Overview of SME-targeted policies in selected OECD countries

Country	Institution	Policy	Description
Austria	Austrian Research Promotion Agency	Digital Pro Bootcamps	The Digital Pro Bootcamps programme supports companies and their employees in the systematic development of IT expertise and advanced digitisation skills. The programme sees highly motivated specialists from Austrian companies developed into "digital professionals" in shortened learning phases. In addition to IT expertise and advanced digitisation skills in specific areas of digitisation, the focus of the qualification is primarily on professional implementation skills.
Chile	Ministry of Economy, Development and Tourism	Digitise your SME	The programme offers events, workshops, training and tools, as well as a network of allies for the adoption of digital technologies, with the objective of guiding and accompanying SMEs in their digital transformation process.
	Technical Cooperation Services	Digital Route	The programme seeks to provide training to SMEs to facilitate the incorporation and use of technology in the management of their businesses. This includes for instance online training courses for SMEs on cybersecurity challenges and related tools.
		Digitise your Store	Grants for investments, technical assistance, training and marketing actions on digital technologies for warehouse management.

Country	Institution	Policy	Description
Denmark	Ministry of Industry, Business and Financial Affairs	SME Digital	A co-ordinated scheme to support the digital transformation of Danish SMEs, which can benefit their ability to innovate in AI. It involves grants to SMEs to commission private consulting services on digitalisation matters.
Germany	Federal Ministry for Economic Affairs and Energy	Digital Now	Digital Now offers financial grants to stimulate the digitalisation of SMEs. Grants are provided to support investments in digital technologies and training employees on digital topics.
		Competence Center Digital Crafts (*Mittelstand-Digital Zentrum Handwerk*)	The *Mittelstand-Digital Zentrum Handwerk* supports craftsmen and SMEs in tapping into the economic potential of digital transformation. In order to reduce information deficits, craftsmen and entrepreneurs are provided with practical information, guidelines, implementation and networking services, which are developed through six regional "showcases".
Hungary	AI Coalition of Hungary	Data economy accelerator centre Debrecen	A centre dedicated to supporting business owners in generating data-based business intelligence. Company managers who are interested in the digital development of their business and in harnessing internally generated data can receive organisational and business development advice free of charge from specialised experts.
Netherlands	Ministry of Economic Affairs and Climate Policy	Commit2Data	A multi-year research and innovation programme based on a public-private partnership to explore new business models and opportunities around big data in specific application areas such as smart industry, energy and logistics. The programme also includes six data innovation hubs providing companies, particularly SMEs that are late adaptors concerning innovation, with up-to-date knowledge, tools and training modules for the responsible use of AI and data.
		Accelerating digitalisation of SMEs	Through workshops the programme provides SMEs and entrepreneurs support in the areas of big data, online sales and marketing and automation, enabling them to independently apply digital applications.
		SME IDEA	A programme that supports SMEs in the development of lifelong learning activities including data skills that fit the needs of their specific company type, size and sector.

Source: OECD (2022[61]), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, https://doi.org/10.1787/81c738f0-en, drawing on the OECD/EC Scale Up Project (https://www.oecd.org/cfe/smes/sme-scale-up.htm) and (OECD, 2023[62]) OECD Data Lake on SMEs and Entrepreneurship (data extracted on 21 June 2023).

Tailored skills policies for SMEs and entrepreneurs typically offer some form of assistance to help them understand their skills needs, navigate the training offer and identify the solutions that best fit their needs. To address the challenge of reaching out to a large number of small businesses while containing the costs that face-to-face delivery implies, in recent years, some countries have developed digital business diagnostic tools that offer generic business advice and can serve as an entry point to wider business support systems, including for skills development (OECD, 2020[63]). These tools are mainly targeted to entrepreneurs and managers to enhance the management capacity of SMEs to understand and address their skills needs. This is the case, for example, of the Skills for Better Business programme, launched by Ireland's government in 2022. This comprises a free, online assessment tool allowing SME owner-managers to identify their current management and business capabilities and uncover which critical areas to target in order to enhance the business growth performance. The tool is coupled with a listing resource that helps SME owner-managers identify and engage with a wide range of management development and training supports available.[5]

Tailored skills policies are often delivered at the local level, mobilising local entities such as higher education institutions, or creating specialised institutions. For example, the Australian Industry 4.0 Testlabs initiative leverages facilities at research and education organisations like universities, where experts illustrate the potential of digital technologies and provide tailored skills training and education programmes for SMEs' workforce. In the European Union, the network of Digital Innovation Hubs (DIHs) helps companies integrate digital tools and practices in their business processes, offering technology

infrastructure (in "competence centres"),[6] access to the latest knowledge and expertise for piloting, testing and implementing digital solutions, as well as financing. In Estonia, the Business Agency funds "technology competence centres" in order to provide SMEs with the technical capabilities to deploy ICT-based solutions and data-driven business models and encourage knowledge sharing between researchers and SMEs. As part of the Italian National Transition Plan 4.0 to support the Fourth Industrial Revolution, DIHs and i4.0 Competence Centres have been established across Italy to reinforce the innovation ecosystem. These hubs focus on spreading awareness of i4.0 technologies, courses on sector-specific advanced skills and fundamental i4.0 skills and development of industrial research and experimental development projects (OECD, 2021[64]; 2021[65]).

Some policy practices have been in place for decades and have gone through several positive evaluations. For instance, in the United Kingdom, the network of Catapults, which are research and technology organisations (RTOs), provides tailored support to SMEs and start-ups to develop their products, improve their processes and upskill and reskill their workforce. As a case in point, through the project High Value Manufacturing (HVM) Catapult, SMEs are granted access to expertise, capabilities and even specialist equipment and technology. HVM Catapult is based on a tailored support service of SMEs, in which Catapult staff proactively engage with SMEs (Department for Business, 2021[66]). There are seven HVM Catapult centres in the United Kingdom, and two of them are hosted by universities, to better connect research and innovation activities in specific sectors and localities.

Box 6.6. The Manufacturing Extension Partnership, United States

The Manufacturing Extension Partnership (MEP) is a public-private partnership that provides solutions to SMEs leveraging on a network of 1 450 advisors and experts, distributed in approximately 430 MEP service locations across the United States. Administered by the National Institute of Standards and Technology (NIST), since its creation in 1988, the MEP system has become a source of trusted advice about new technologies, production techniques and business management practices for a significant number of firms (about 8 000 to 10 000 per year).

MEP focuses on SMEs that are already established. The MEP, like similar technology and innovation advisory services in other countries, responds to the fact that existing SMEs often face market imperfections and other systematic challenges in acquiring and deploying information, expertise, skills and other resources. These issues lead to difficulties in technological and business upgrading, contributing in turn to lagging productivity, innovativeness and competitiveness among many of these establishments ((n.a.), 2013[67]). The MEP services provide SMEs with expertise, diagnostics, mentoring, training and other support. It also plays a brokering role and provides access and referrals to other public and private resources (Shapira and Youtie, 2016[68]).

The MEP offers customised and accessible services, which are oriented to business outcomes, rather than to research. The SMEs that engage with the MEP do so because its services are customised to their needs: equivalent private sector sources are either more expensive or not available. If effective, MEP services should prompt intermediate business actions (including, but not limited to, equipment investment, enhanced plant layouts, employee training, process and quality improvements, cost reductions, and new products and marketing strategies) leading to improved business performance outcomes such as enhanced productivity, sustainability and growth for its clients.

Higher education institutions can host MEP centres, as in the case of Purdue, Indiana

Purdue University is a public land-grant research university, in the State of Indiana. The university is home to the Purdue MEP, which provides high-value, affordable solutions to local manufacturing SMEs.

The local MEP centre leverages resources in both the public and private sectors to help identify areas of improvement, streamline processes and increase the competitiveness of SMEs.

Purdue MEP offers tailored services, which are designed through onsite analysis projects and workshops. These tailored services span from human resource training (employee attraction and retention) to leadership development and lean manufacturing, to promote value and quality in production. The MEP centre can also mobilise the resources of the university and involve faculty in designing specific research and innovation process.

Source: Lipscomb, C. et al. (2017[69]), "Evaluating the impact of manufacturing extension services on establishment performance", https://doi.org/10.1177/089124241774405; NIST (n.d.[70]), *Manufacturing Extension Partnership (MEP)*, https://www.nist.gov/mep; U.S. Federal Register (2018[71]), *Hollings Manufacturing Extension Partnership Program ; Knowledge Sharing Strategies*, https://www.federalregister.gov/documents/2018/07/18/2018-15265/hollings-manufacturing-extension-partnership-program-knowledge-sharing-strategies#:~:text=Since%20its%20creation%20in%201988,8%2C000%20to%2010%2C000%20per%20year.

In the United States, the network of the MEP, administered by the NIST, offers business assistance to established SMEs, through centres located across the states (Box 6.6). Empirical studies show that SMEs that have benefitted from MEP support are more competitive and more resilient (Shapira et al., 2015[72]) (Lipscomb et al., 2017[73]). Training provided to SMEs is specific and includes technical and transversal skills related to entrepreneurial and management activities. MEP leverages existing local organisations such as universities and colleges, which host the centres. By localising within higher education institutions, MEP centres can capitalise on the research capacity, the laboratories and the social capital of the host institution, which often represents a local landmark for the community of SMEs and entrepreneurs.

Other policy programmes in the United States leverage on HEIs to deliver tailored skills bundles to SMEs in localities. For instance, the Small Business Development Centers (SBDC) programme counts on a network of universities and colleges. A specific example is represented by the University of Texas in San Antonio (UTSA), which has developed an SBDC International Trade Center that provides no-cost import and export advising, market research and training solutions for small businesses. SBDC agents accompany entrepreneurs and help them develop their business idea and business plan. The UTSA has internationalised this approach by creating a Center for Global Development, which has been supporting SMEs and entrepreneurs, including informal ones, in several Latin American countries and Tunisia (UTSA, 2021[74]).[7]

In the European Union, the Smart Specialisation Strategy hinges on the close engagement of HEIs and research institutions with the local business community, especially SMEs. The Academy for Smart Specialisation at Karlstad University in Sweden represents an example in this regard. The university co-operates closely with the regional government of Värmland. The two institutions have joined forces to create the academy, which is located within the university and has access to the research capabilities and the laboratories of the institution. The academy generates specific skills services for local businesses with a focus on SMEs, which for instance can access the training services provided by the Karlstad Lean Factory,[8] which promotes the values of lean manufacturing in the regional productive ecosystem.[9] This epitomises the role that HEIs can have to generate firm-level services in connection with education, research and innovation activities (OECD, 2020[75]).

Skills policies can also be deployed to unleash the growth potential of SMEs, for example via acceleration programmes that offer support to SMEs and entrepreneurs aiming to scale up their activities. Tailoring skills services is an important feature of these policies. For instance, in France, the *Accélérateur PME,* connected to Bpifrance, is both the national agency for innovation and the French Public Bank for Investment. *Accélérateur PME* offers tailored support to entrepreneurs through the 50 local branches of Bpifrance and works with micro businesses, SMEs and mid-caps (firms that have a medium-sized

capitalisation), offering solutions adapted to key steps in a business' growth such as business creation, financing, guarantees or equity investment.

Knowledge diffusion is at the heart of support measures for management learning and leadership development in SMEs. Initiatives such as the MaRS Discovery District in Toronto, Canada, one of the world's largest urban innovation hubs, have proved valuable in this regard, bringing together educators, researchers, social scientists, entrepreneurs and business experts under one roof, which combines labs, office space and events space. Key to the success of the MaRS Discovery District is the business advisory services and linkages to other stakeholders in the local entrepreneurial ecosystem (e.g. research organisations, financiers, etc.) (OECD, 2013[76]).

Conclusion

Against the backdrop of international shocks, this chapter brings forward a narrative concerning the skills needs of SMEs, which does not focus merely on technical competencies but rather on bundles of transversal skills, related to the way in which SMEs and entrepreneurs develop their own business, cope with digital innovations and connect to partners (supply chains) and customers. These bundles of transversal skills encompass a range of "capabilities": entrepreneurial competencies that affect the resilience and competitiveness of SMEs and entrepreneurs.

In addition, the chapter discusses the limitations for SMEs and entrepreneurs to fully internalise all the skills they need, including transversal ones. It underlines, however, that they can get access to such skills through their "ecosystem", which results from their local community and the networks in which they are active. Providing SMEs and entrepreneurs with access to bundles of transversal skills, including interacting with partners and customers in their own ecosystem, can be effective to improve their overall capacity to cope with the digital and green transitions.

There are several international examples of policies that provide SMEs and entrepreneurs with training opportunities and connections to improve their transversal skills. Several of these policy actions have an explicit spatial dimension, as they accompany SMEs and entrepreneurs locally and offer tailored support to improve transversal skills. However, often these policies are small in scale, or relatively disconnected from other policy agendas. The fact that policy actions do not reach many SMEs and entrepreneurs, as well as the limited capacity to generate complementarities with other policy agendas related to regional development, innovation, sustainability, etc, represent key challenges that should be considered to improve the resilience and the competitiveness of a large number of SMEs and entrepreneurs across regions.

References

(n.a.) (2013), *21st Century Manufacturing*, National Academies Press, Washington, D.C., https://doi.org/10.17226/18448. [67]

Arne Leifels (2020), "Digital skills shortage is hampering German SMEs' digital transformation - Is upskilling the answer?". [34]

Autor, D., F. Levy and R. Murnane (2003), "The skill content of recent technological change: An empirical exploration", *Quarterly Journal of Economics*, Vol. 118/4, pp. 1279-1333, https://doi.org/10.1162/003355303322552801. [23]

Ben Letaifa, S. and Y. Rabeau (2013), "Too close to collaborate? How geographic proximity could impede entrepreneurship and innovation", *Journal of Business Research*, Vol. 66/10, pp. 2071-2078, https://doi.org/10.1016/j.jbusres.2013.02.033. [77]

Besant, J., G. Tsekouras and H. Rush (2009), "Getting the tail to wag – Developing innovation capability in SMEs", 10th International CINet. [53]

Brambilla, I., D. Lederman and G. Porto (2012), "Exports, export destinations, and skills", *American Economic Review*, Vol. 102, pp. 3406-3438. [4]

Brunello, G. and M. Schlotter (2011), "Non-Cognitive Skills and Personality Traits: Labour Market Relevance and Their Development in Education & Training Systems". [8]

Buchanan, J., P. Anderson and G. Power (2017), "Skill Ecosystems", *The Oxford Handbook of Skills and Training*, pp. 444-465. [57]

Calvino, F. et al. (2022), "Closing the Italian digital gap: The role of skills, intangibles and policies", *OECD Science, Technology and Industry Policy Papers*, No. 126, OECD Publishing, Paris, https://doi.org/10.1787/e33c281e-en. [18]

Cardon, M. and S. Valentin (2017), "Training and development in small and medium enterprises", in *The Cambridge Handbook of Workplace Training and Employee Development*, Cambridge University Press, https://doi.org/10.1017/9781316091067.018. [40]

Causa, O. et al. (2022), "The post-COVID-19 rise in labour shortages", *OECD Economics Department Working Papers*, No. 1721, OECD Publishing, Paris, https://doi.org/10.1787/e60c2d1c-en. [27]

CEDEFOP (2008), "Sectoral Training Funds in Europe", *Panorama Series CEDEFOP*. [52]

Cedefop (2021), *Digital Skills: Challenges and Opportunities*, European Centre for the Development of Vocational Training, https://www.cedefop.europa.eu/en/data-insights/digital-skills-challenges-and-opportunities. [13]

Cedefop (2021), *The Green Employment and Skills Transformation: Insights from a European Green Deal Skills Forecast Scenario*, European Centre for the Development of Vocational Training, http://data.europa.eu/doi/10.2801/112540. [20]

Cedefop (2020), "Coronavirus and the European job market: How the pandemic is reshaping skills demand", European Centre for the Development of Vocational Training, https://www.cedefop.europa.eu/en/news/coronavirus-and-european-job-market-how-pandemic-reshaping-skills-demand. [15]

Cooney, R. et al. (2010), "Exploring Skill Ecosystems in the Australian Meat Processing Industry: Unions, Employers and Institutional Change", *The Economic and Labour Relations Review*, Vol. 21/2, pp. 121-138, https://doi.org/10.1177/103530461002100208. [56]

Corradini, C., D. Morris and E. Vanino (2022), "Towards a regional approach for skills policy", *Regional Studies*, https://doi.org/10.1080/00343404.2022.2031950. [48]

Credit Suisse (2022), "The shortage of skilled workers is real. Swiss SMEs are looking for solutions", https://www.credit-suisse.com/ch/en/corporate-clients/products/escher/the-shortage-of-skilled-workers-is-real.html. [47]

Dar, A., S. Canagarajah and P. Murphy (2003), "Training Levies: Rationale and Evidence from Evaluations", *Washington, DC: World Bank*. [51]

Department for Business, E. (2021), "Catapult Network Review - How the UK's Catapults can Strengthen Research and Development Capacity", *BEIS Research Paper Number 2021/013*. [66]

ECB (2022), *Survey on the Access to Finance of Enterprises in the Euro Area (SAFE)*, European Central Bank, https://www.ecb.europa.eu/stats/ecb_surveys/safe/html/ecb.safe202212~6bc3312ea1.en.html#toc3. [32]

Eurostat (2022), *Digital Economy and Society (database)*, European Commission, https://ec.europa.eu/eurostat/web/digital-economy-and-society/data/database. [39]

Finegold, D. (1999), "Creating Self-Sustaining, High-Skill Ecosystems", *Oxford Review of Economic Policy*, Vol. 15/1, pp. 60-81. [54]

Hall, R. and R. Lansbury (2006), "Skills in Australia: Towards Workforce Development and Sustainable Skill Ecosystems", *Journal of Industrial Relations*, Vol. 48/5, pp. 575-592, https://doi.org/10.1177/0022185606070106. [55]

Hamburg, I. (2019), "Implementation of a digital workplace strategy to drive behavior change and improve competencies", in Orlando, B. (ed.), *Strategy and Behaviors in the Digital Economy*, Intechopen, https://doi.org/10.5772/intechopen.79659. [44]

ILO (2017), *Upskilling SMEs: How Governments Fund Training and Consulting. Comparing Experiences from Asia, Europe and North America*, Small Enterprise Unit, Enterprises Department, International Labour Organization, Geneva, https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/documents/publication/wcms_609267.pdf. [41]

Jansen, M. and R. Lanz (2013), *Skills and Export Competitiveness for Small and Medium-Sized Enterprises*, International Trade Centre and World Trade Organization, Geneva, Switzerland, https://www.wto.org/english/tratop_e/devel_e/a4t_e/global_review13prog_e/skills_and_export_competitiveness_e.pdf. [3]

Johanson, R. (2009), "A Review of National Training Funds", *Social Protection Discussion Papers and Notes 52187, The World Bank*. [50]

Lam, A. (2022), "Canada's Beveridge curve and the outlook for the labour market", Staff Analytical Note/Note analytique du personnel, Bank of Canada, https://www.bankofcanada.ca/wp-content/uploads/2022/11/san2022-18.pdf. [26]

LinkedIn (2022), *Global Green Skills Report 2022*, https://economicgraph.linkedin.com/content/dam/me/economicgraph/en-us/global-green-skills-report/global-green-skills-report-pdf/li-green-economy-report-2022-annex.pdf. [21]

Lipscomb, C. et al. (2017), "Evaluating the impact of manufacturing extension services on establishment performance", *Economic Development Quarterly*, Vol. 32/1, https://doi.org/10.1177/0891242417744050. [69]

Lipscomb, C. et al. (2017), "Evaluating the Impact of Manufacturing Extension Services on Establishment Performance", *Economic Development Quarterly*, Vol. 32/1, pp. 29-43, https://doi.org/10.1177/0891242417744050. [73]

Lotz-Sisitka, H. and P. Ramsarup (2019), "Green Skills Research: Implications for Systems, Policy, Work and Learning", *In Green Skills Research in South Africa. Routledge.*, pp. 208-223. [58]

Love, J. and S. Roper (2015), "SME innovation, exporting and growth: A review of existing evidence", *International Small Business Journal*, Vol. 33/1, pp. 28-48, https://doi.org/10.1177/0266242614550190. [5]

Marchese, M. et al. (2019), "Enhancing SME productivity: Policy highlights on the role of managerial skills, workforce skills and business linkages", *OECD SME and Entrepreneurship Papers*, No. 16, OECD Publishing, Paris, https://doi.org/10.1787/825bd8a8-en. [2]

Neeley, T. and P. Leonardi (2022), "Developing a digital mindset. How to lead your organization into the age of data, algorithms, and AI", Harvard Business Review, https://hbr.org/2022/05/developing-a-digital-mindset. [10]

NIST (n.d.), *Manufacturing Extension Partnership (MEP)*, National Institute of Standards and Technology, United States Department of Commerce, https://www.nist.gov/mep. [70]

OECD (2023), *Job Creation and Local Economic Development 2023: Bridging the Great Green Divide*, OECD Publishing, Paris, https://doi.org/10.1787/21db61c1-en. [19]

OECD (2023), "OECD Data Lake on SMEs and Entrepreneurship", *https://www.oecd.org/cfe/datalake.htm*. [62]

OECD (2022), "Financing growth", in *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Publishing, Paris, https://doi.org/10.1787/6962c7a9-en (accessed on 11 October 2022). [17]

OECD (2022), *Financing Growth and Turning Data into Business: Helping SMEs Scale Up*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/81c738f0-en. [61]

OECD (2022), *OECD Employment Outlook 2022: Building Back More Inclusive Labour Markets*, OECD Publishing, Paris, https://doi.org/10.1787/1bb305a6-en. [25]

OECD (2022), *Skills for Jobs 2022. Key Insights*, OECD, Paris, https://www.oecdskillsforjobsdatabase.org/data/S4J2022_results.pdf. [29]

OECD (2021), *OECD Skills Outlook 2021: Learning for Life*, OECD Publishing, Paris, https://doi.org/10.1787/0ae365b4-en. [7]

OECD (2021), "Preparing the tourism workforce for the digital future", *OECD Tourism Papers*, No. 2021/02, OECD Publishing Paris, https://doi.org/10.1787/9258d999-en. [45]

OECD (2021), *Raising Skills in SMEs in the Digital Transformation. A Review of Policy Instruments in Italy*, OECD, Paris, https://www.oecd.org/els/emp/skills-and-work/adult-learning/Raising_skills_in_SMEs_Italy.pdf. [43]

OECD (2021), "SME digitalisation to "Build Back Better": Digital for SMEs (D4SME) policy paper", *OECD SME and Entrepreneurship Papers*, No. 31, OECD Publishing, Paris, https://doi.org/10.1787/50193089-en. [64]

OECD (2021), *The Digital Transformation of SMEs*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, https://doi.org/10.1787/bdb9256a-en. [65]

OECD (2021), *Training in Enterprises: New Evidence from 100 Case Studies*, Getting Skills Right, OECD Publishing, Paris, https://doi.org/10.1787/7d63d210-en. [38]

OECD (2020), *Digital business diagnostic tools for SMEs and entrepreneurship. A review of international policy experiences*, OECD Publishing, Paris, https://doi.org/10.1787/516bdf9c-en. [63]

OECD (2020), *Enhancing Training Opportunities in SMEs in Korea*, Getting Skills Right, OECD Publishing, Paris, https://doi.org/10.1787/7aa1c1db-en. [36]

OECD (2020), *Evaluation of the Academy of Smart Specialisation*, The Geography of Higher Education, OECD, Paris, https://www.oecd.org/cfe/smes/Evaluation_Academy_Smart_Specialisation.pdf. [75]

OECD (2019), *Getting Skills Right: Future-Ready Adult Learning Systems*, Getting Skills Right, OECD Publishing, Paris, https://doi.org/10.1787/9789264311756-en. [35]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [1]

OECD (2013), "An International Benchmarking Analysis of Public Programmes for High-Growth Firms", *OECD LEED*. [76]

OECD (2013), *Skills Development and Training in SMEs*, OECD Skills Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264169425-en. [37]

OECD (2010), *Learning for Jobs*, OECD Reviews of Vocational Education and Training, OECD Publishing, Paris, https://doi.org/10.1787/9789264087460-en. [49]

OECD (n.d.), *OECD Skills for Jobs (database)*, OECD, Paris, https://www.oecdskillsforjobsdatabase.org/#UK/_. [28]

OECD (forthcoming), "SMEs in the Era of Hybrid Retail. Evidence from an OECD D4SME survey", *OECD SME and Entrepreneurship Papers*, OECD Publishing, Paris. [46]

OECD (forthcoming), *The Geography of Higher Education in Québec, Canada*, OECD Publishing, Paris. [11]

OECD.Stat (n.d.), *ICT Access and Usage by Businesses (database)*, OECD, Paris, https://stats.oecd.org/OECDStat_Metadata/ShowMetadata.ashx?Dataset=ICT_BUS&ShowOnWeb=true&Lang=en. [14]

OECD/EU (2018), *Supporting Entrepreneurship and Innovation in Higher Education in The Netherlands*, OECD Skills Studies, OECD Publishing, Paris/European Union, Brussels, https://doi.org/10.1787/9789264292048-en. [12]

Open University/British Chambers of Commerce (2022), *Business Barometer 2022. Navigating the Skills Landscape*, https://www.britishchambers.org.uk/media/get/The%20Open%20University%20Business%20Barometer%202022%20report.pdf. [33]

Pavlova, M. (2018), "Fostering inclusive, sustainable economic growth and 'green' skills development in learning cities through partnerships", *International Review of Education*, Vol. 64/3, pp. 339-354, https://doi.org/10.1007/s11159-018-9718-x. [22]

Rodríguez-Pose, A. (2013), "Do Institutions Matter for Regional Development?", *Regional Studies*, Vol. 47/7, pp. 1034-1047, https://doi.org/10.1080/00343404.2012.748978. [60]

Samek, L., M. Squicciarini and E. Cammeraat (2021), "The human capital behind AI jobs and skills demand from online job postings", *OECD Science, Technology and Industry Policy Papers*, No. 120, OECD Publishing, Paris, https://doi.org/10.1787/2e278150-en. [16]

Shapira, P. and J. Youtie (2016), "The impact of technology and innovation advisory services", in *Handbook of Innovation Policy Impact*, Edward Elgar Publishing, https://doi.org/10.4337/9781784711856.00013. [68]

Shapira, P. et al. (2015), "Institutions for Technology Diffusion". [72]

Spours, K. (2019), "A Social Ecosystem Model: Conceptual Developments and Implications for VET". [59]

Štangl Šušnjar, G. et al. (2016), "The role of human resource management in small and medium sized companies in Central-Eastern Europe", in Ateljević, J. and J. Trivić (eds.), *Economic Development and Entrepreneurship in Transition Economies*, Springer, https://doi.org/10.1007/978-3-319-28856-7_12. [42]

Statistics Canada (2022), *Labour Shortage Trends in Canada*, https://www.statcan.gc.ca/en/subjects-start/labour_/labour-shortage-trends-canada. [30]

U.S. Federal Register (2018), *Hollings Manufacturing Extension Partnership Program ; Knowledge Sharing Strategies*, United States Federal Register, https://www.federalregister.gov/documents/2018/07/18/2018-15265/hollings-manufacturing-extension-partnership-program-knowledge-sharing-strategies#:~:text=Since%20its%20creation%20in%201988,8%2C000%20to%2010%2C000%20per%20year. [71]

UNESCO (2015), "Transversal Competencies in Education Policy & Practices", *United Nations Educational, Scientific and Cultural Organization*. [6]

Unioncamere (2023), *Progetto Excelsior. Sistema informativo per l'occupazione e la formazione*, https://excelsiorienta.unioncamere.it/. [31]

UTSA (2021), *Welcome to the UTSA Small Business Development Center*, University of Texas at San Antonio, https://sasbdc.org/ (accessed on 26 September 2022). [74]

Vona, F. et al. (2018), "Environmental regulation and green skills: An empirical exploration", *Journal of the Association of Environmental and Resource Economists*, Vol. 5/4, pp. 713-753. [24]

WEF (2020), *The Future of Jobs Report 2020*, World Economic Forum, https://www3.weforum.org/docs/WEF_Future_of_Jobs_2020.pdf. [9]

Notes

[1] Upskilling refers to an employee learning additional tasks to better perform his/her job. Reskilling refers to an employee learning a new set of skills on order to perform different tasks or a different job.

[2] Proximity is a multifaceted concept that does not depend only on geography. For example, agents can be close because of their cognitive, organisational, social and institutional proximity (Ben Letaifa and Rabeau, 2013[77]).

[3] Additional information about *Kit Digital* can be found on https://espanadigital.gob.es/en/measure/digital-kit-program.

[4] Additional information about Activa Industry 4.0 can be found on https://www.industriaconectada40.gob.es/programas-apoyo/Paginas/activa.aspx.

[5] See https://skillsforbetterbusiness.gov.ie.

[6] The term competence centre is used in different contexts to describe an infrastructure dedicated to knowledge organisation and transfer, and may have different meanings according to focus area, scope, domain and socio-economic framework. In general, competence centres are collaborative entities established and led by industry and resourced by highly-qualified researchers associated with research institutions empowered to undertake market focused strategic research for the benefit of industry.

[7] In 2018, the centre served over 500 businesses with advising and training services that resulted in the generation of over USD 567 million in global sales and that led in the creation and retention of 2 264 jobs (see Geography of Higher Education webinar session: In conversation with Cliff Paredes).

[8] See www.kau.se/en/klf/about-karlstad-lean-factory.

[9] Lean manufacturing principles – or lean thinking – were developed by Toyota in 1980s. Lean thinking promotes efficiency and collaboration in the production process and it is based on five key principles: value, value streams, flow, pull and perfection.

Part II Country profiles

7 Reader's guide

The OECD SME and Entrepreneurship Outlook 2023 examines recent SME&E developments and identifies several forthcoming challenges for SME&Es, including uncertain economic conditions, geo-political tensions, rising energy costs, and new pressures across supply-chains.

The standardised country profiles provide a country perspective on the state of SME sector and entrepreneurship, the barriers to trade faced by entrepreneurs, particularly women, the extent of SME integration in global value chains (GVCs), and the accessibility of SMEs to professional networks and digital technologies.

The SME&E Outlook country profiles cover the 38 OECD member countries. They build on the most recent work and data available at the time of drafting. However due to differences in data collection calendars and methodologies, there may be data and time gaps across some indicators and interpretation should be done with caution.

Part 2 of the SME and Entrepreneurship (SME&E) Outlook 2023 is made of standardised country profiles that explore the structural factors of the SME sector, the integration of SMEs into global value chains, and the accessibility of SMEs to networks and digital skills and capital.

The SMEEO country profiles build on work carried out across the OECD and beyond. Measurement and indicators have been selected on the basis of their SME&E policy relevance, international comparability, and the most extensive country coverage. Primary data sources are presented in more details in the Annex A.

A data infrastructure was built and integrated into the OECD corporate data management system to gather, store and harmonise information. The OECD SME&E 'Data Lake' will support future SME- and entrepreneurship-related policy analysis.

Reader's guide

SME sector structure and performance

Recent SME performance has been uneven across firms, sectors and countries (Chapter 1). While most SMEs have little direct exposure to Russia and Ukraine, they have been indirectly affected by the sharp increases in energy and commodity prices, tightening financial conditions and lesser monetary and fiscal support.

The ***first section*** of the country profiles presents an overview of SMEs across three important dimensions of the economy: employment, turnover, and exports. The relevance and timeliness of these three indicators provide a broad overview of the state of SMEs across countries and time.

- **Employment** refers to employment by micro, SMEs, and large firms expressed as a percent of total employment. Total employment is the total number of persons who worked in or for the

concerned unit during. Sector coverage is the business economy except financial and insurance activities (05-82 except K, according to ISIC Rev. 4). The year of reference is 2020, or latest.

- **Turnover** refers to the total value of invoices corresponding to market sales of goods or services. Turnover of micro, SMEs, and large firms is expressed as a percent of total turnover of the economy. Sector coverage is the business economy except financial and insurance activities (05-82 except K, according to ISIC Rev. 4). The year of reference for turnover is 2020, or latest.
- **Exports** refers to the sales, barter, or gifts or grants, of goods and services from residents to non-residents. Exports by micro, SMEs, and large firms is expressed as a percent of total exports in the country. Sector coverage for the is total economy. The year of reference is 2020, or latest.

An industry breakdown of the Employment and Turnover indicators is also presented for the industries that are particularly vulnerable to disruptions during COVID-19 crisis. These include: manufacturing of motor vehicles and other transport equipment (C/29-30), construction (F/41-43), wholesale/retail trade and repair of motor vehicles (G/45-47), air transport (H/51), accommodation and food service activities (I/55-56), real estate activities (L/68),professional, scientific and technical activities (M/69-75),arts, entertainment and recreation (R/90-93), and other service activities (S/94-96) (OECD, 2020[1]).

Data for employment and exports comes from the OECD Structural and Demographic Business Statistics database (OECD, 2022[2]). Data on exports comes from the Trade by Enterprise Characteristics (TEC) database (OECD, 2022[3]). In cases when data is not available, no information is presented.

Entrepreneurship and business dynamics

The war in Ukraine put a halt to the strong rebound in firm entries witnessed in the course of 2021 up until the first quarter of 2022. Across OECD countries, bankruptcies fell and remained below pre-crisis levels well into 2021 and the beginning of 2022.

The ***second section*** provides indicators related to business dynamics and entrepreneurship that provide a glimpse of how these were affected by the pandemic and subsequently Russia's war of aggression against Ukraine.

Business dynamics are measured by two indicators: firm entries and bankruptcies while ***entrepreneurship*** is measured by self-employment.

- **Firm entries** refers to the number of new enterprises created during the reference quarter. Firm entry is presented as quarter-over-quarter growth from the year 2000 (or earliest available) until the second quarter of 2022 (or latest available). Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year.
- **Bankruptcy** refers to the initiation of insolvency procedures. Note that such procedures do not always end up in the dissolution of the enterprise. Bankruptcy is presented as quarter-over-quarter growth from the year 2000 (or earliest available) until the second quarter of 2022 (or latest available). Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. In cases where bankruptcy is not available, business exit data is presented. Business exits refer to the number of dissolutions of companies and equivalent entities.
- **Self-employment** refers to the number of employers, workers who work for themselves, members of producers' co-operatives, and unpaid family workers. It is expressed as a percentage of total employment and available for the year 1990 (or earliest) until the year 2021 (or latest).

Data for firm entries and bankruptcy comes from OECD Timely Indicators of Entrepreneurship database (TIE) (OECD, 2023[4]). Data on self-employment come from Labour Force Statistics (LFS) (OECD, 2020[5]). In cases when data is not available, no information is presented.

SME indebtedness

The COVID-19 crisis and related policy interventions had a significant impact on the dynamics of lending to SMEs (OECD, 2022[6]). In 2022, conditions tighten in financial markets, reflecting greater risk aversion and uncertainty. As a result, a tighter monetary policy stance to counter inflation could impact the conditions for SME borrowing (OECD, 2022[7]). This represents an important challenge for highly leveraged SMEs that took on additional debt to weather the COVID-19 pandemic.

The ***third section*** provides a glimpse on SME indebtedness as a possible obstacle to future SME investment and capacity to scale up and transform.

- The indicator **SME outstanding loans** refers to the bank and financial institution loans to SMEs, amount outstanding (stocks) at the end of period. It is presented as year-over-year growth. It is shown by firm size using the national definition of SME or, if necessary, loan amounts less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Data is presented in Year-over-year growth.

The underlying data comes from Financing SMEs and Entrepreneurs 2022 An OECD Scoreboard (OECD, 2022[6]). Data refer to 2021, or latest available. In cases when data is not available, no information is presented.

Women in trade and gender gap

Across OECD countries, international trade is a major driver of economic growth. Amongst the different categories of firms and business owners, women entrepreneurs are less likely to engage in international trade than male entrepreneurs. As a result, women entrepreneurs are less able to seize the opportunities connecting to global networks could bring for increasing competitiveness, and other spillover effects trade could offer (Chapter 3).

The ***fourth section*** provides one indicator that measures the **gender gap in trade**. **The gender gap in trade** shows the extent to which woman-led versus man-led firms export.

The graph presents firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company.

The underlying data comes from the Future of Business Survey (OECD-World Bank-Meta, March 2022[8]), specifically designed to examine these issues. Only the responses from owners and managers of the business (obtained from the question *Which of these best describes your main employment situation?*) are used in the analysis. In cases when data is not available, no information is presented.

SME integration in GVCs, linkages with foreign markets and multinationals

Integration into domestic and global value chains (GVCs) is of particular relevance for SMEs as it can expand market opportunities, including abroad, ease access to strategic resources (such as finance, skills or technology) and enable capacity upgrading, through the exchanges that take place within the value chains (Chapter 4).

The ***fifth section*** provides 8 indicators across 3 thematic areas that present an overview of integration in GVCs, linkages with foreign markets, and multinationals.

The **first dimension** relates to a country's integration in international trade and are based on trade values for **four indicators:**

- **The first and second indicators** show the share of SMEs in a country's imports and exports as a percentage of all imports and exports, respectively. Country values are compared to the OECD average. SMEs include firms with 1-249 persons employed. Imports of goods and services consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non-residents. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents
- **The third and fourth indicators** show the import and export shares of firms trading with more than 20 countries, expressed as a percentage of all imports and exports, respectively. A higher number of trade partners suggest a greater integration in foreign markets and a greater exposure to shocks, including abroad. For example, to calculate the import share of firms that import from 20+ countries, first it is necessary to aggregate all the import value of firms that trade with more than 20 countries. This number is then divided by the total value of imports for the year of reference. Country values are compared to the OECD average.

The data is drawn from the OECD Trade by Enterprise Characteristics database (OECD, 2022[3]). Data refer to 2021 or latest year available. In cases when data is not available, no information is presented.

The **second dimension** relates to a country's vulnerability to trade disruptions due to the participation of domestic SMEs in long GVCs. It presents two indicators: the share of SMEs in export and import trade value of long GVCs.

- The share of SMEs in export (import) trade value of long GVCs is defined as the total exports (imports) by SMEs trading in long GVCs industries divided by the total exports (imports) in long GVCs industries for the year of reference. Long GVCs are defined as the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO) model (OECD, 2018[9]) (De Backer and Miroudot, 2013[10]), and using the International Standard Industrial Classification of All Economic Activities Revision 4 (ISIC Rev.4) at two digits: i.e. manufacturing of textiles (13), manufacturing of wearing appeal (14), manufacturing of leather and related products (15), manufacturing of rubber and plastics products (22), manufacturing of basic metals (24), manufacturing of computers, electronics, and optical equipment (26), manufacturing of electrical equipment (27), manufacturing of other machinery and equipment (28), manufacturing of motor vehicles, trailers and semi-trailers (29), and manufacturing of other transport equipment (30). Data are for 2020 (or latest year available). Country values are compared to the OECD average. The data is drawn from the OECD Trade by Enterprise Characteristics database (OECD, 2022[3]). Data refer to 2021, or latest year available. In cases when data is not available, no information is presented.

Finally, the **third dimension** looks at the embeddedness of foreign affiliates in local economy, through the supply chain linkages they have developed in the country.

- The sourcing structure of foreign affiliates refer to the percentage of foreign affiliates' consumption that is sourced domestically, i.e. from domestic multinationals (MNEs) and non-MNEs, across the total economy. Local businesses act as suppliers of MNEs. Country values are compared to the OECD average.
- The output use of foreign affiliates is the percentage of the output of foreign affiliates that is used by domestic MNEs and non-MNEs for intermediary consumption, across the total economy. Local businesses act as users/buyers of MNEs. Country values are compared to the OECD average.

The underlying data comes from OECD TEC database and the OECD Analytical Database on the Activity of Multinational Enterprises (AMNE) (OECD, 2017[11]). The year of reference is 2016. In cases when data is not available, no information is presented.

SME networks for innovation, growth and resilience

Networks are strategic assets for SMEs to access resources, markets, and partners, capture knowledge spillovers, and achieve external economies of scale. Networks enable technological leapfrog, support SME innovation and are a cornerstone for their strategies of resilience (Chapter 4).

The ***sixth section*** presents three sets of indicators that capture the extent to which SMEs are part of, and make use of, different forms of networks.

The first set of indicators show SME integration in innovation networks through cooperation with higher education institutions and other firms.

Cooperation with higher education institutions refers to firms co-operating on innovation activities with universities or other higher education institutions, as a percentage of innovation active firms. Data are for 2018 and are drawn from the 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021[12]; Eurostat, 2022[13]).

Cooperation with enterprises refers to firms co-operating on innovation activities with other enterprises, as a percentage of innovation active firms. Data are for 2018 and are drawn from the 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021[12]; Eurostat, 2022[13]).

International cooperation with enterprises refers to firms cooperating with enterprises outside of the country of residency of the firm, as a percentage of innovation active firms. Data refer to 2018 and are drawn from the 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021[12]; Eurostat, 2022[13]).

The second set of indicators related to the adoption of platform and network technologies and drawn from the OECD database on ICT Access and Usage by Businesses (OECD, 2023[14]):

Cloud computing services refer to firms purchasing Cloud computing services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software.

Social media use refers to firms using social media, i.e. the enterprise's use of applications based on Internet technology or communication platforms for connecting, creating and exchanging content online, with customers, suppliers, or partners, or within the enterprise. Enterprises using social media are considered those that have a user profile, an account or a user license depending on the requirements and the type of the social media.

Supply chain sharing refer to firms sharing electronically Supply Chain Management (SCM) information with suppliers and customers. Sharing information electronically on SCM implies exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. This information may be exchanged via websites, networks or other means of electronic data transfer, but it excludes manually typed e-mail messages.

Customer relationship management software refer to firms using CRM (Customer Relationship Management) software (%).

The third set of indicators show the participation of SMEs in professional networks:

The membership of SME in formal professional groups refers to the percentage of SMEs that report belonging to the following groups: 1) groups of professional women; 2) groups of people with similar jobs;

3) groups of people leading small businesses; 3) groups of other people in the industry; 4) local chamber of commerce; 5) other professional groups; and 6) no associations to any formal groups. The underlying data comes from the Future of Business Survey (OECD-World Bank-Meta, March 2022[8]), specifically designed to examine these issues. The shares are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of?". The answers are weighted such that the weight of each firm is 1 to account for multiple responses. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses obtained from owners and managers of the business (obtained from the question "Which of this best describes your main employment situation?") are included.

All indicators in this section are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest) to make them comparable. The same methodology was used in the SME&E Outlook 2019 (OECD, 2019[15]) and 2021 (OECD, 2021[16]).

Formally, the benchmarking index is constructed as follows. First, let $X_{c,t}$ denote the value for country *c* at time *t*. Second, let $X_{\{min,t\}}$, $X_{\{med,t\}}$ and , $X_{\{max,t\}}$ denote the minimum, median and maximum values at time *t* across OECD countries, respectively. The country index of benchmark $I_{c,t}$ is then calculated using the following conditions:

If $X_{c,t} > X_{\{med,t\}}$ then

$$I_{c,t} = 100 + (X_{c,t} - X_{\{med,t\}})/(, X_{\{max,t\}} - X_{\{med,t\}}) * 100$$

If $X_{c,t} < X_{\{med,t\}}$ then

$$I_{c,t} = 100 - (X_{c,t} - X_{\{med,t\}})/(X_{\{min,t\}} - X_{\{med,t\}}) * 100$$

The benchmark charts highlight the position and dispersion of the top five (High) and bottom five (Low) OECD values. The country's relative position is marked with a dot. However, in cases when data is not available, no information is presented, i.e. the dot marking the country's position in the ranking, does not figure on the graph.

Upskilling, reskilling and finding talent: the role of SME ecosystems

A major obstacle to SME innovation and twin transformation is their more limited access to skills, more limited capacity to attract talent and more limited resources to train and re-train their employees (Chapter 6). Digitalisation transforms the skillset needed to thrive in data-driven economies, but open also opportunities to outsource skills needs.

The ***seventh section*** presents four indicators that capture the different channels through which SME can access digital skills.

- ICT hiring refers to the share of businesses which have employed ICT specialists, within the last 12 months (%). ICT specialists are employees for whom ICT is the main job. For example, to develop, operate or maintain ICT systems or applications.
- Training refers to the share of businesses which provided any type of training to develop ICT related skills of the persons employed, within the last 12 months (%).
- Outsourcing refers to share of firms that purchase cloud computing services in (%). Main cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software.

Data are retrieved from the OECD ICT Access and Usage by Businesses database (OECD, 2023[14]). Small firms are defined having between 10-49 employees, medium-sized between 50 and 249 and large

firms 250 or more. Country values are compared to the OECD average. Data refer to 2021. In cases when data is not available, no information is presented.

Caveats and caution in interpretation

The SME&E Outlook 2023 country profiles build on the most recent work and data available at the time of drafting. However due to differences in data collection calendars and processes, benchmarking data may not refer to the same year across all indicators or across all countries. The data cut-off date for the country profiles is 15 April 2023. In case when data is not available, no information is presented.

References

De Backer, K. and S. Miroudot (2013), "Mapping Global Value Chains", *OECD Trade Policy Papers*, No. 159, OECD Publishing, Paris, https://doi.org/10.1787/5k3v1trgnbr4-en. [10]

Eurostat (2022), *Community innovation survey 2020 (CIS2020)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database (accessed 06 February 2023). [13]

Eurostat and OECD (2007), *Eurostat-OECD manual on business demography statistics*, https://www.oecd.org/sdd/business-stats/eurostat-oecdmanualonbusinessdemographystatistics.htm. [17]

OECD (2023), "ICT Access and Use by Businesses", *OECD Telecommunications and Internet Statistics* (database), https://doi.org/10.1787/9d2cb97b-en (accessed on 10 March 2023). [14]

OECD (2023), "Timely indicators of entrepreneurship", *Structural and Demographic Business Statistics* (database), https://doi.org/10.1787/b1bfd8c5-en (accessed on 10 March 2023). [4]

OECD (2022), *Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard*, OECD Publishing, Paris, https://doi.org/10.1787/e9073a0f-en. [6]

OECD (2022), *OECD Data Lake on SMEs and Entrepreneurship: A New Knowledge Infrastructure on SMEs and Entrepreneurship*, https://www.oecd.org/cfe/datalake.htm (accessed 3 March 2023). [18]

OECD (2022), *OECD Economic Outlook, Interim Report March 2022: Economic and Social Impacts and Policy Implications of the War in Ukraine*, OECD Publishing, Paris, https://doi.org/10.1787/4181d61b-en. [7]

OECD (2022), *Structural and Demographic Business Statistics Database*. [2]

OECD (2022), *Trade by Enterprise Characteristics (TEC) Database*. [3]

OECD (2021), *OECD SME and Entrepreneurship Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/97a5bbfe-en. [16]

OECD (2021), *Survey of Business Innovation Statistics*. [12]

OECD (2020), *Evaluating the initial impact of COVID-19 containment measures on economic activity*. [1]

OECD (2020), *Labour Force Statistics 2010-2019*. [5]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [15]

OECD (2018), "OECD Inter-Country Input-Output (ICIO) Tables". [9]

OECD (2017), "Activity of Multinational Enterprises (AMNE) Database". [11]

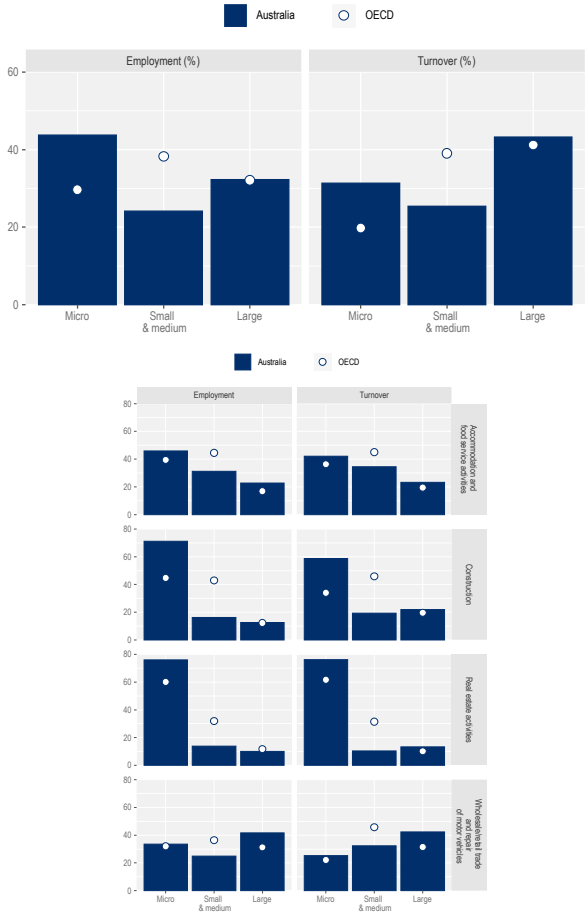
OECD-World Bank-Meta (March 2022), *Future of Business Survey, Data for Good*, https://dataforgood.fb.com/global-state-of-smb. [8]

8 Country Profiles

Australia

SME sector structure and performance

Figure 8.1. SME share of employment and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2016. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2016. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. For OECD, Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. For Australia, the size class of companies differ from the OECD definition and include: size class 1-19 employees, size class 20-199 employees, and size class 200+ employees. Given these differences in the definition of business size, the labels may indicate different business groups for Australia and OECD. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

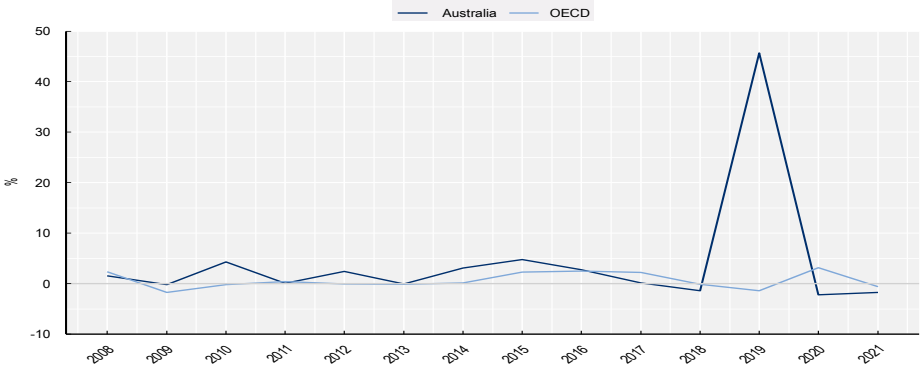
Figure 8.2. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Company registrations refer to the number of companies entering the market in a given year. Company bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

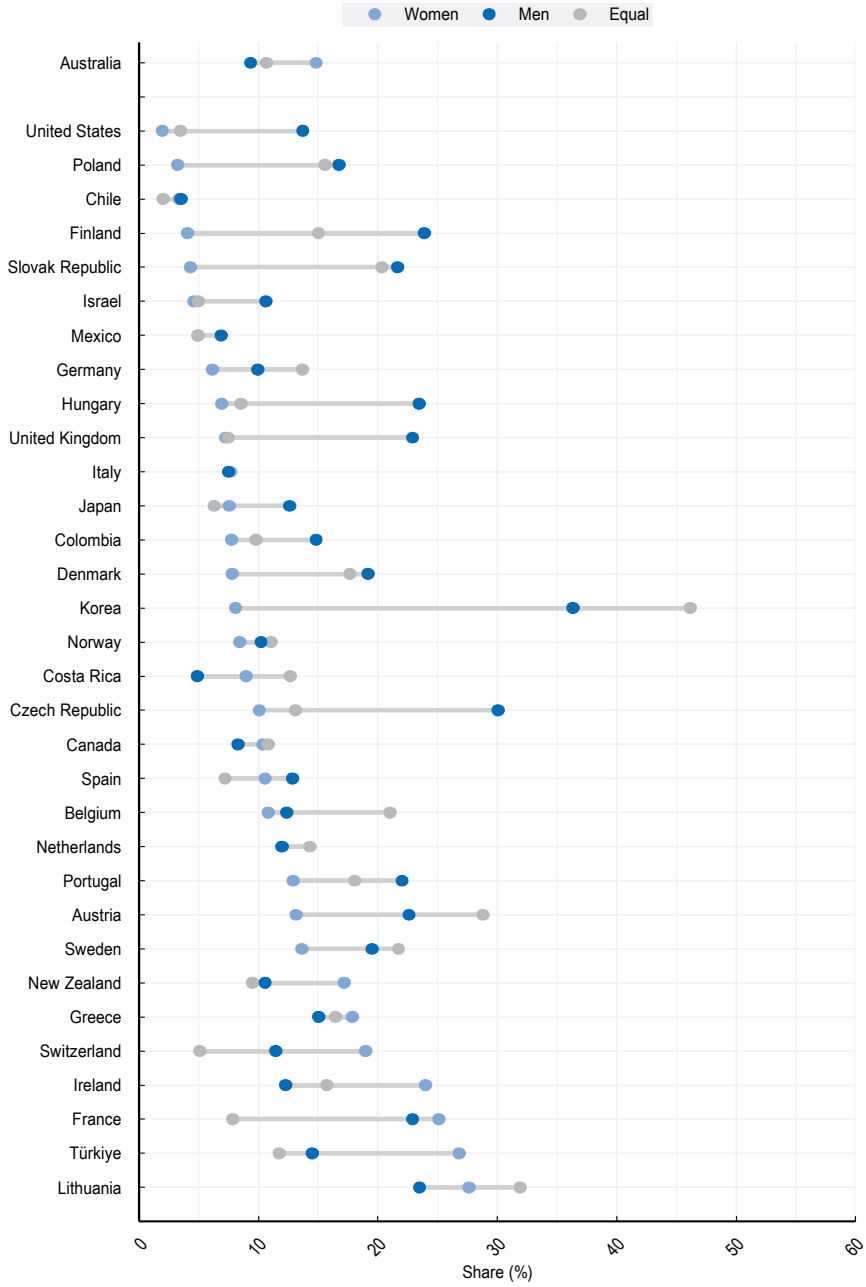
Figure 8.3. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year. Figures for Australia include a series break in 2019 following the introduction of the new Economic and Financial Statistics data collection and a change in outstanding business loans categorisation. The 2019 data point reflect this series break and not the actual growth in Australian SME outstanding loans.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

Women in trade and gender export gap

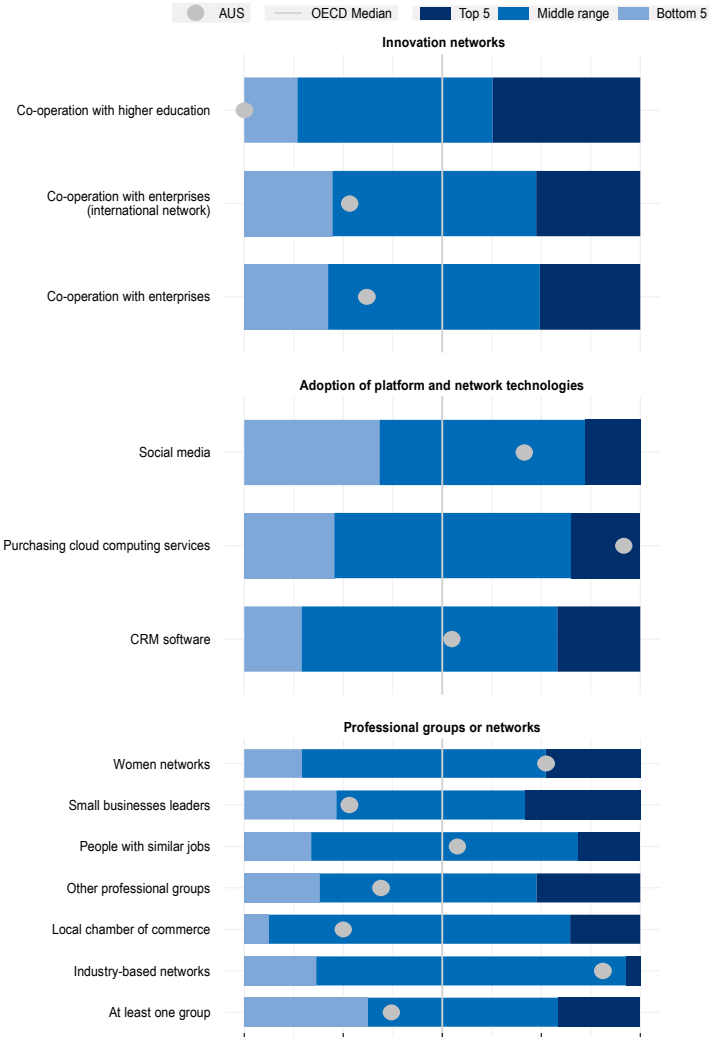
Figure 8.4. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Knowledge and innovation networks

Figure 8.5. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.6. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

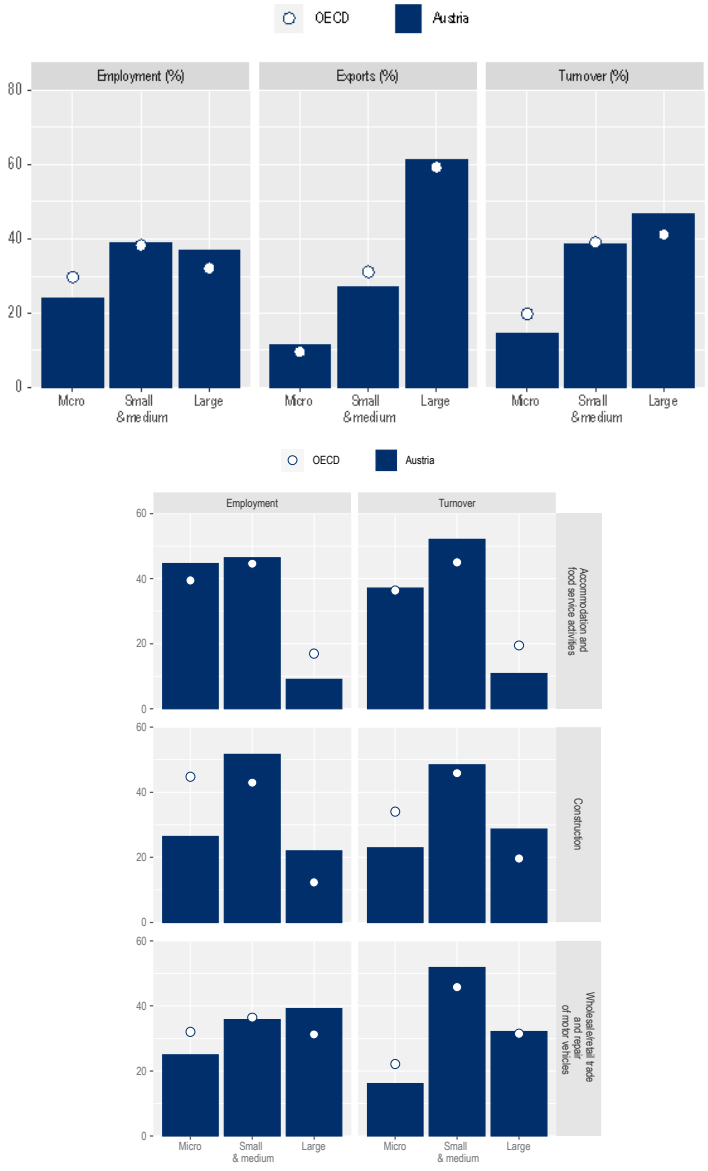


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Austria

SME sector structure and performance

Figure 8.7. SME share of employment, exports, and turnover

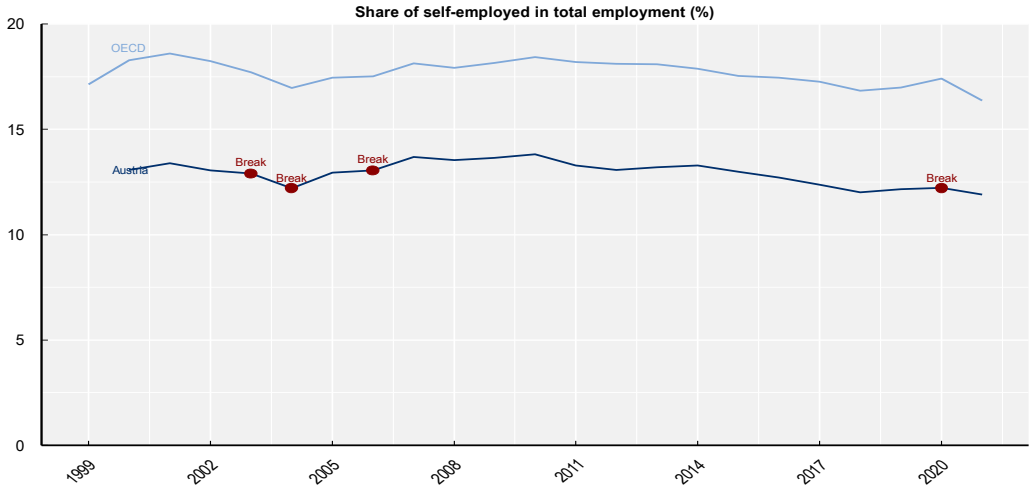


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

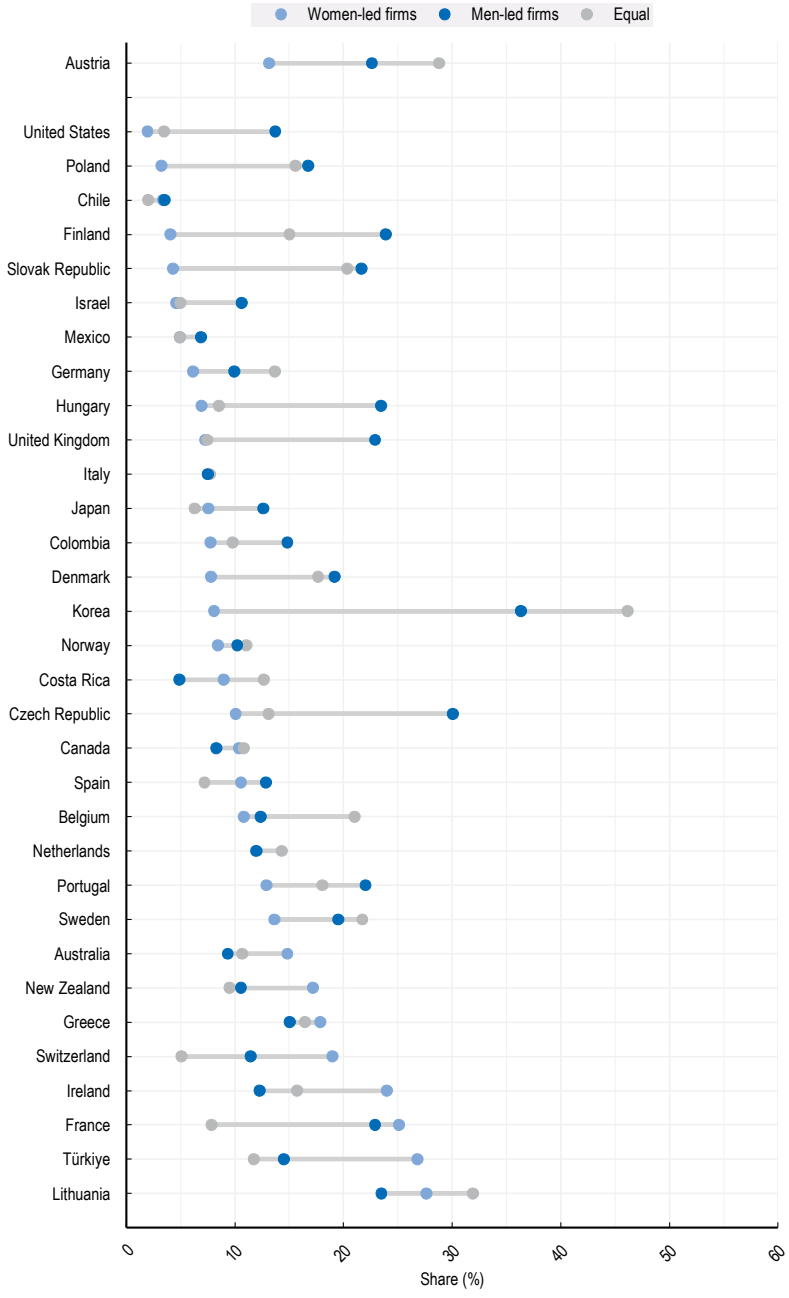
Entrepreneurship

Figure 8.8. Self-employment



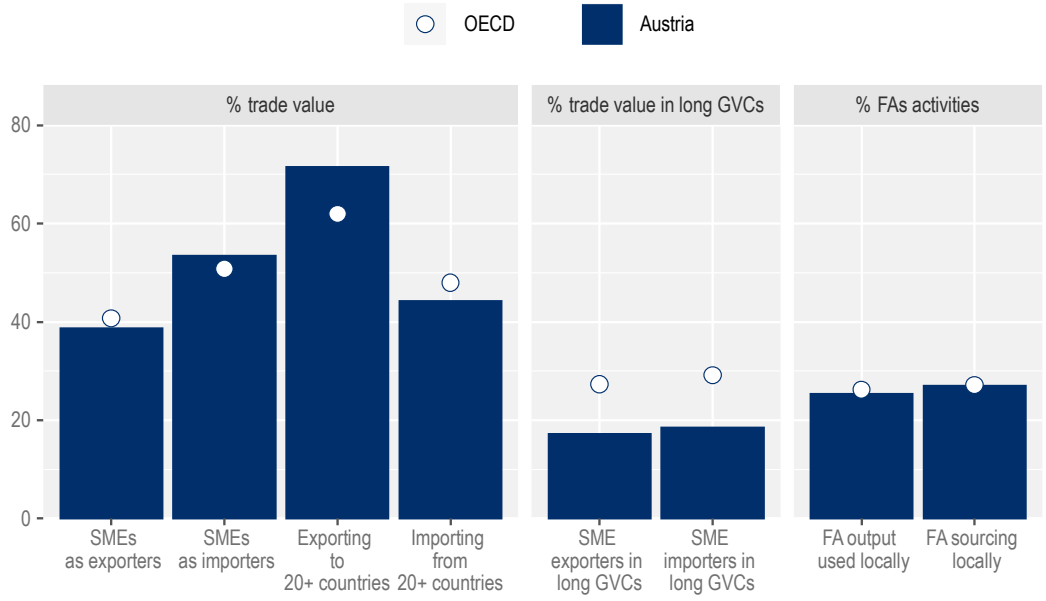
Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

Figure 8.9. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

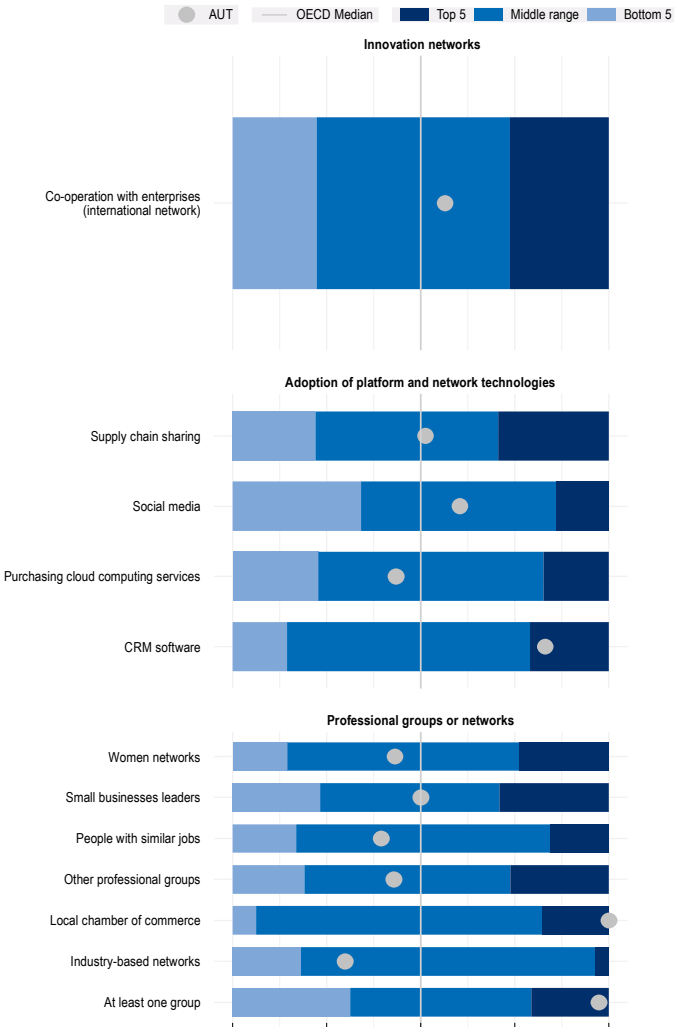
Figure 8.10. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

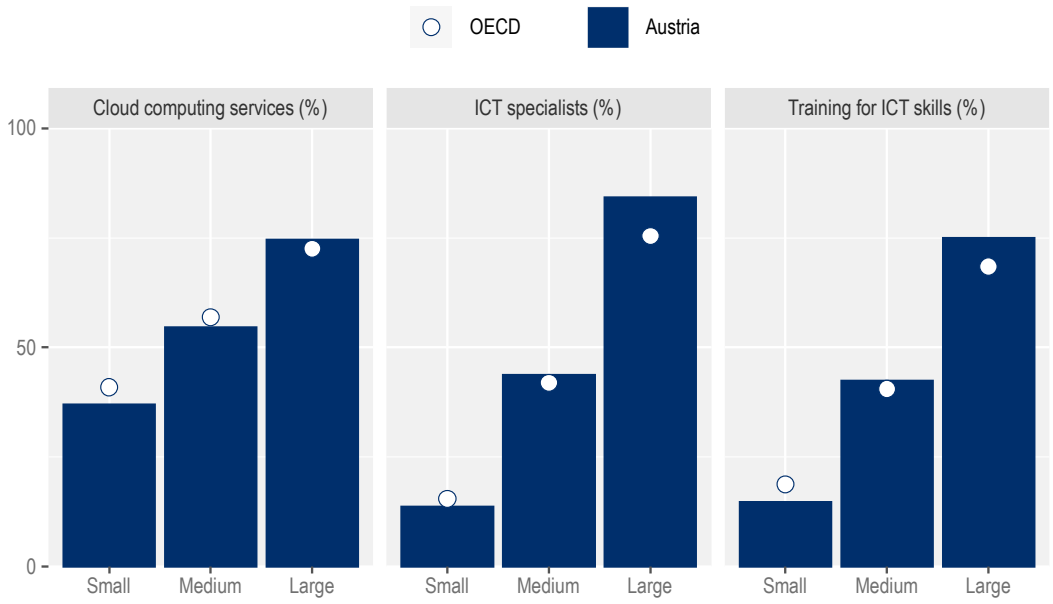
Knowledge and innovation networks

Figure 8.11. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.12. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

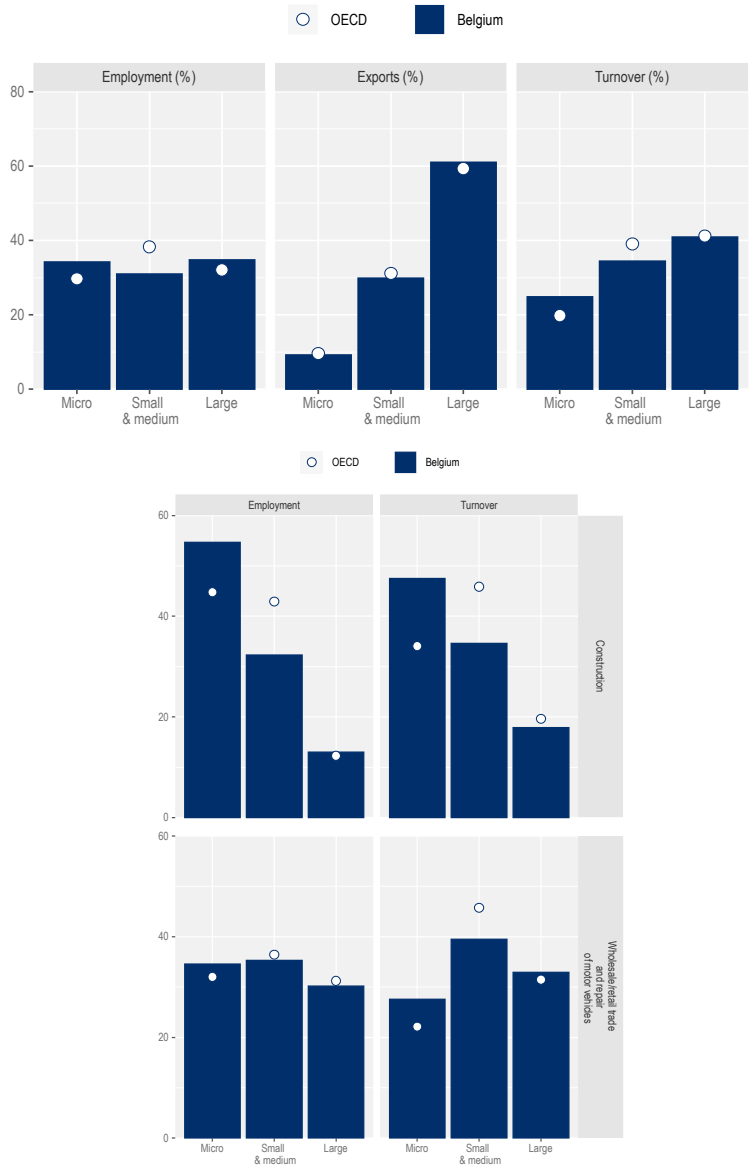


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Belgium

SME sector structure and performance

Figure 8.13. SME share of employment, exports, and turnover

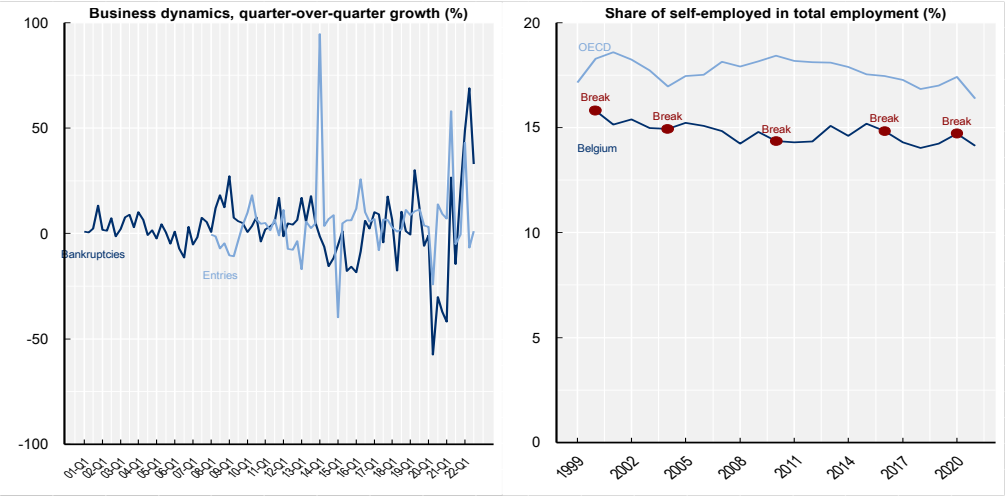


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

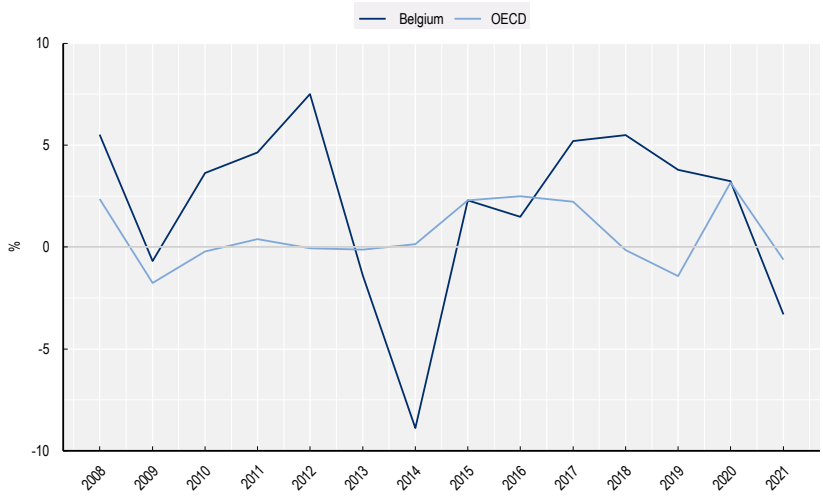
Figure 8.14. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

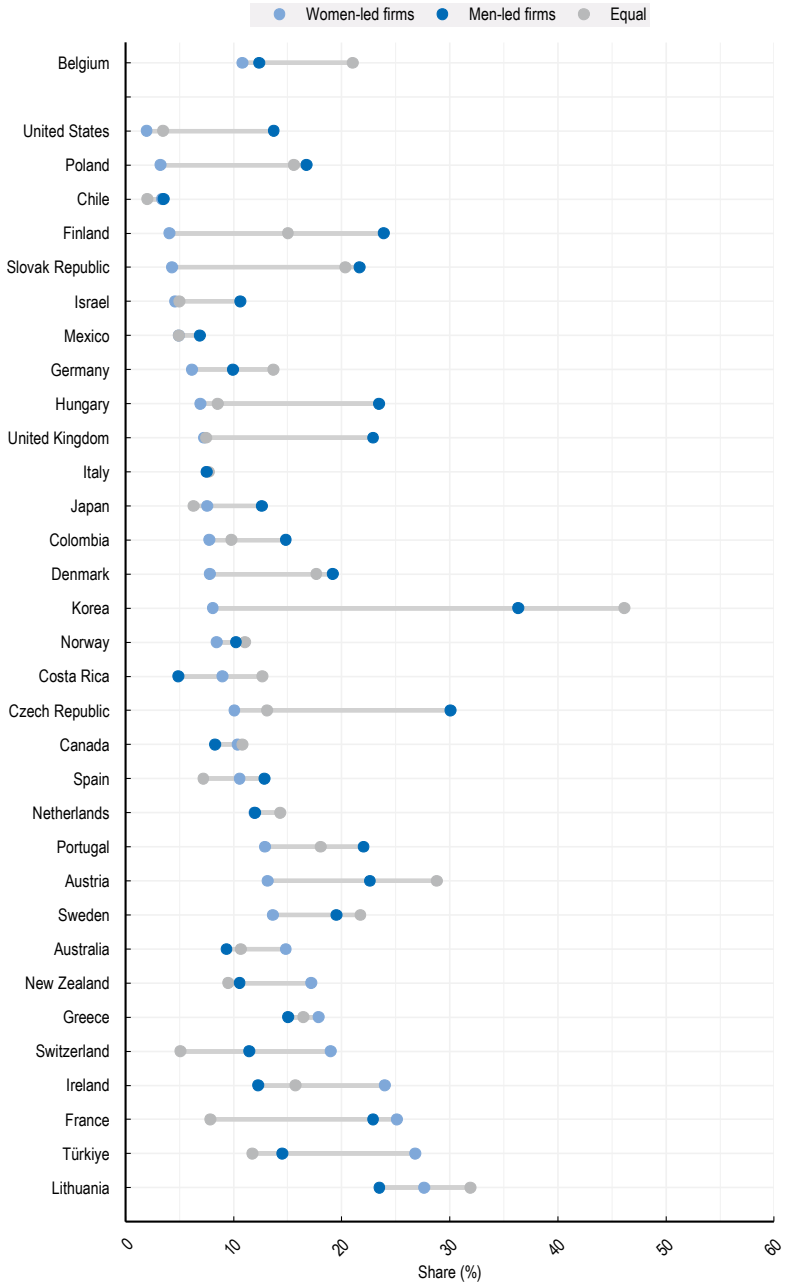
Figure 8.15. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

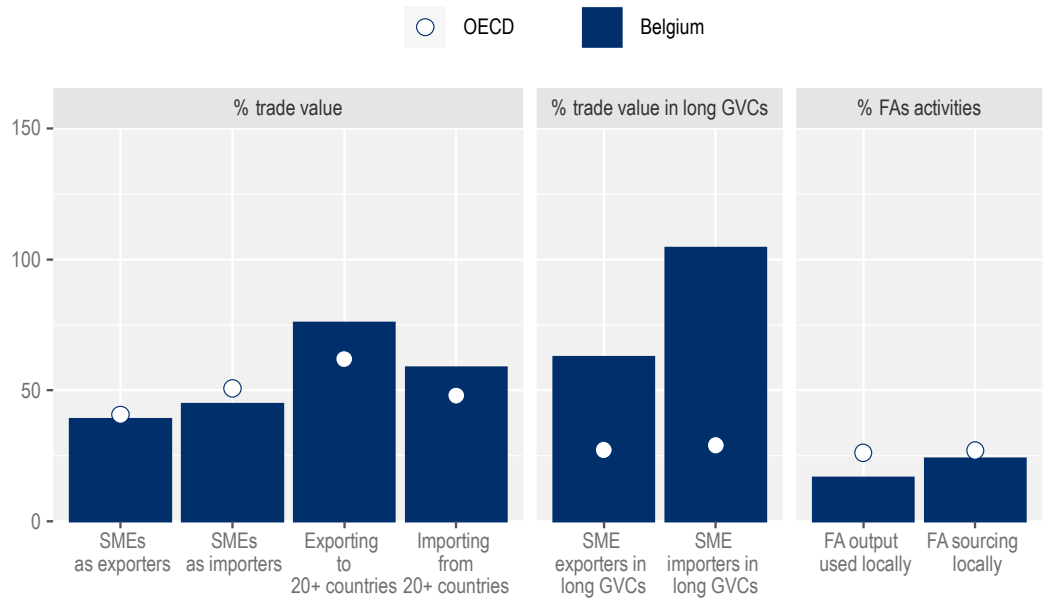
Women in trade and gender export gap

Figure 8.16. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

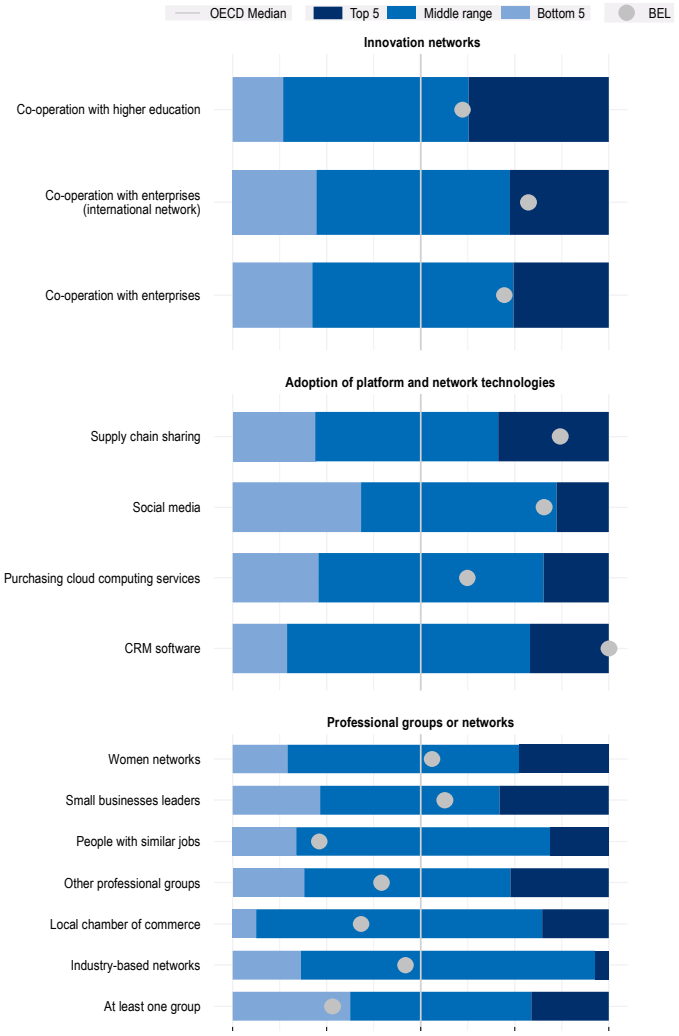
Figure 8.17. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

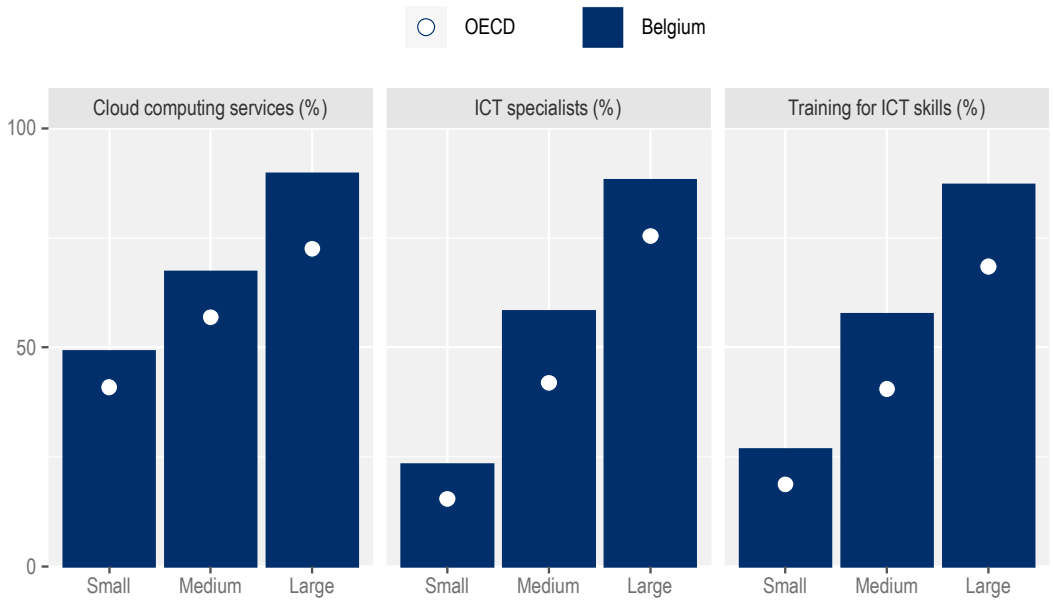
Knowledge and innovation networks

Figure 8.18. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.19. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

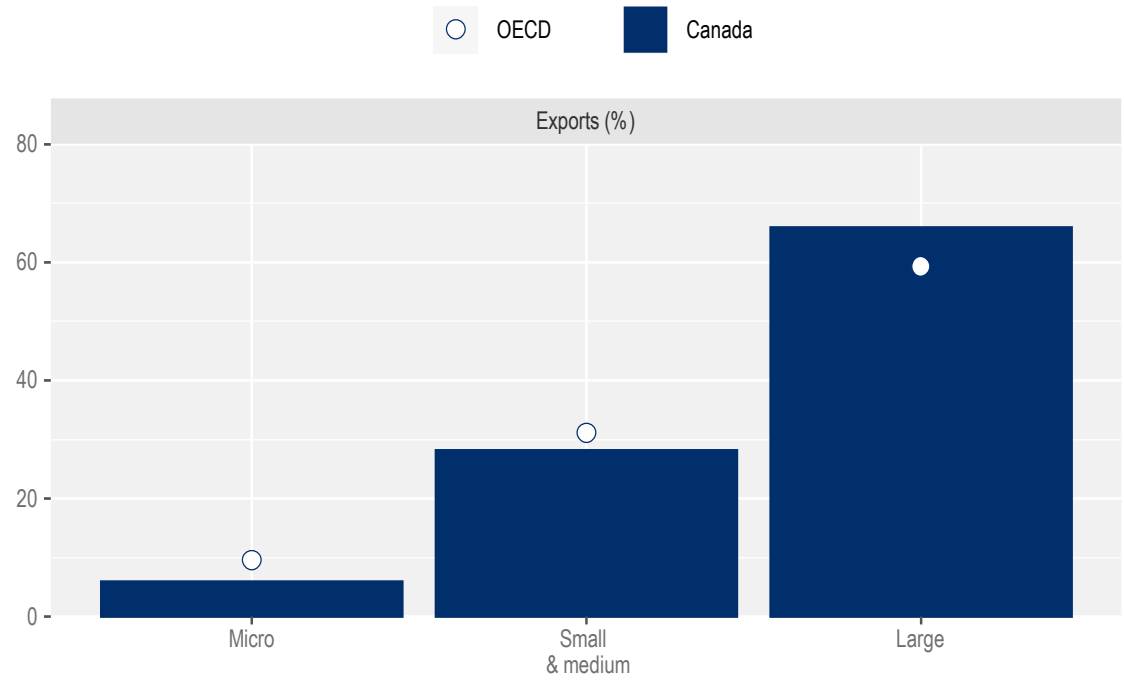


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Canada

SME sector structure and performance

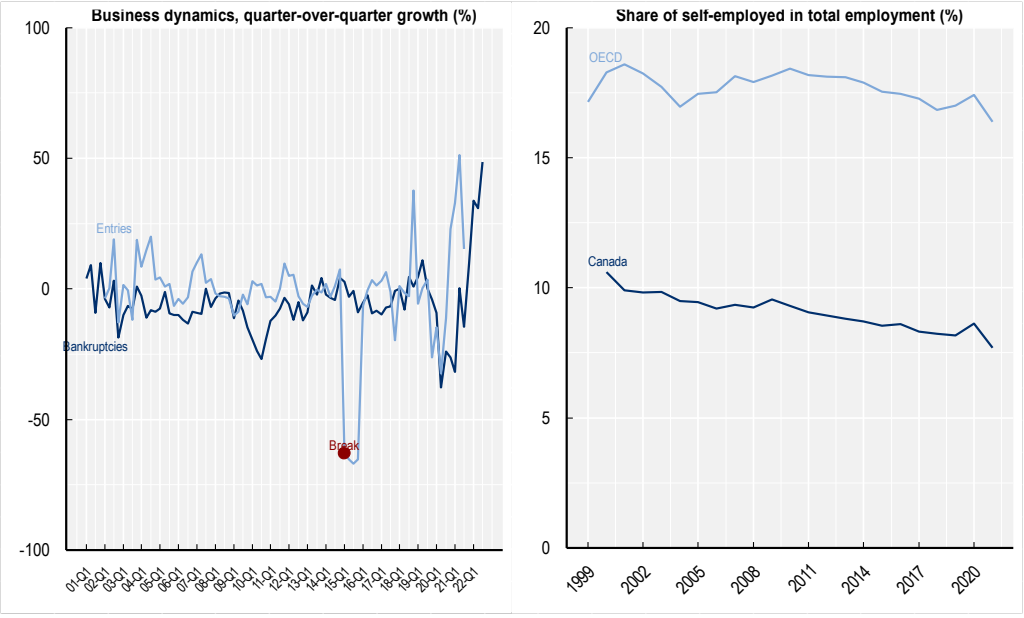
Figure 8.20. SME share of exports



Note: Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.
Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

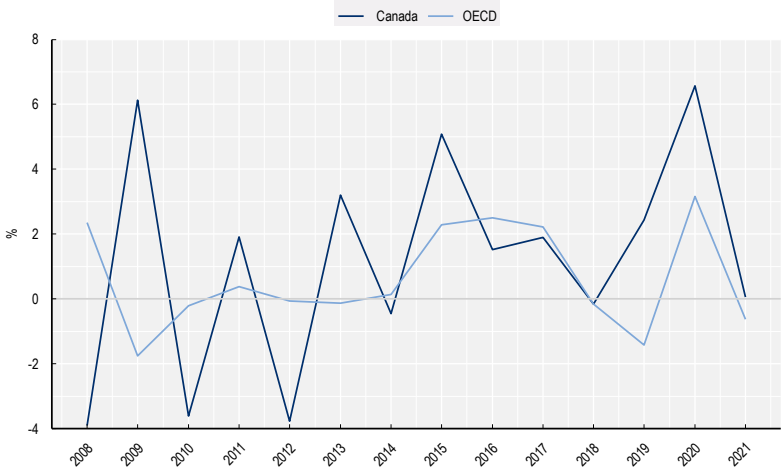
Figure 8.21. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

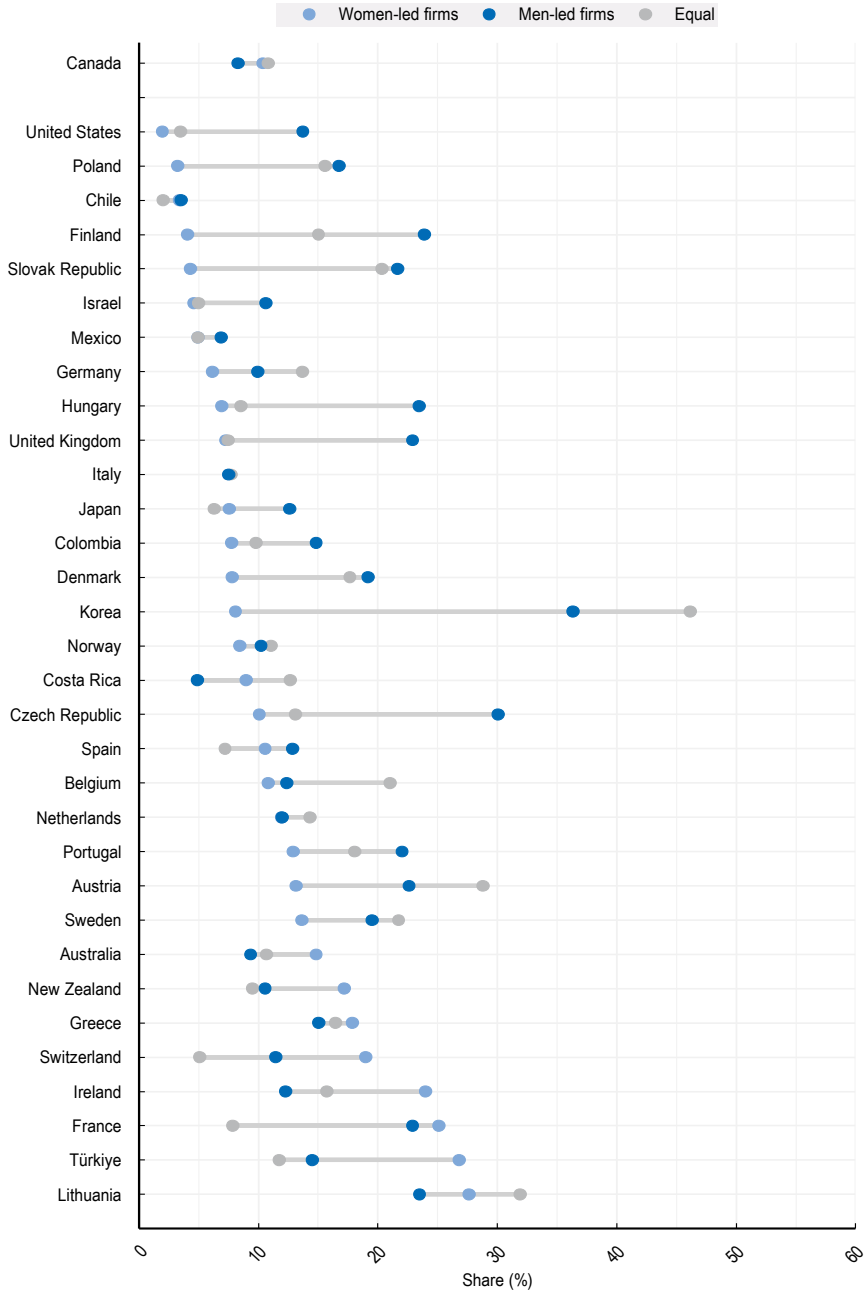
Figure 8.22. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

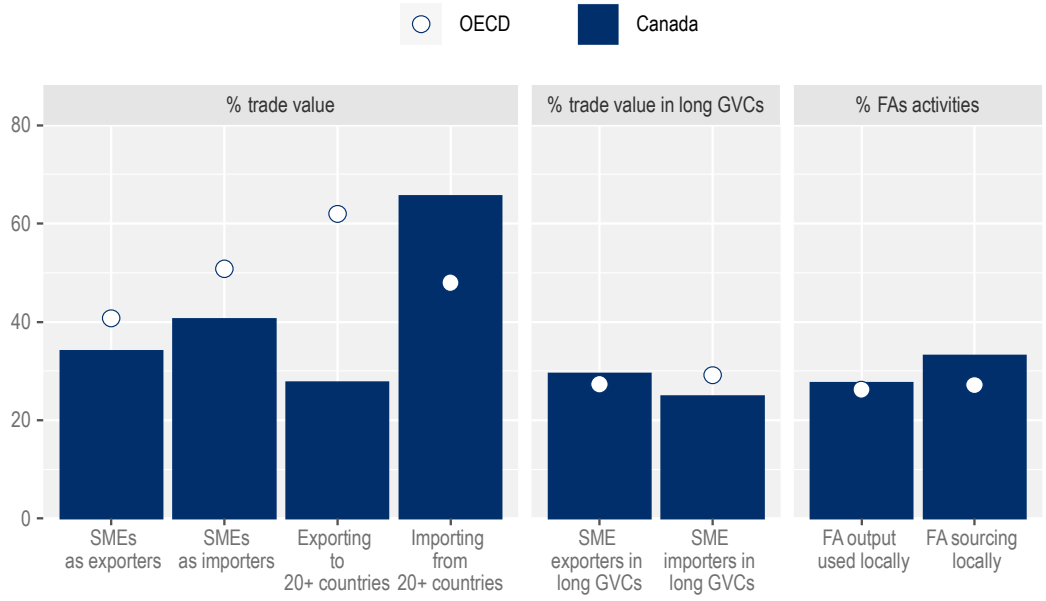
Women in trade and gender export gap

Figure 8.23. Share (%) of firms trading globally by gender of leadership



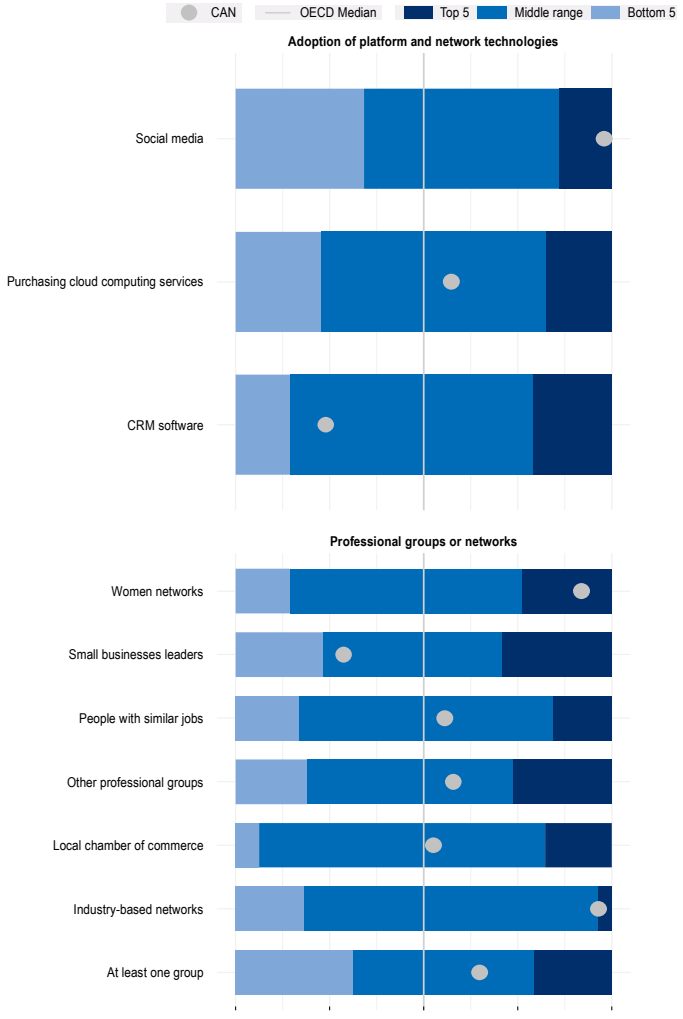
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.24. SME integration in trade and embeddedness of foreign affiliates' activities (%)



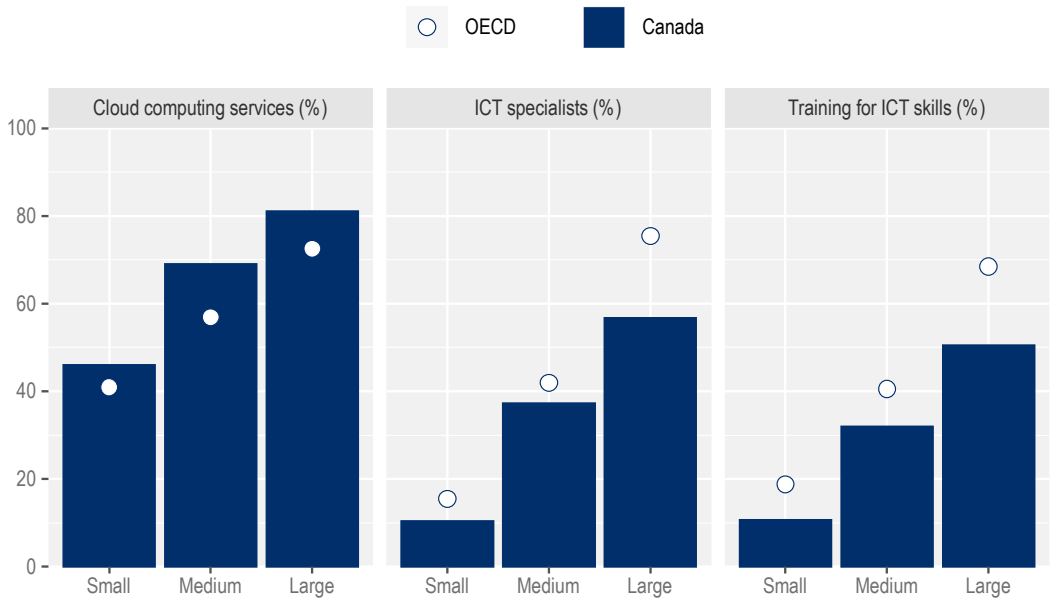
Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Figure 8.25. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.26. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class



Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Chile

Entrepreneurship

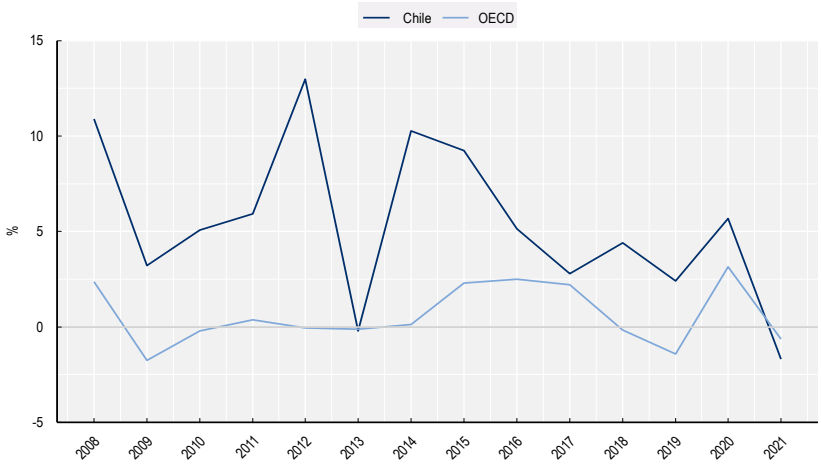
Figure 8.27. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

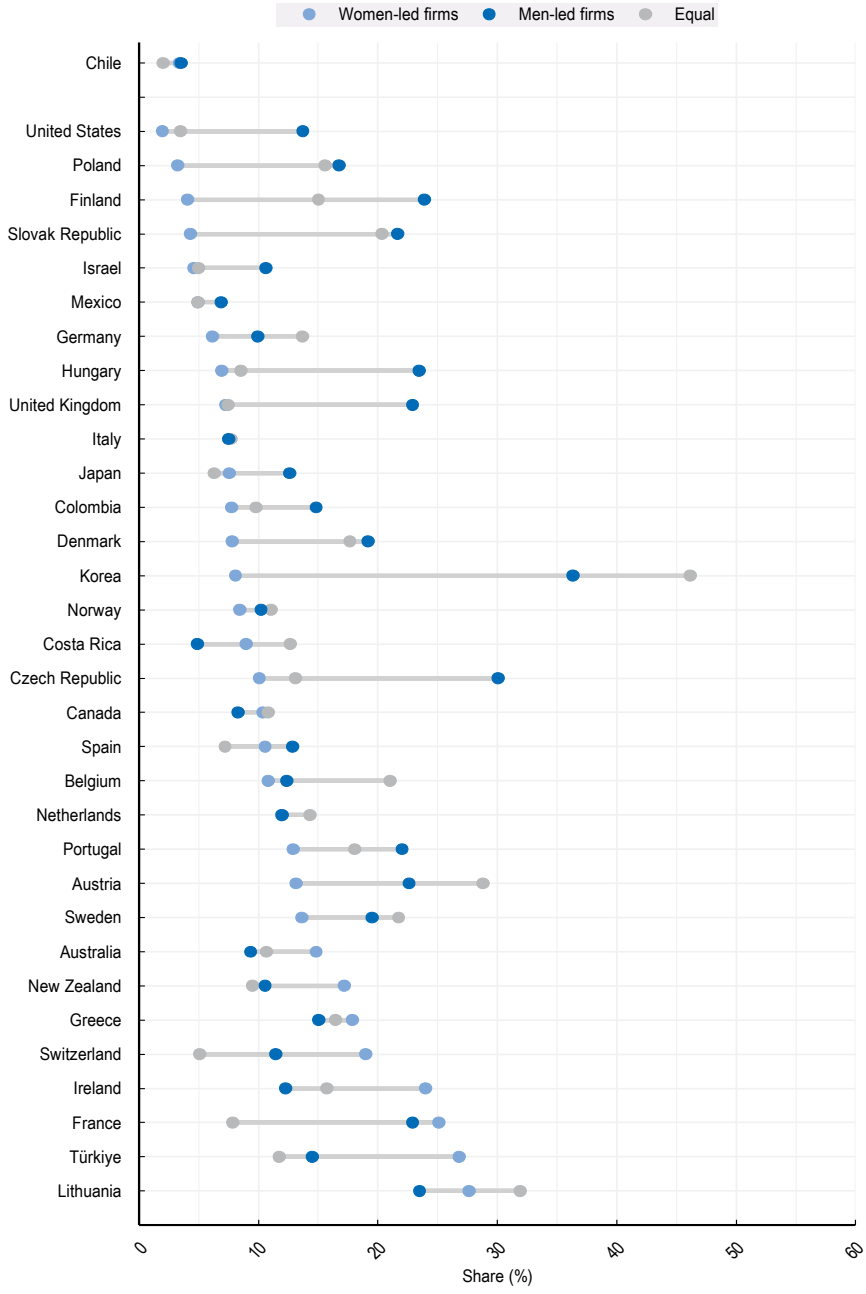
SME indebtedness

Figure 8.28. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

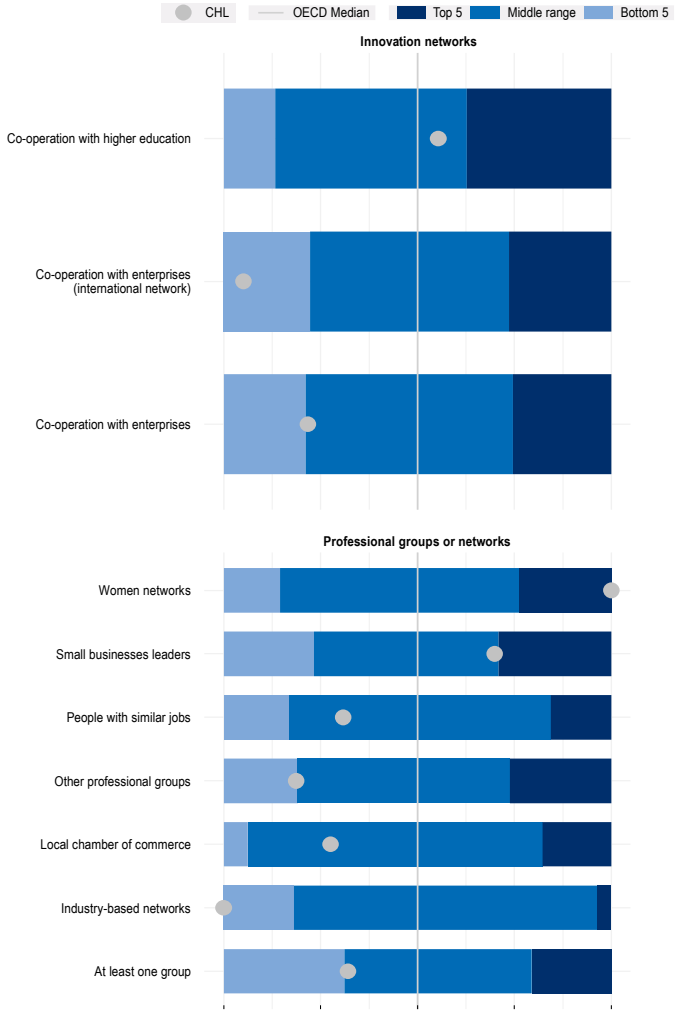
Figure 8.29. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Knowledge and innovation networks

Figure 8.30. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)

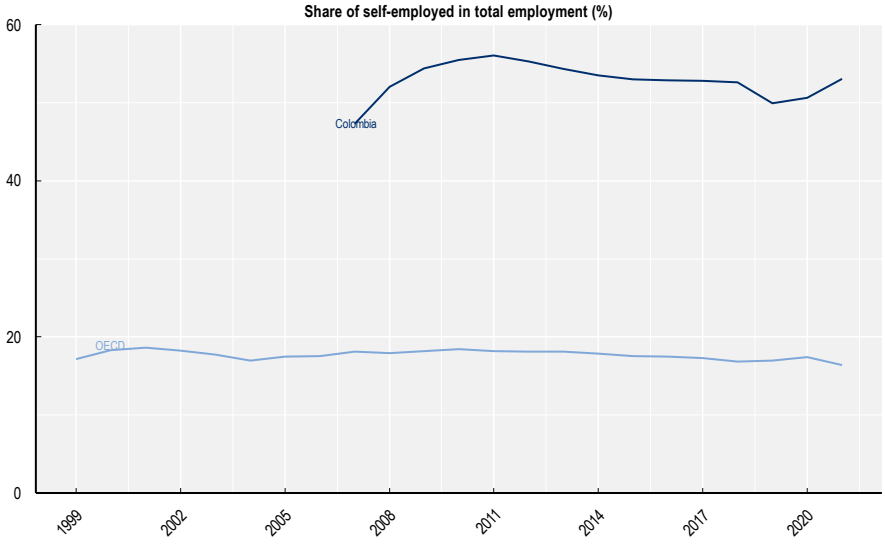


Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Colombia

Entrepreneurship

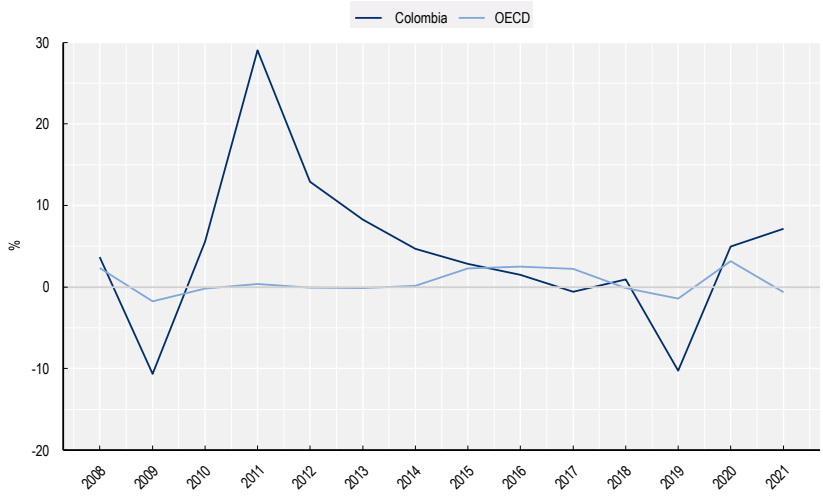
Figure 8.31. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

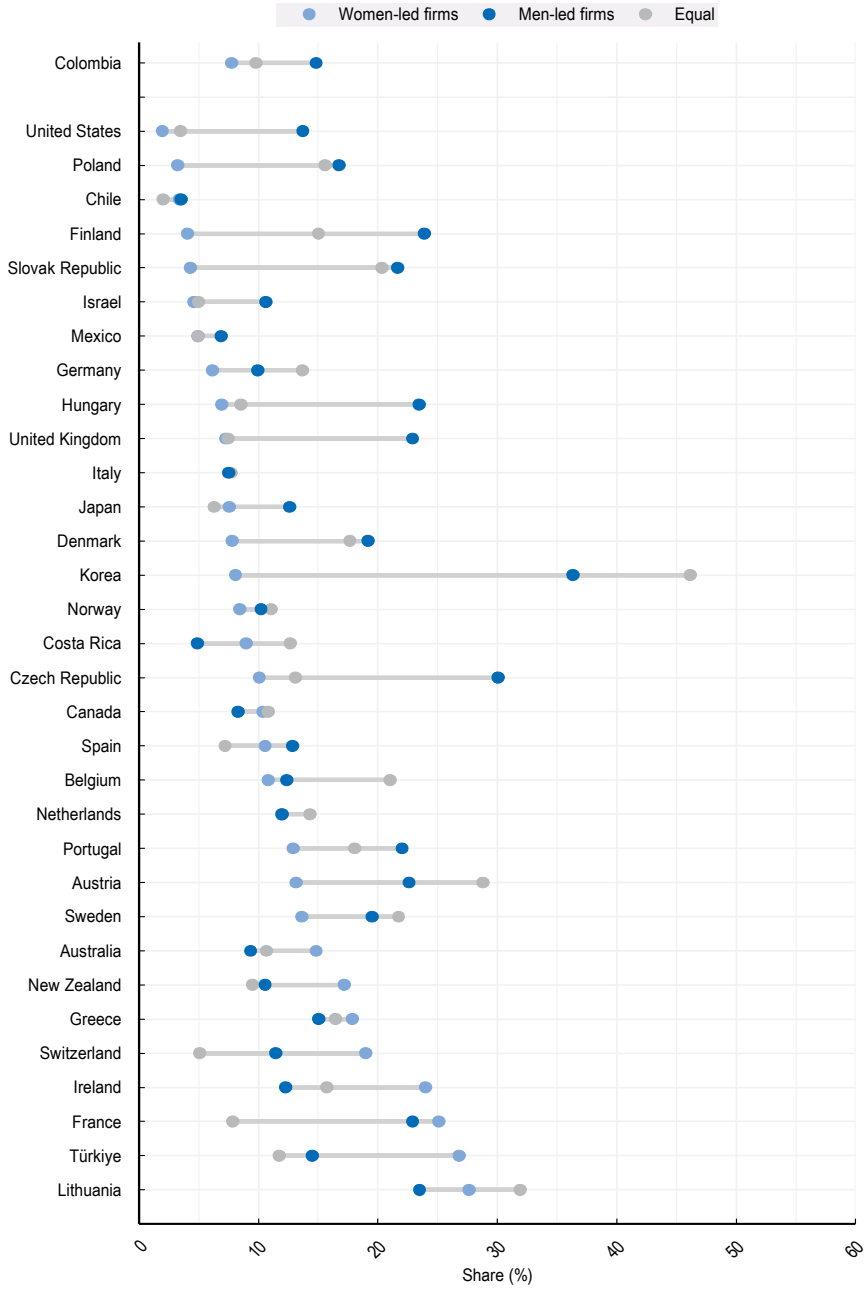
Figure 8.32. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

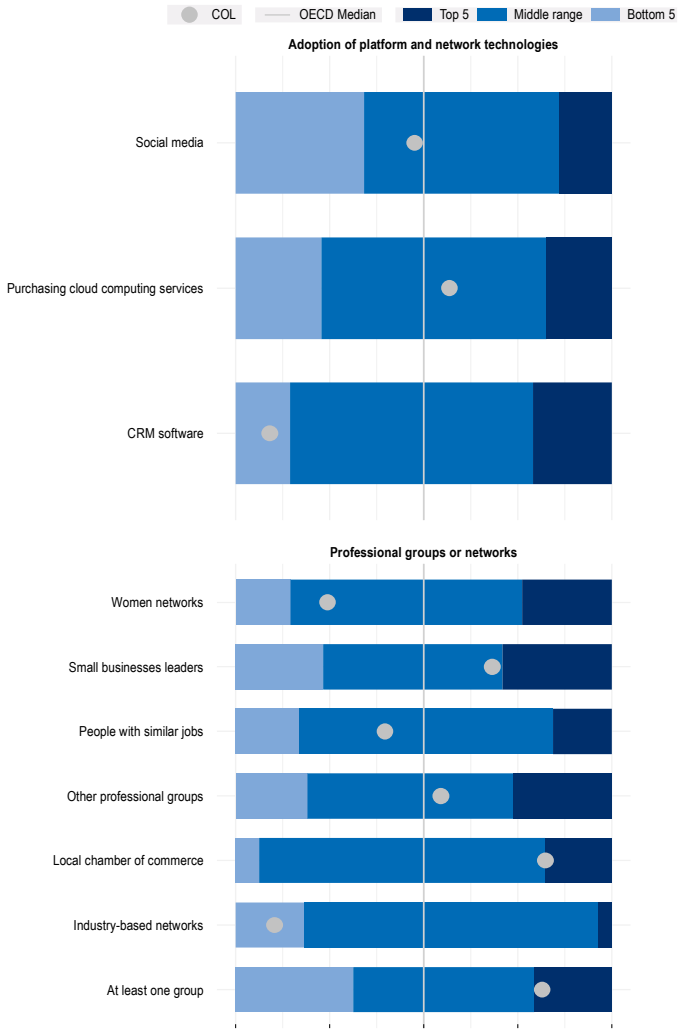
Women in trade and gender export gap

Figure 8.33. Share (%) of firms trading globally by gender of leadership



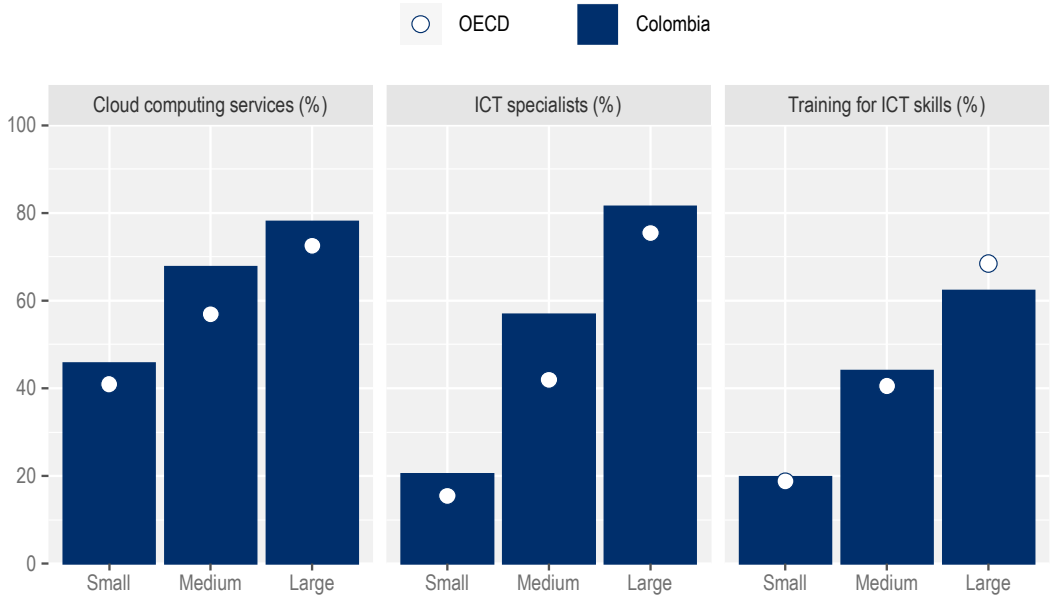
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.34. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.35. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

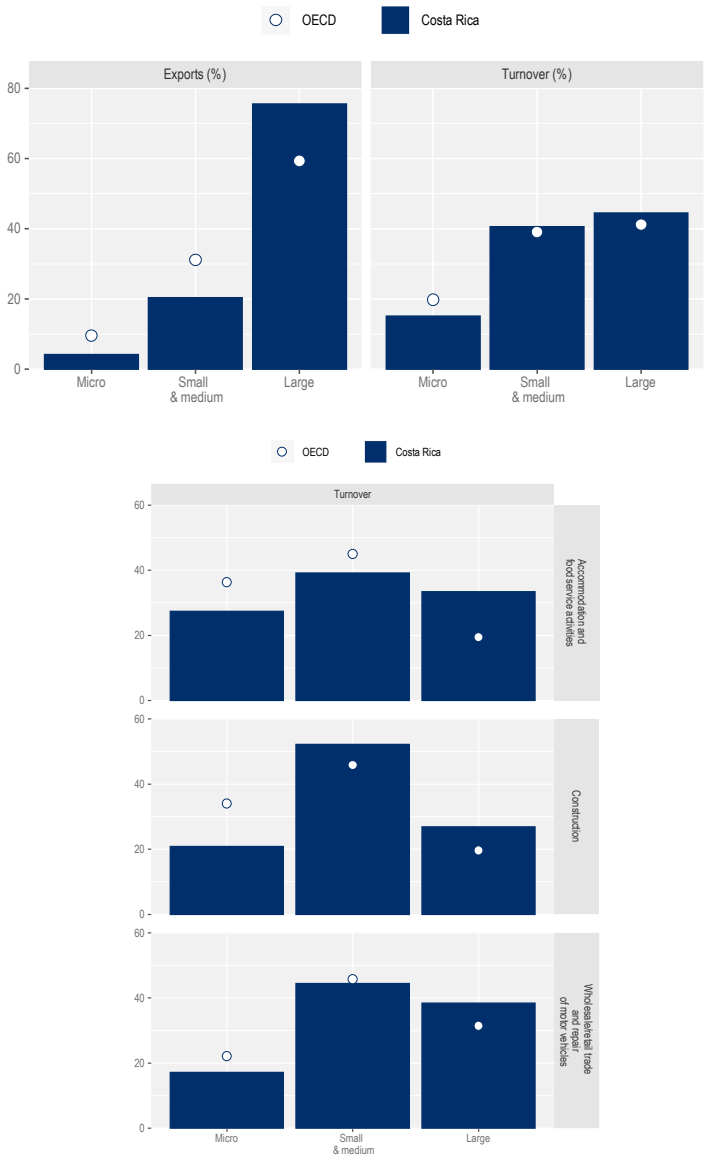


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Costa Rica

SME sector structure and performance

Figure 8.36. SME share of exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

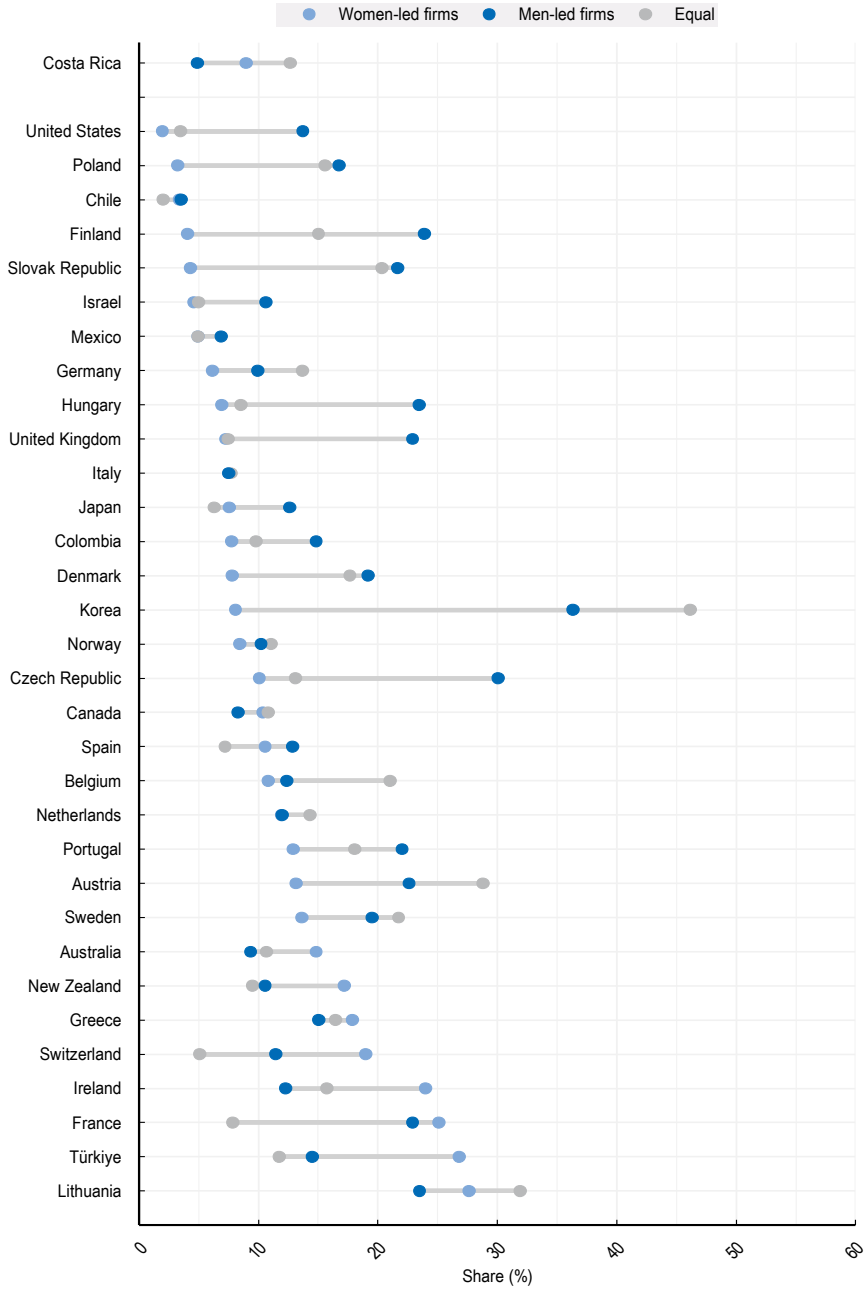
Figure 8.37. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

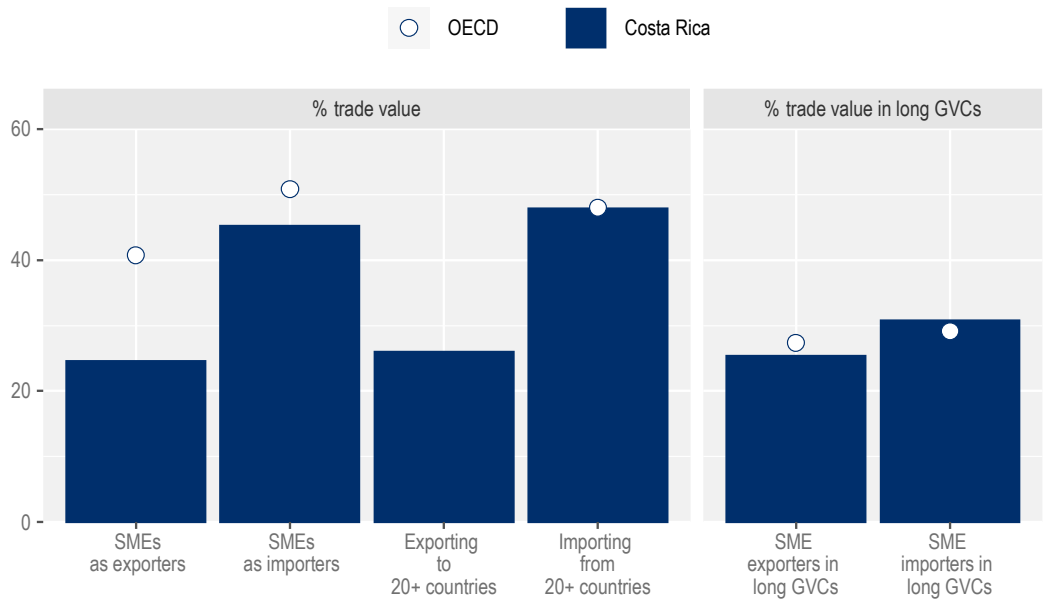
Women in trade and gender export gap

Figure 8.38. Share (%) of firms trading globally by gender of leadership



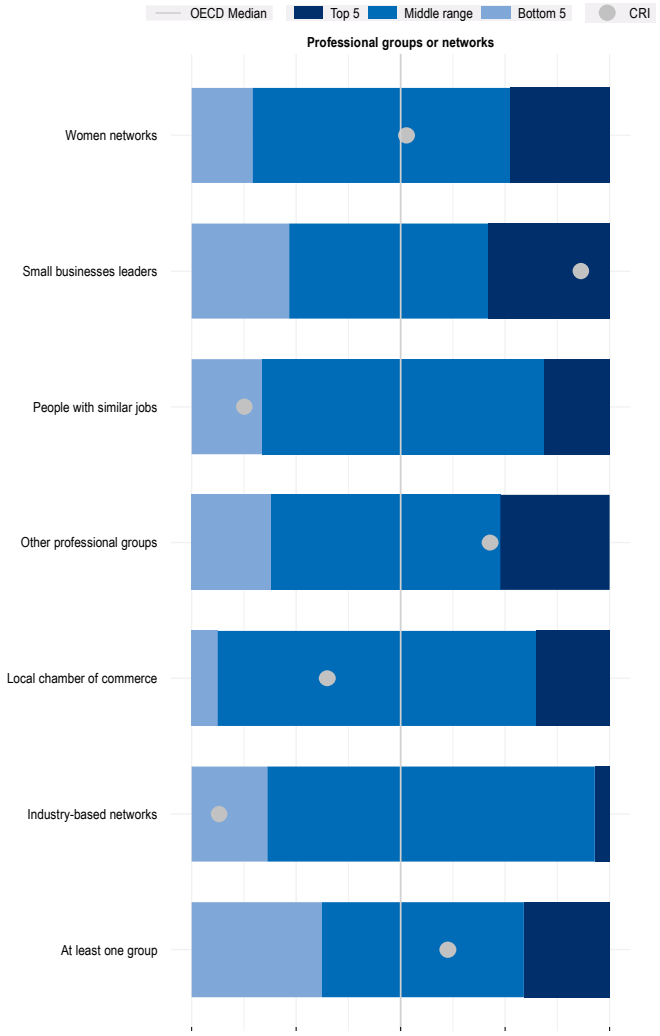
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.39. SME integration in trade (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Reference year: % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database.

Figure 8.40. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)

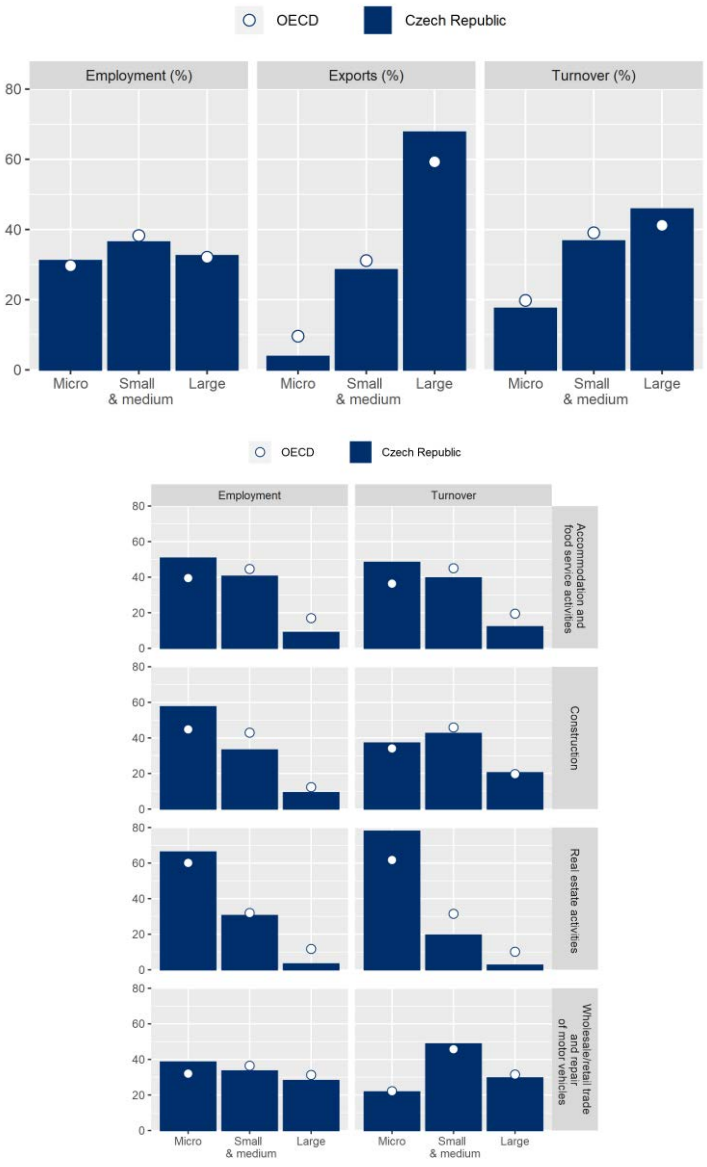


Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Czech Republic

SME sector structure and performance

Figure 8.41. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

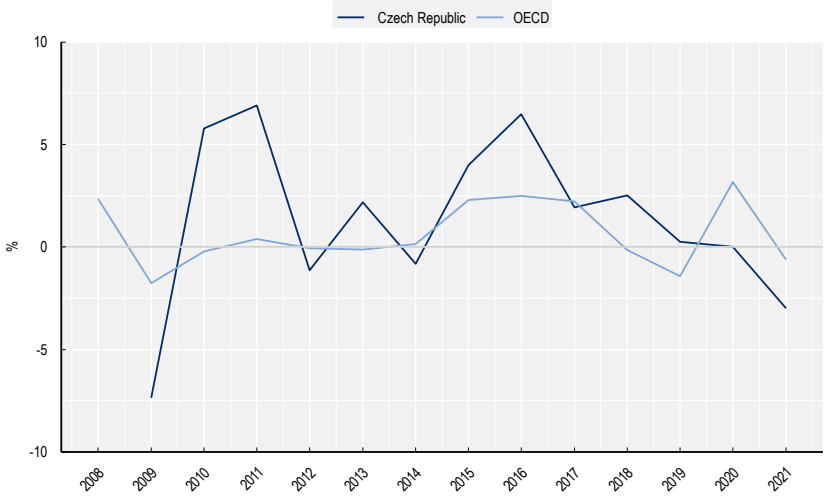
Figure 8.42. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

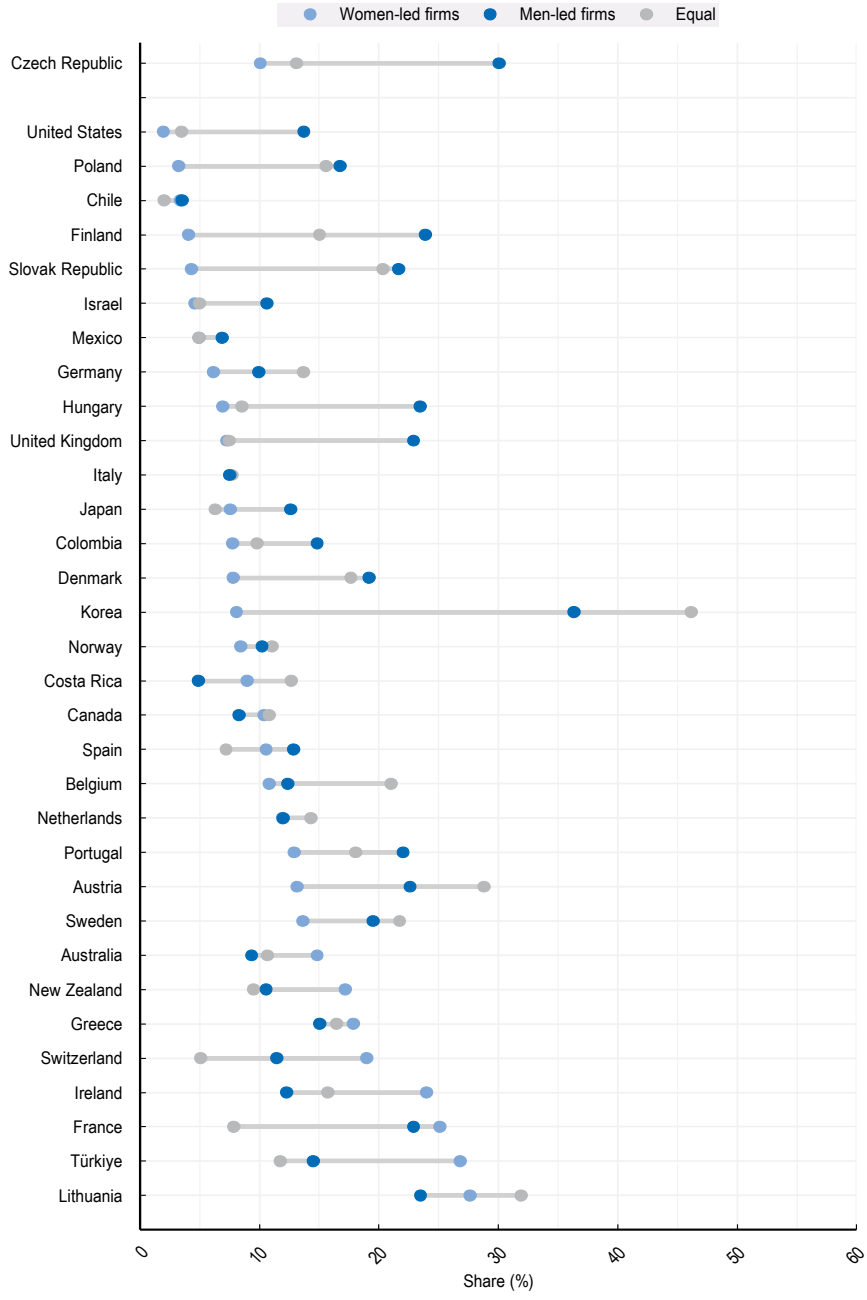
SME indebtedness

Figure 8.43. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



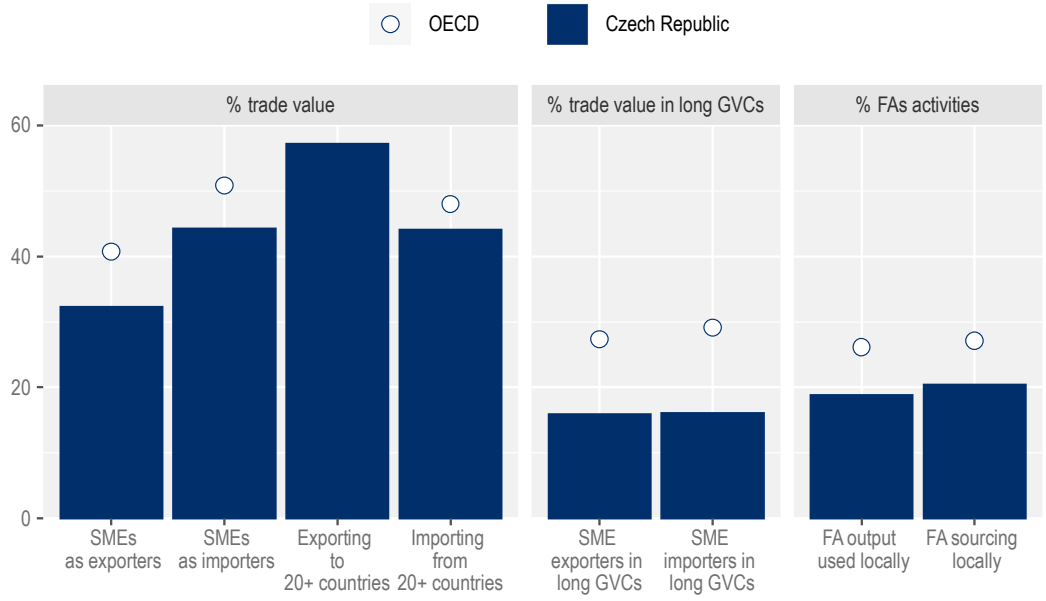
Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

Figure 8.44. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

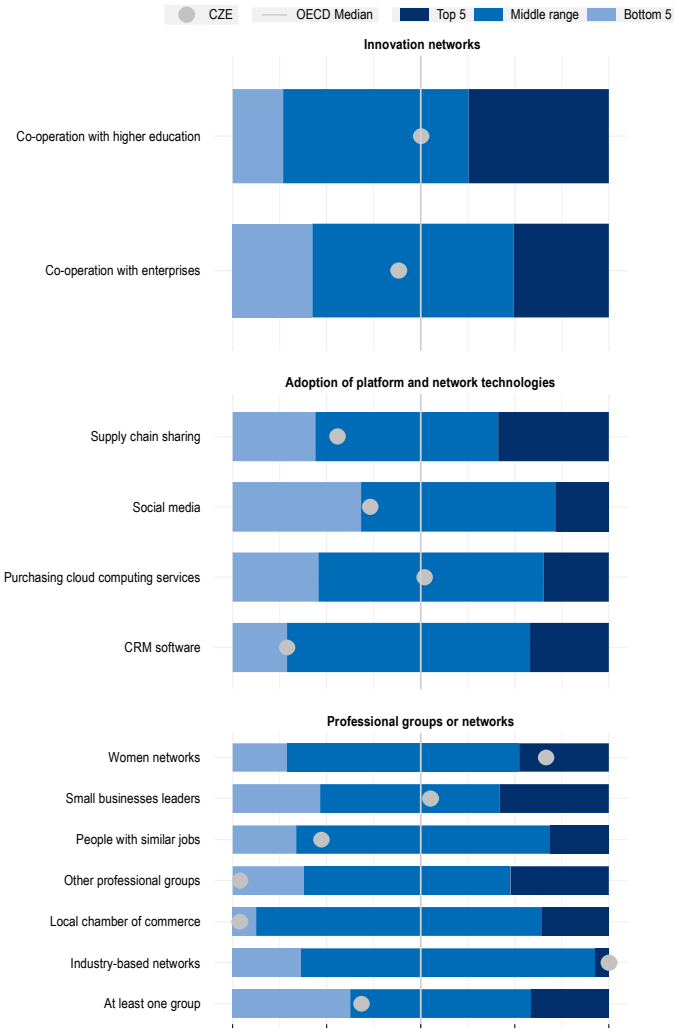
Figure 8.45. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

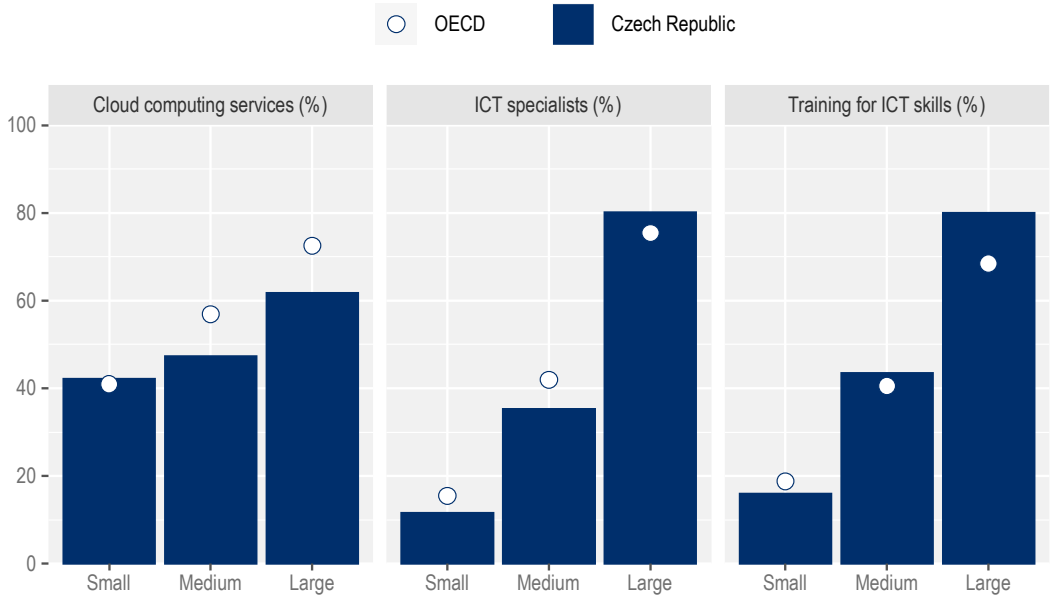
Knowledge and innovation networks

Figure 8.46. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.47. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

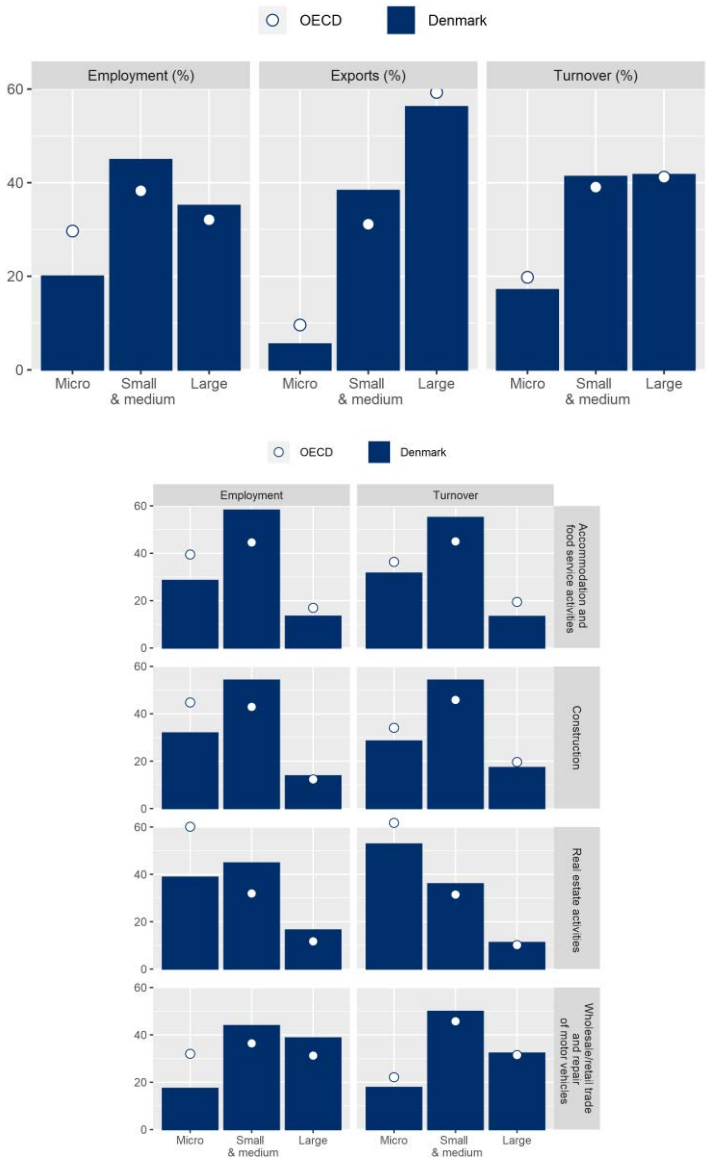


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Denmark

SME sector structure and performance

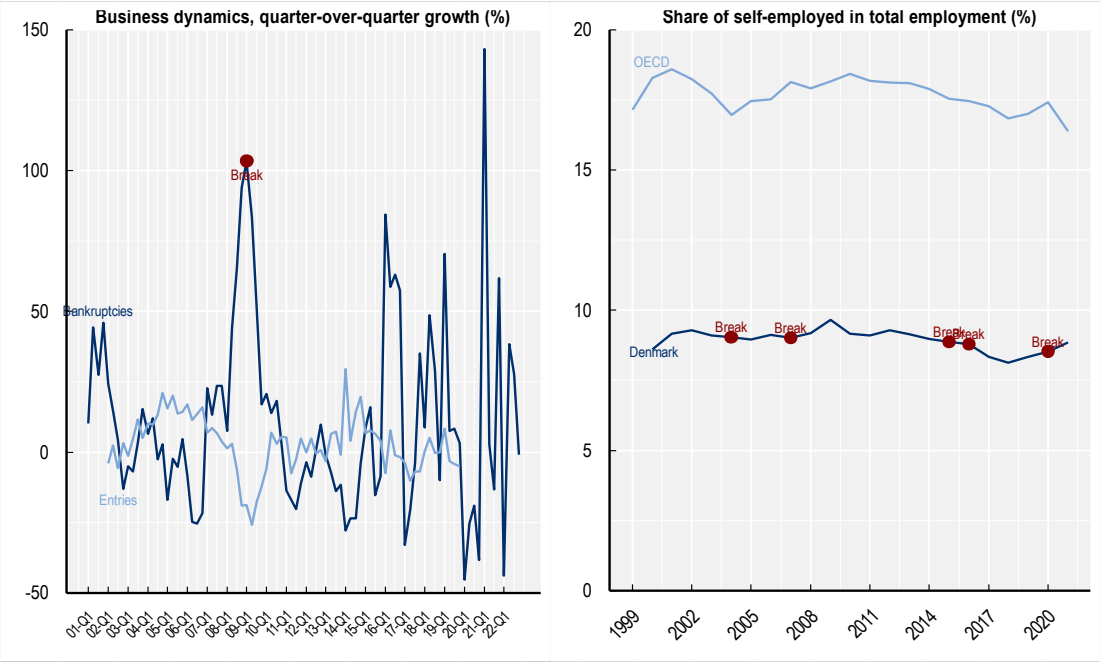
Figure 8.48. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

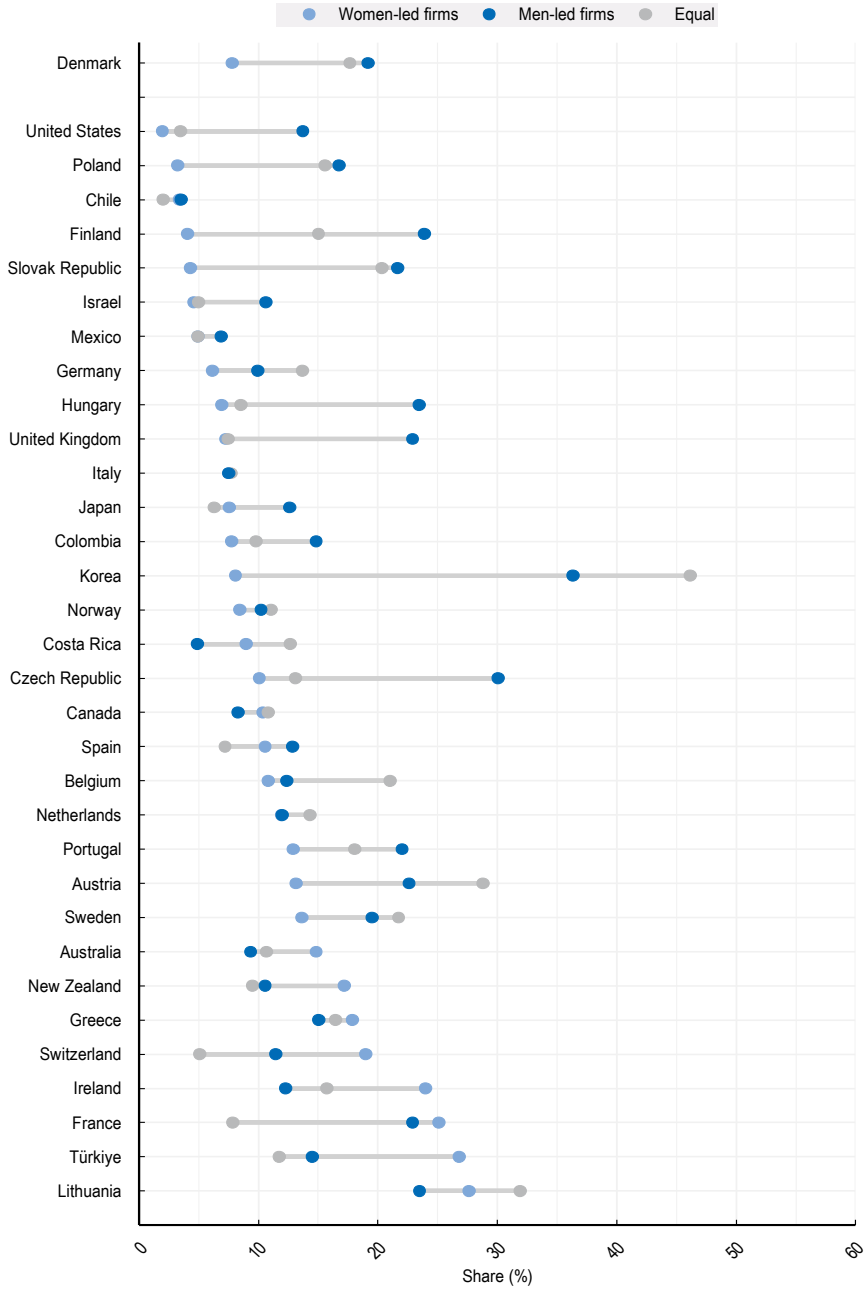
Figure 8.49. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

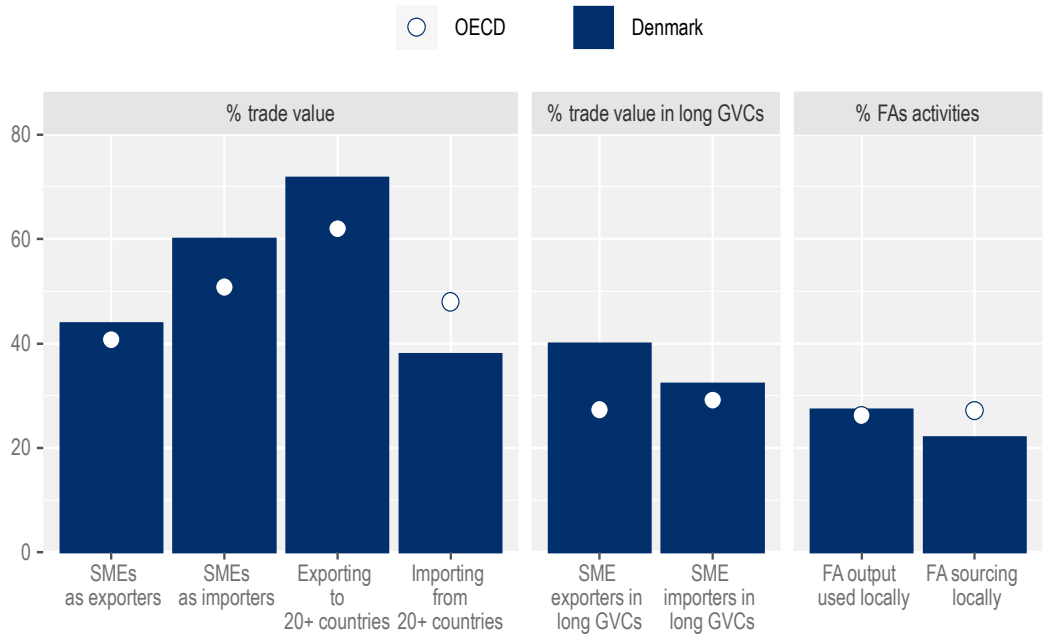
Women in trade and gender export gap

Figure 8.50. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

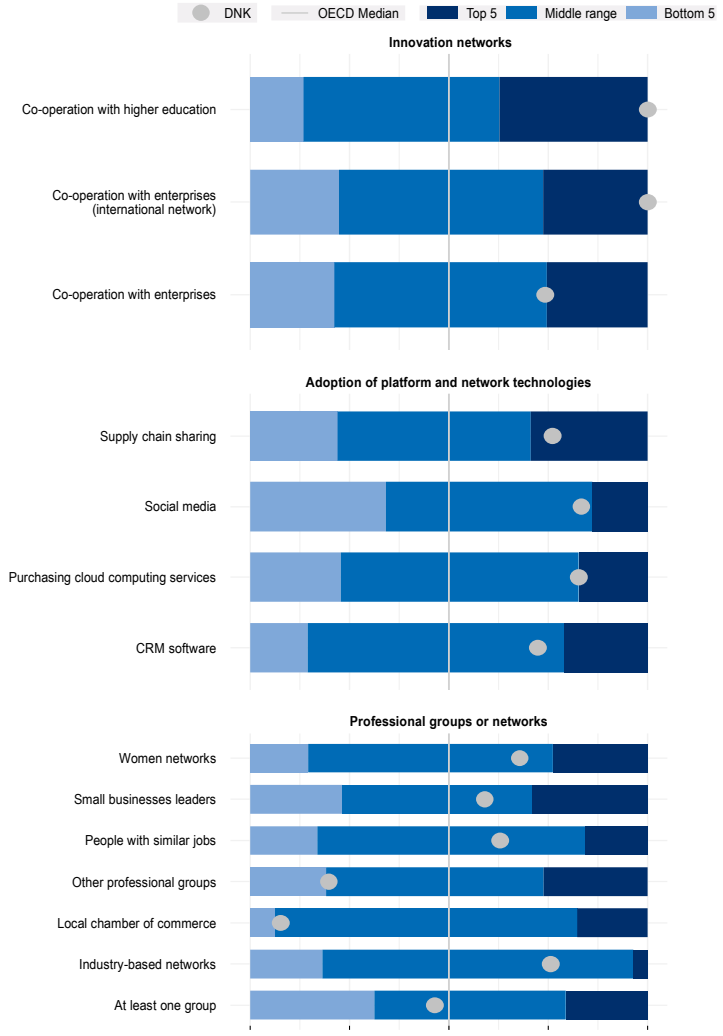
Figure 8.51. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

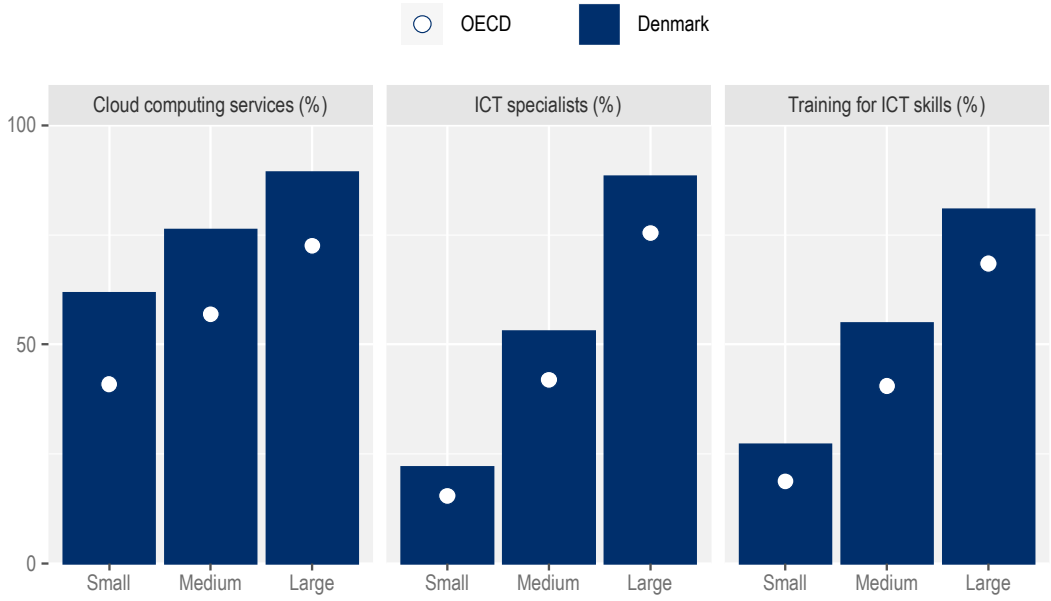
Knowledge and innovation networks

Figure 8.52. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.53. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

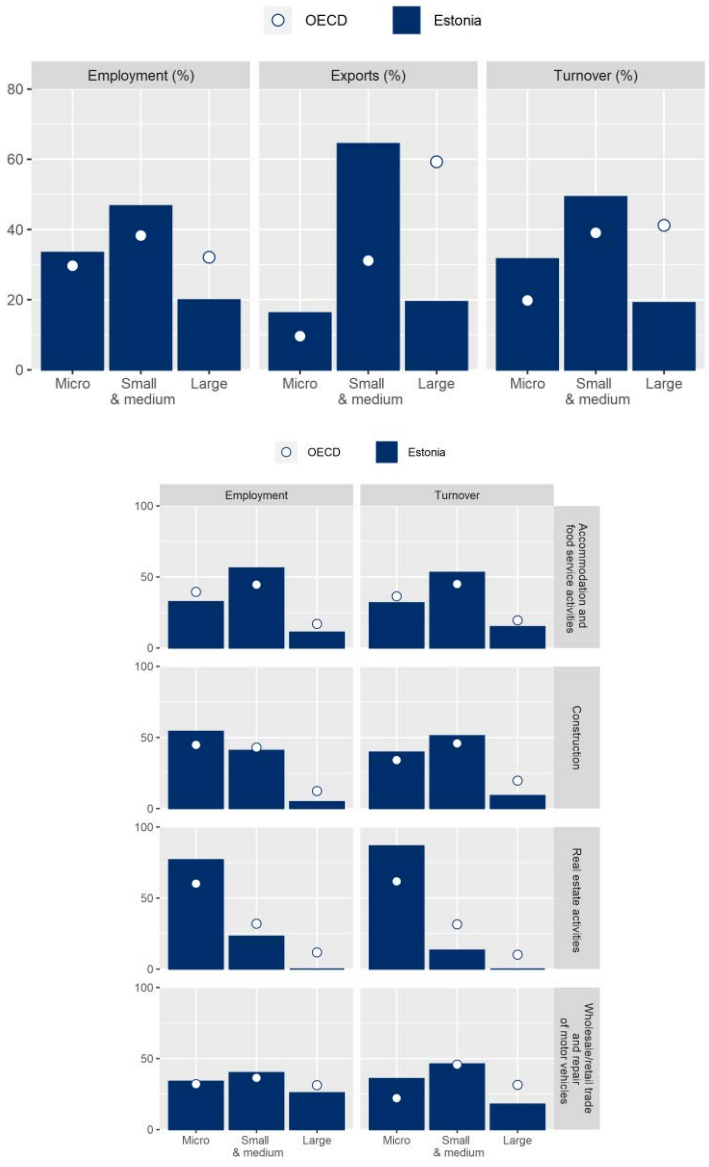


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Estonia

SME sector structure and performance

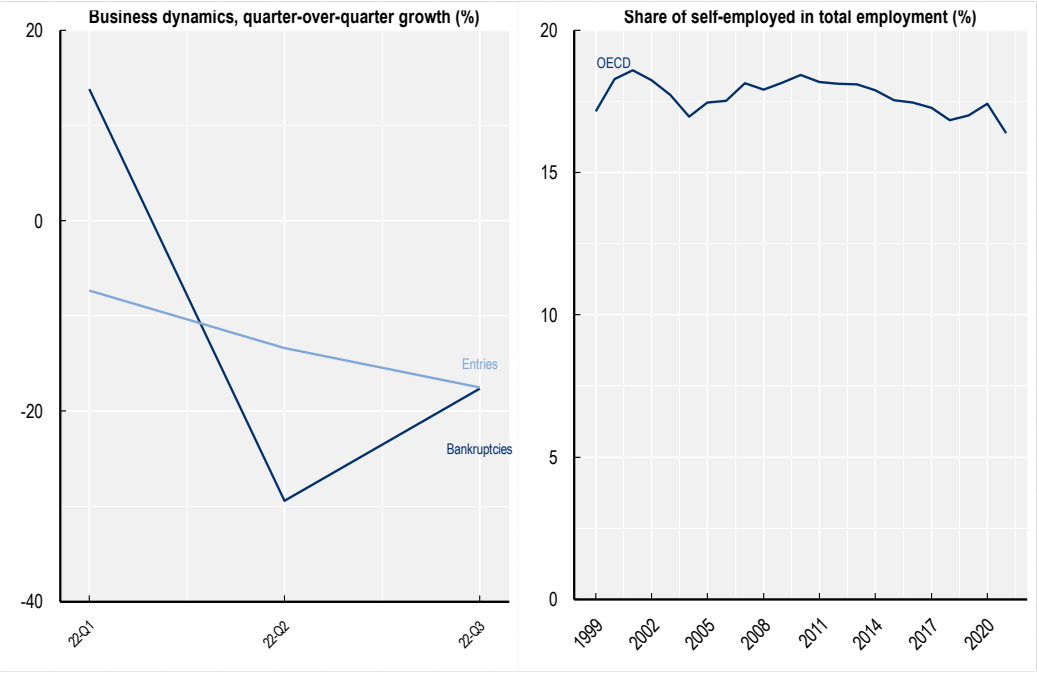
Figure 8.54. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

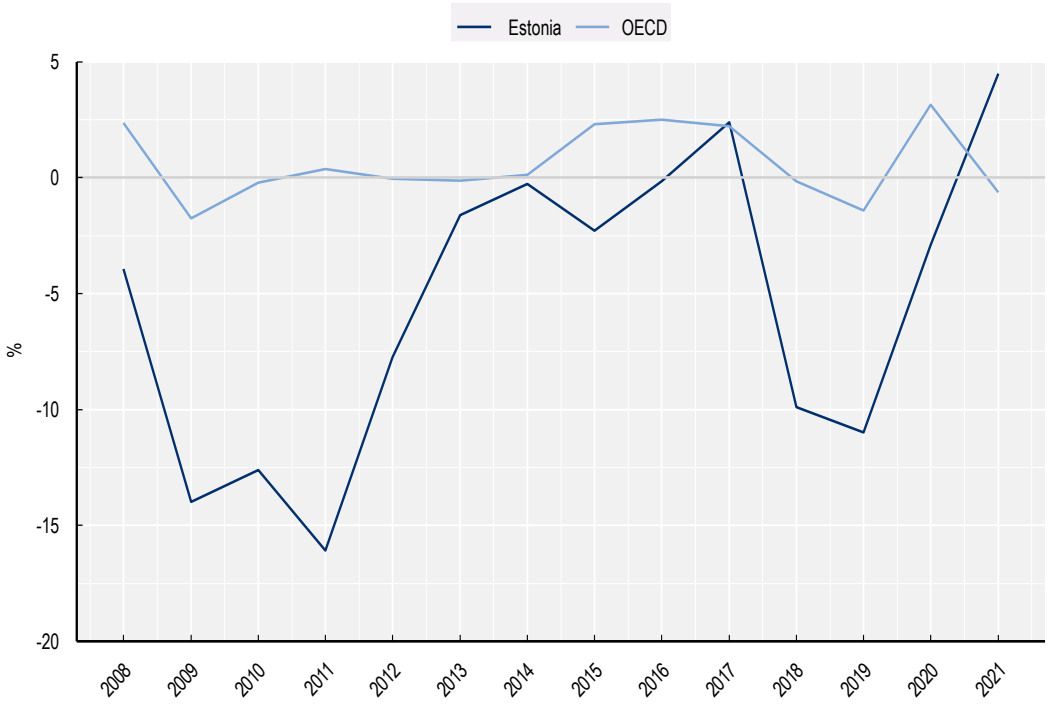
Figure 8.55. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

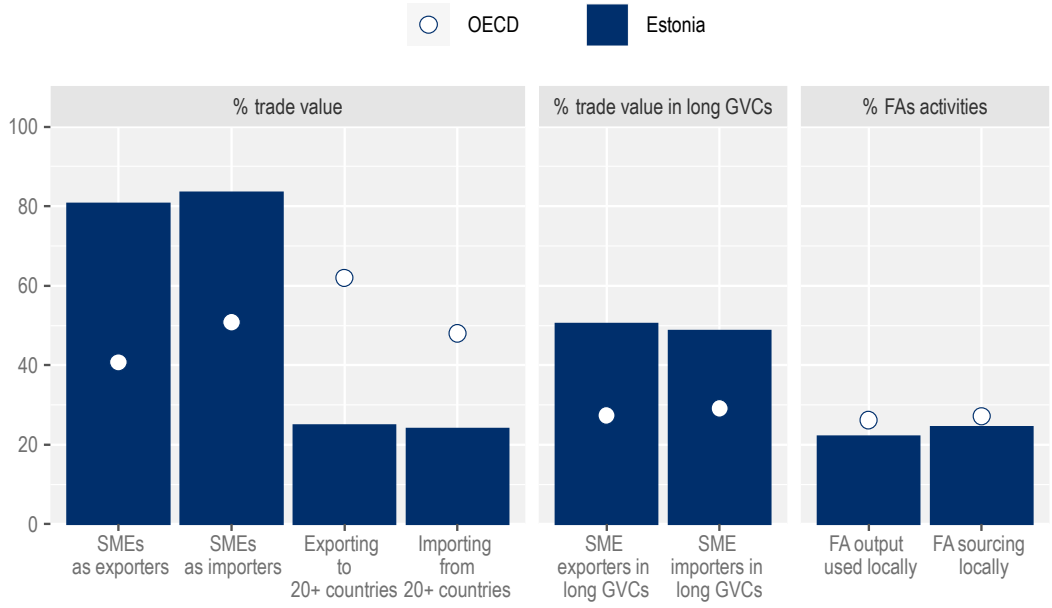
SME indebtedness

Figure 8.56. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

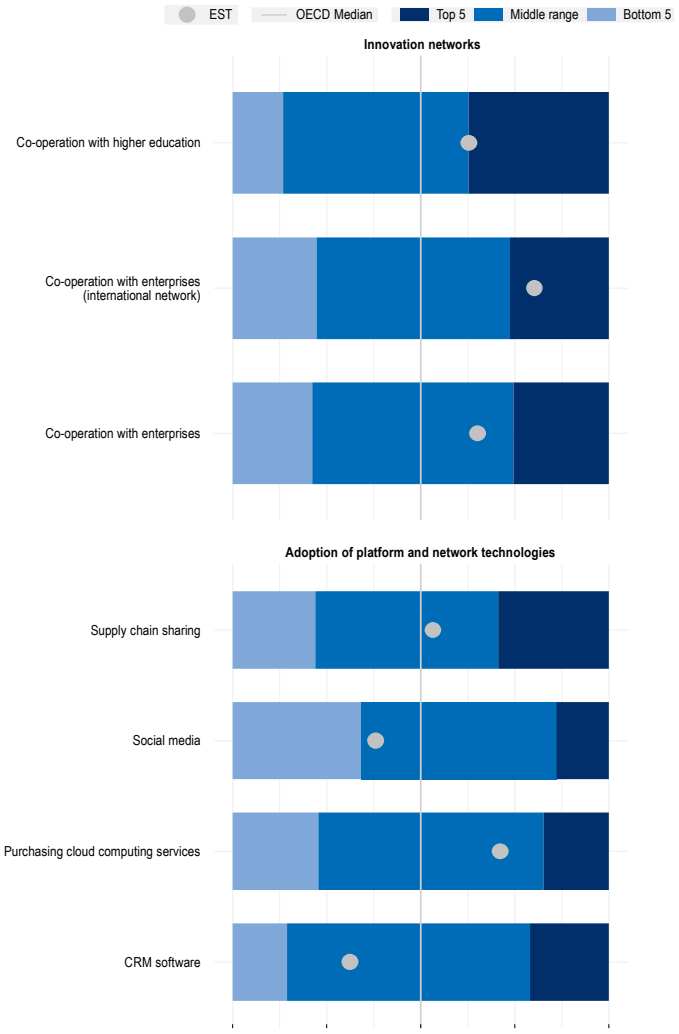
Figure 8.57. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

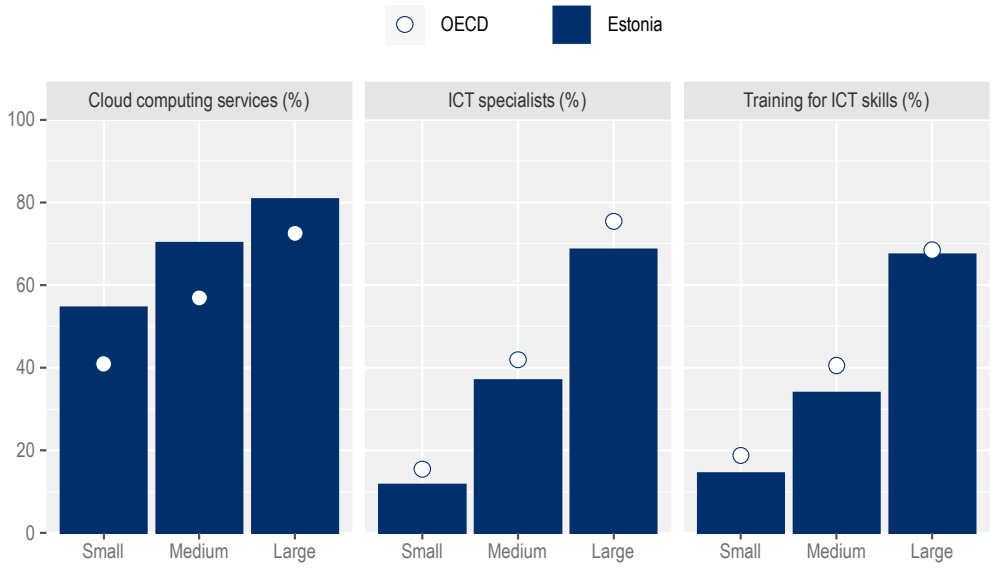
Knowledge and innovation networks

Figure 8.58. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.59. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

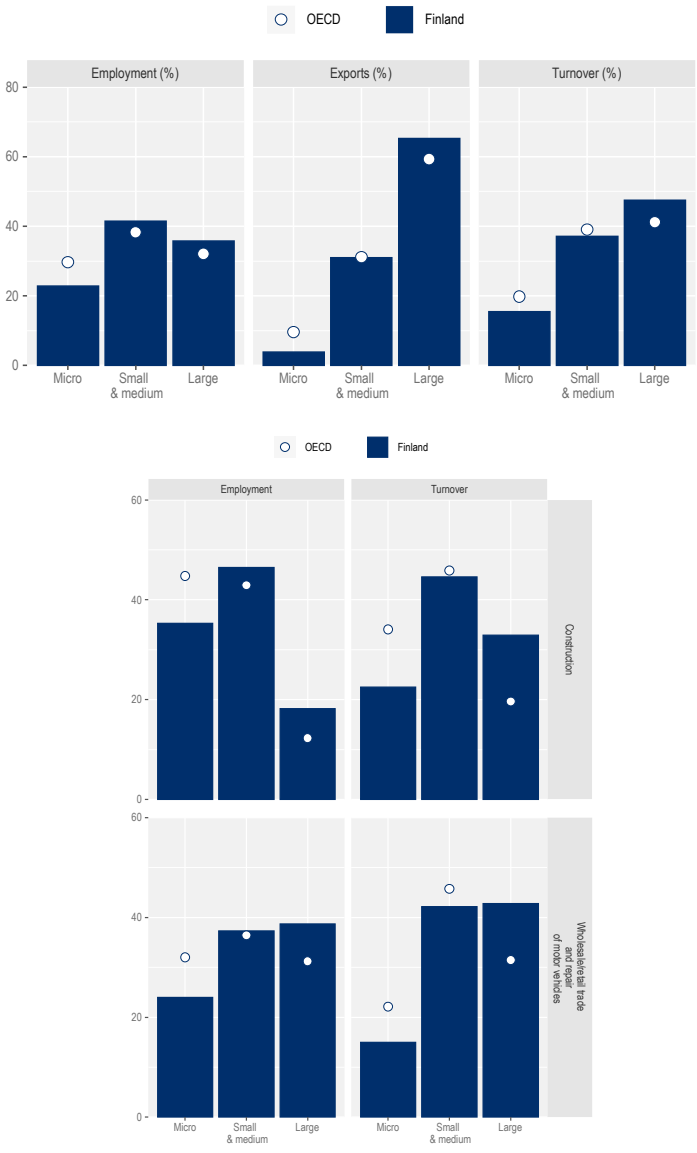


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Finland

SME sector structure and performance

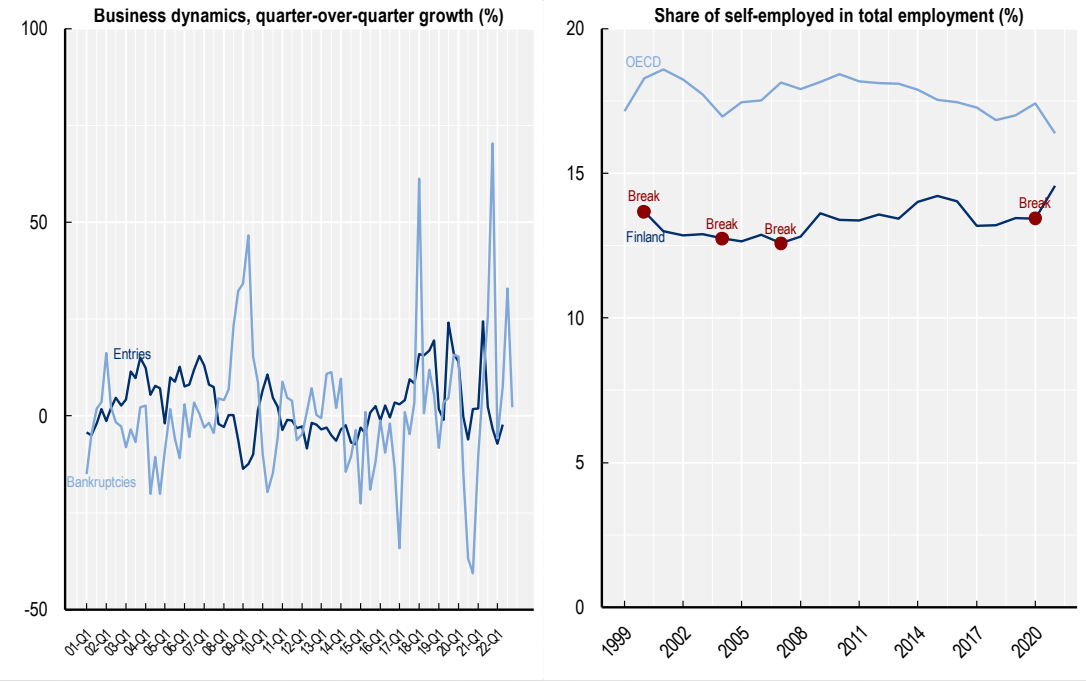
Figure 8.60. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

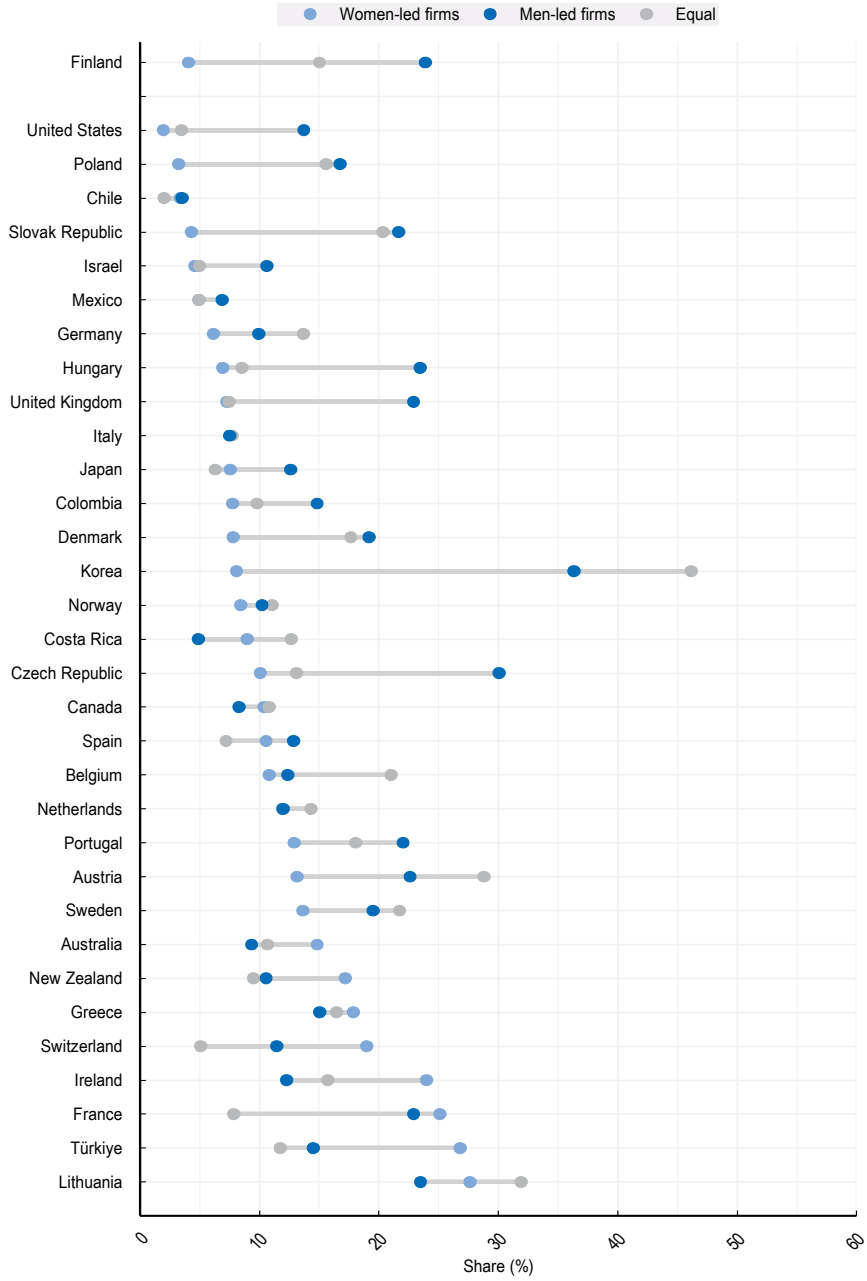
Figure 8.61. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

Women in trade and gender export gap

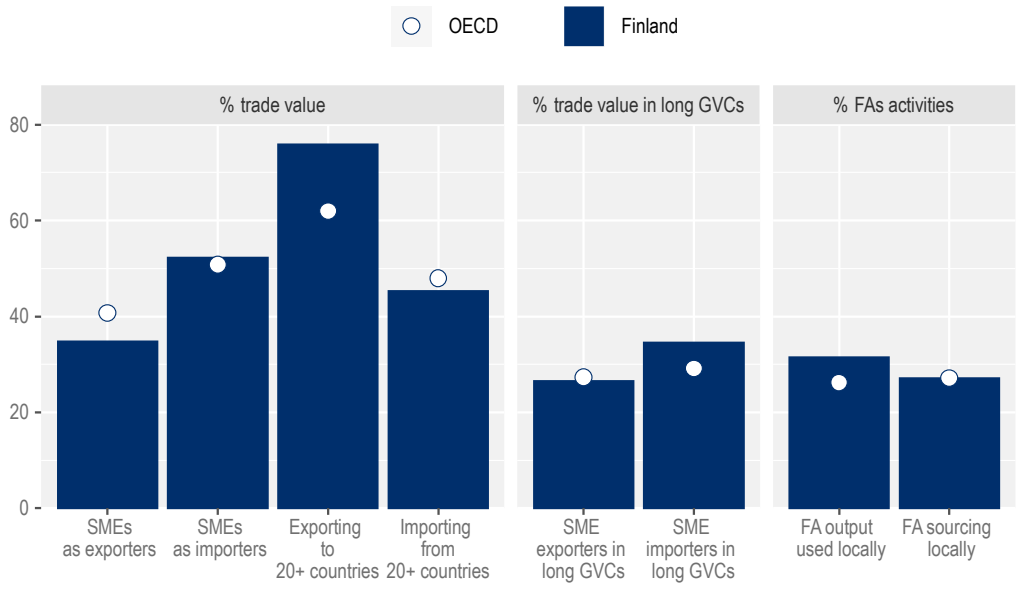
Figure 8.62. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.

Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

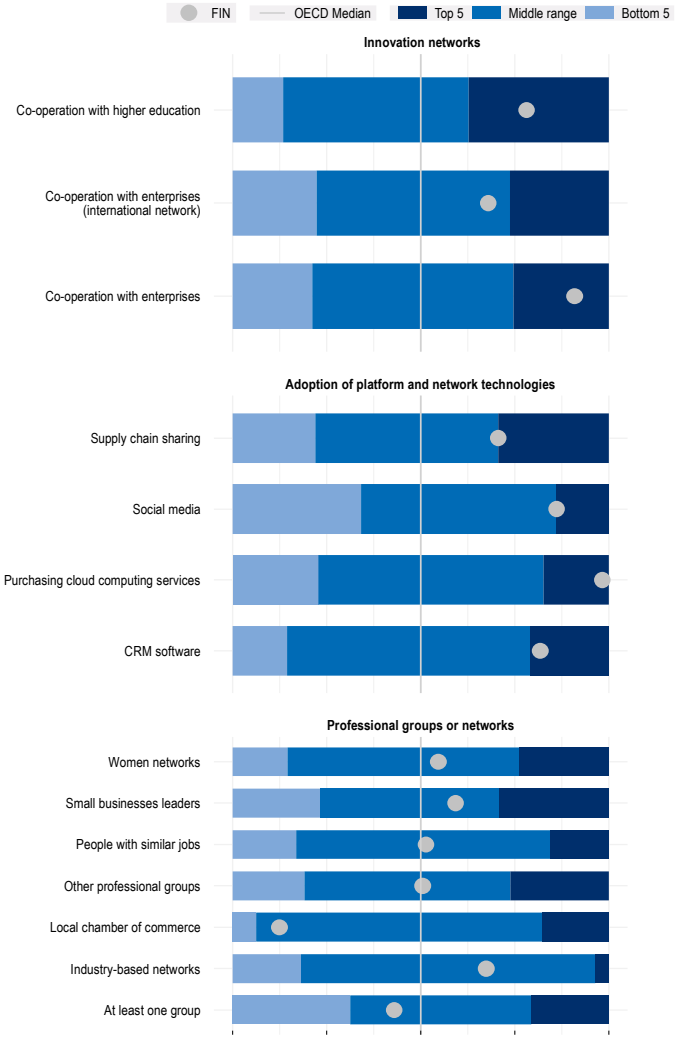
Figure 8.63. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

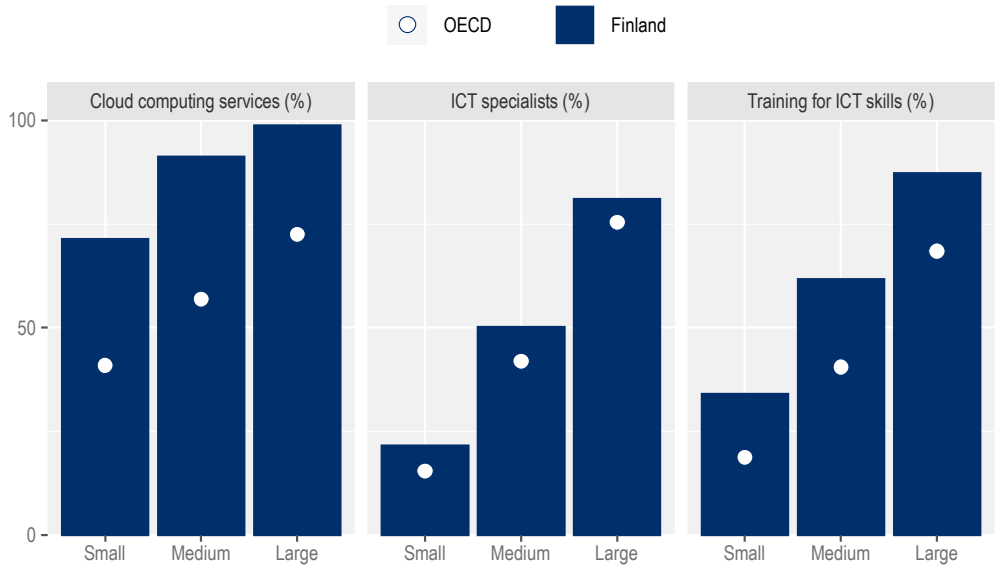
Knowledge and innovation networks

Figure 8.64. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.65. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

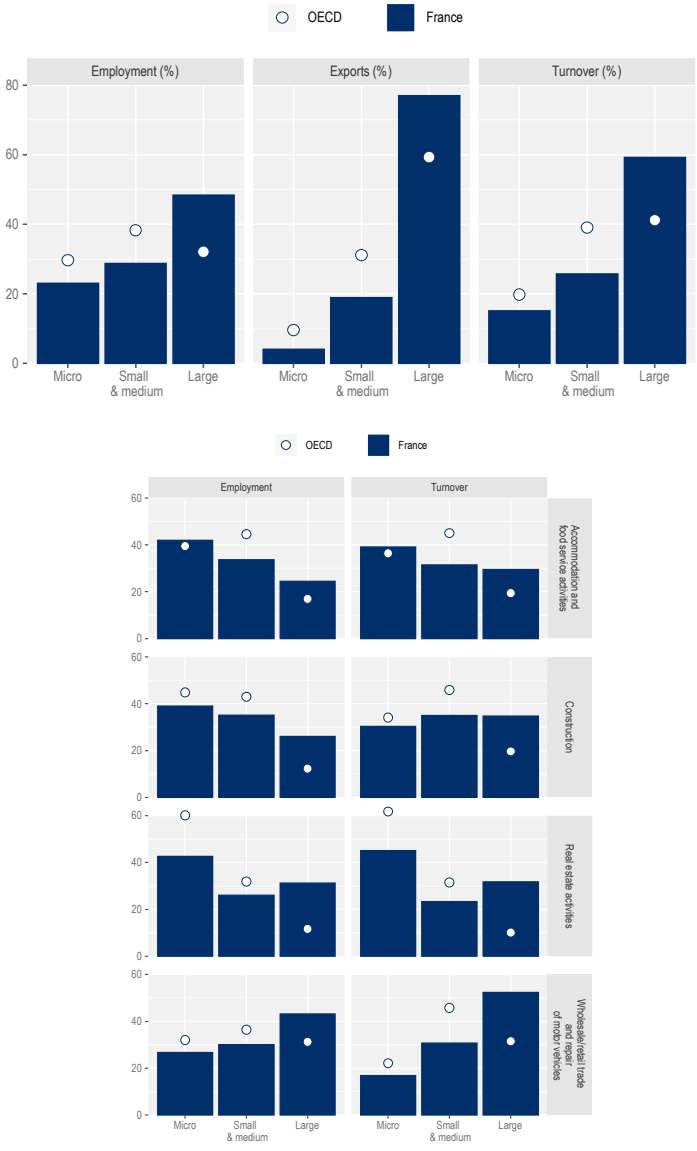


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

France

SME sector structure and performance

Figure 8.66. SME share of employment, exports, and turnover

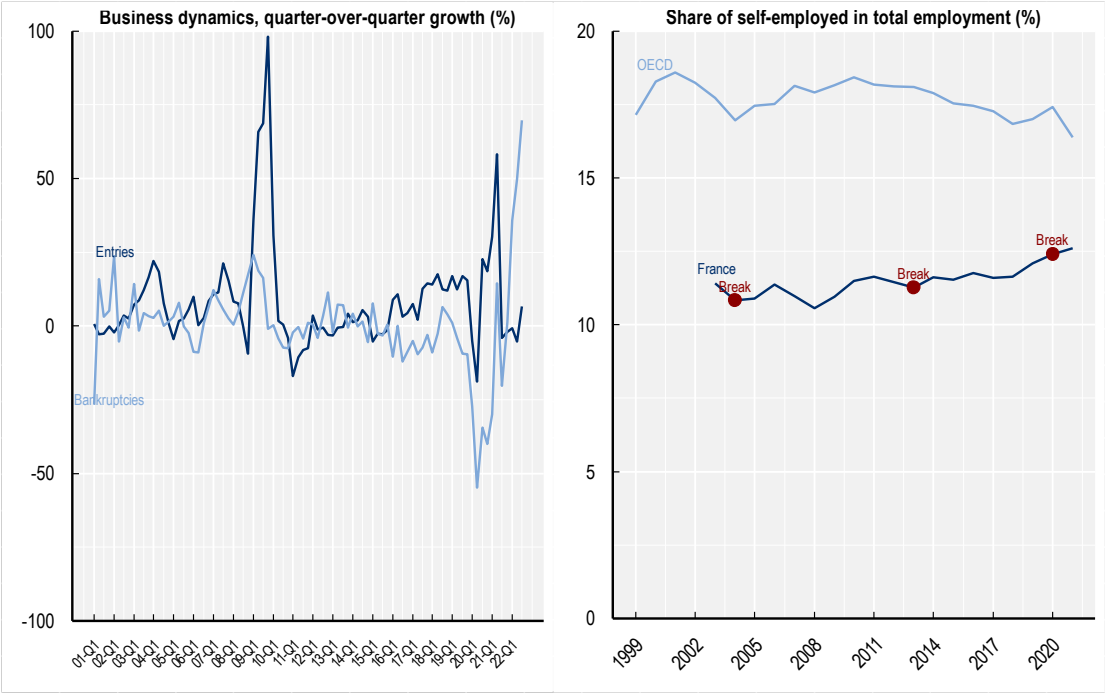


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

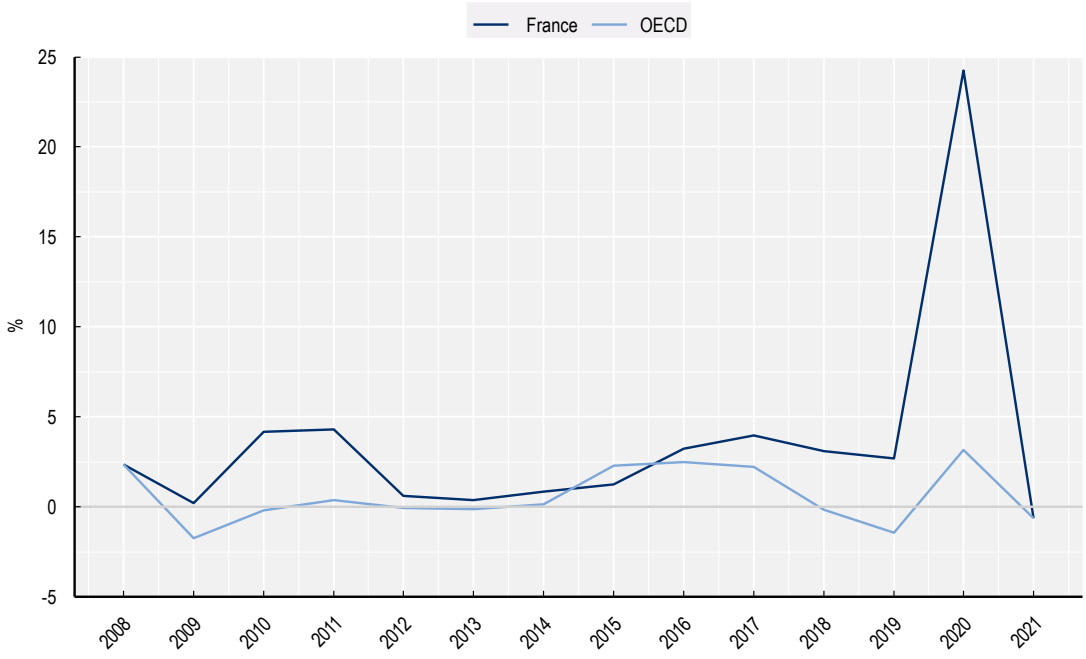
Figure 8.67. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

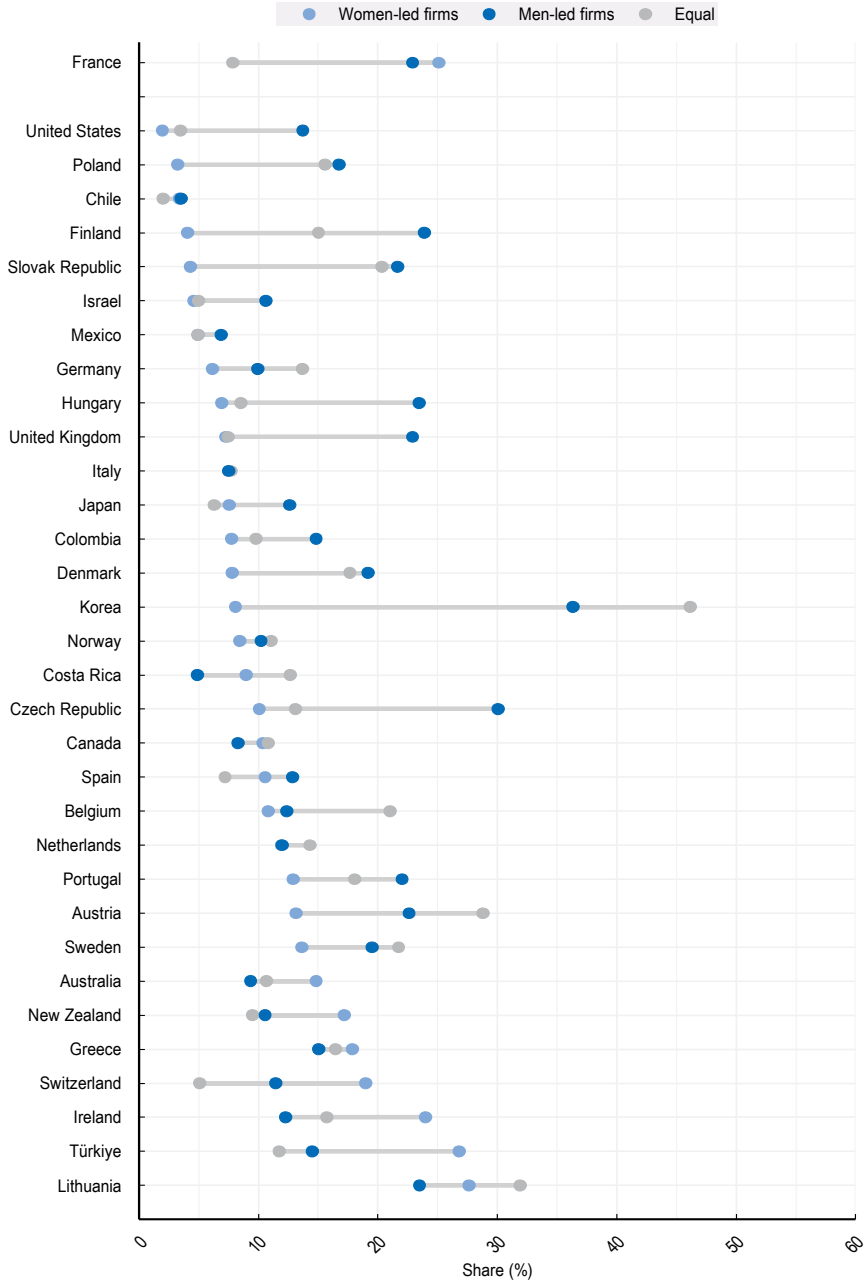
Figure 8.68. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

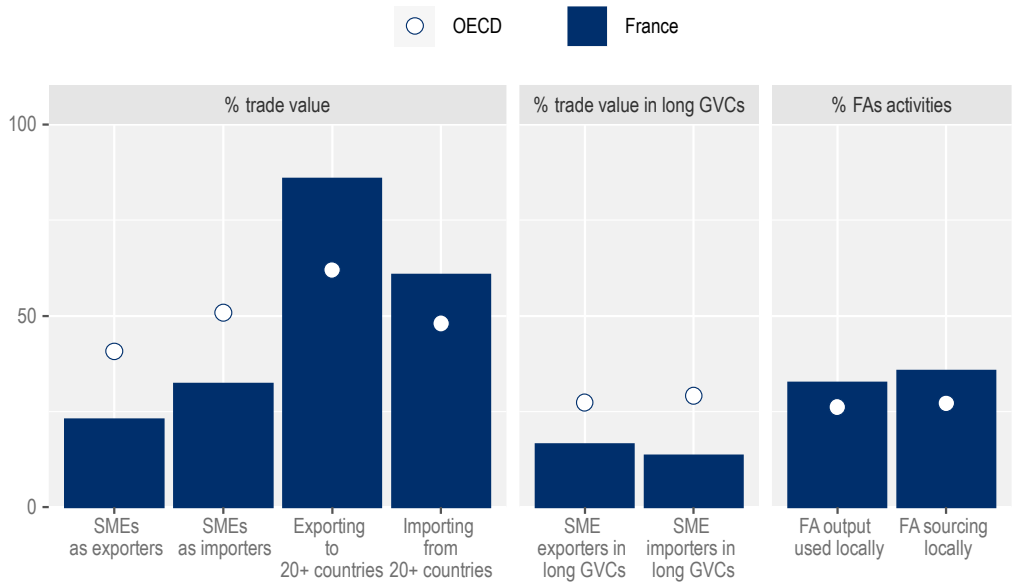
Women in trade and gender export gap

Figure 8.69. Share (%) of firms trading globally by gender of leadership



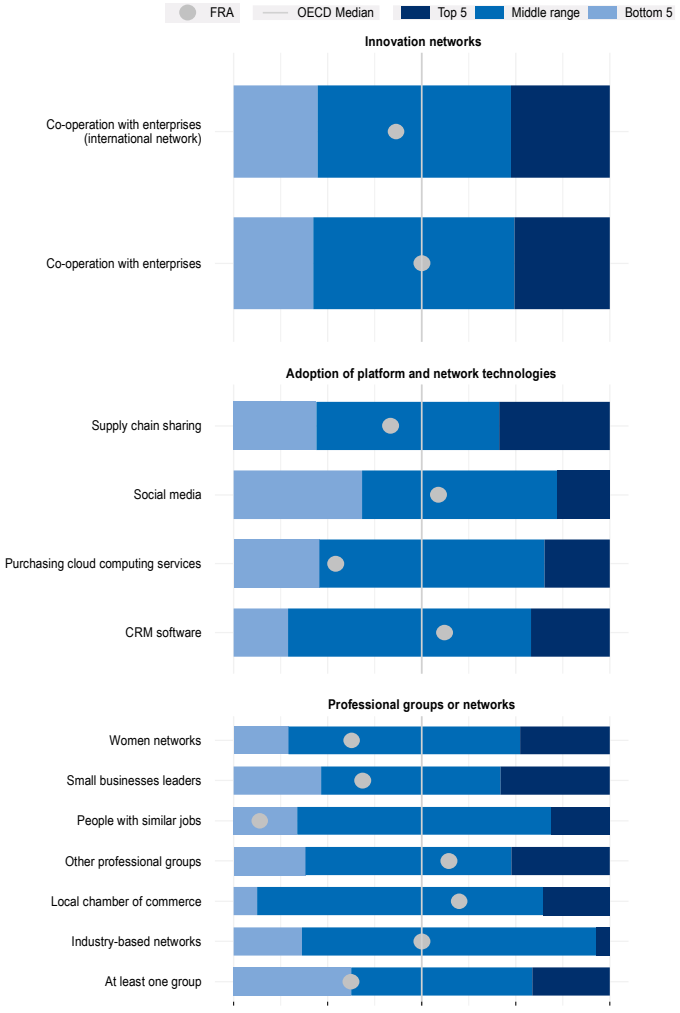
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.70. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Figure 8.71. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.72. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

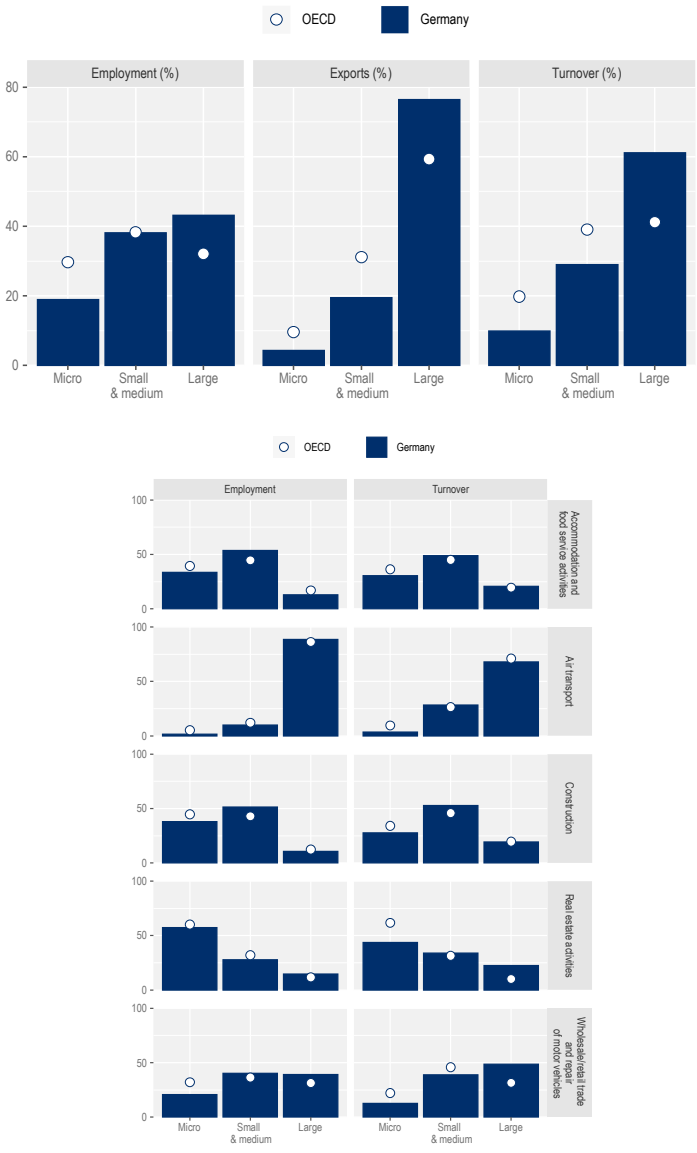


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Germany

SME sector structure and performance

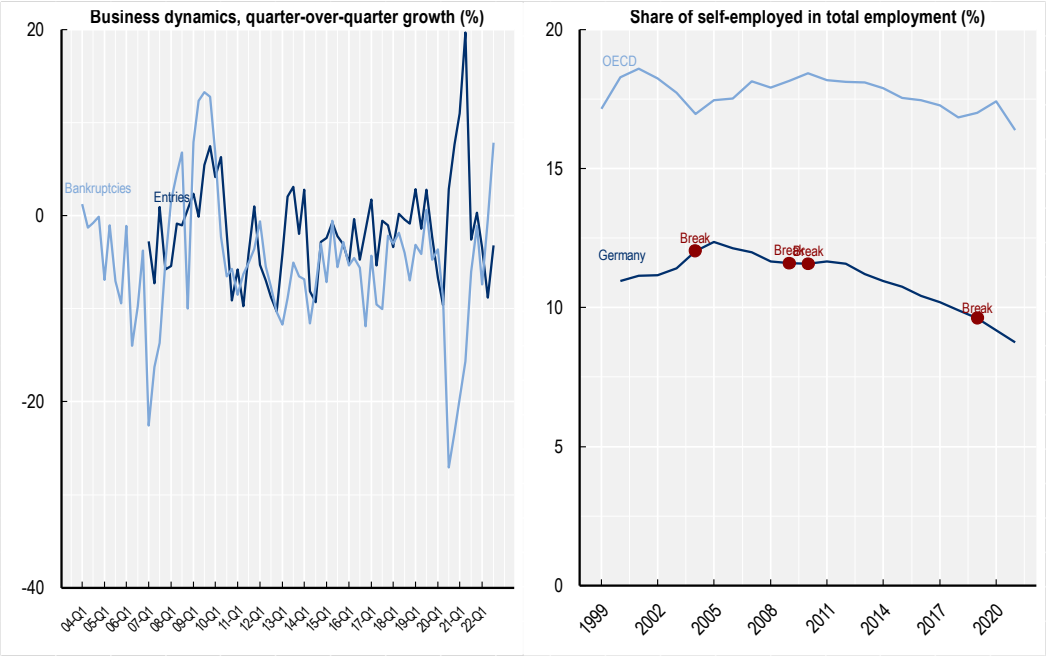
Figure 8.73. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

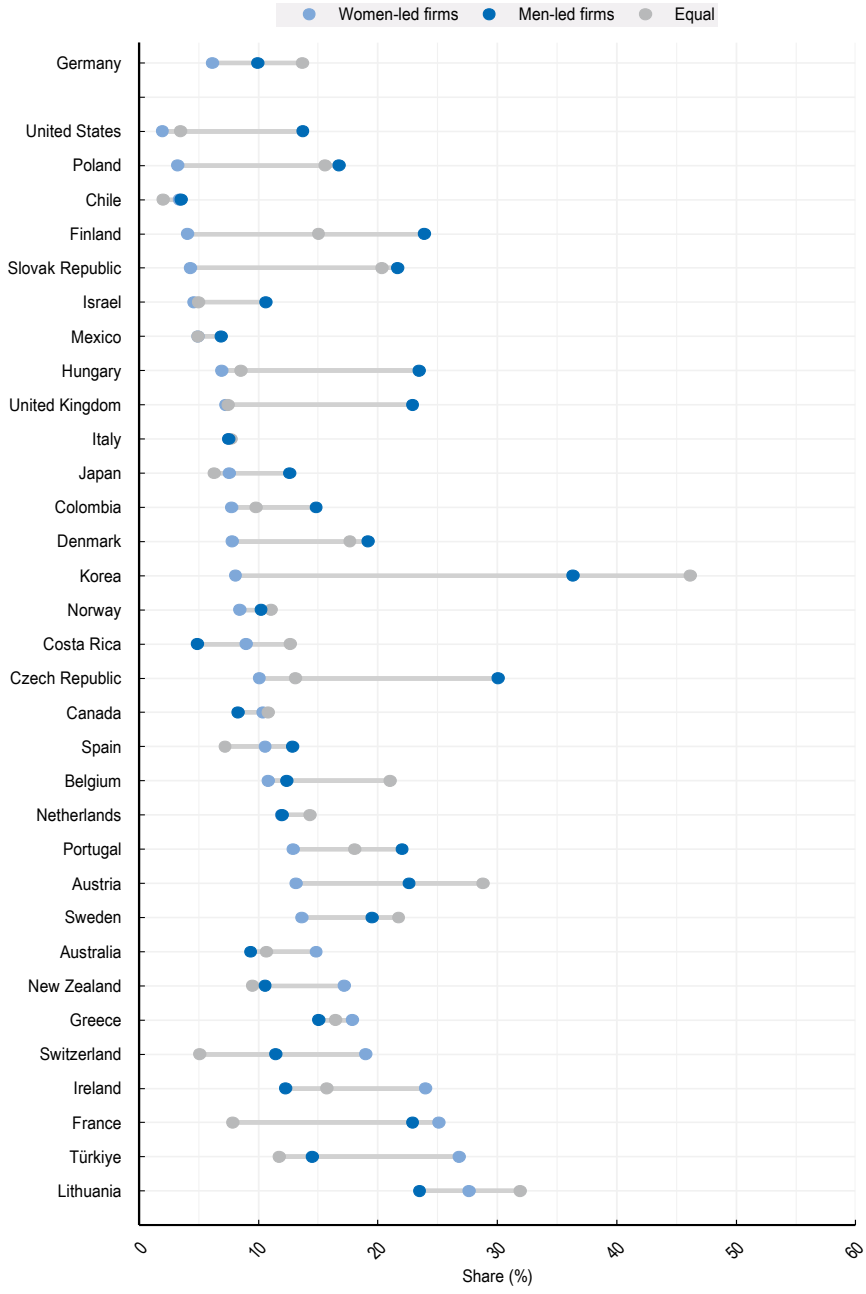
Figure 8.74. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

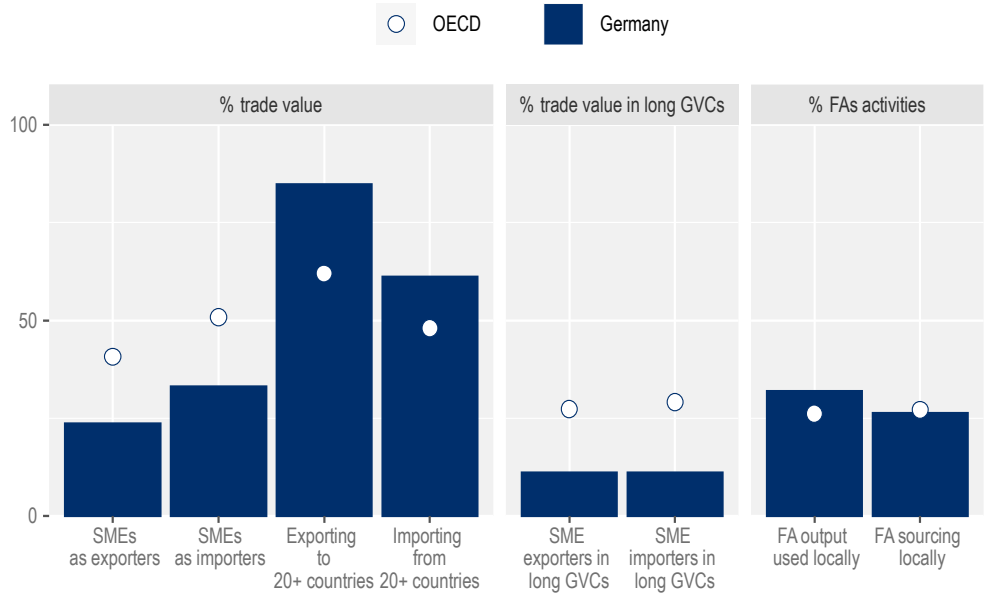
Women in trade and gender export gap

Figure 8.75. Share (%) of firms trading globally by gender of leadership



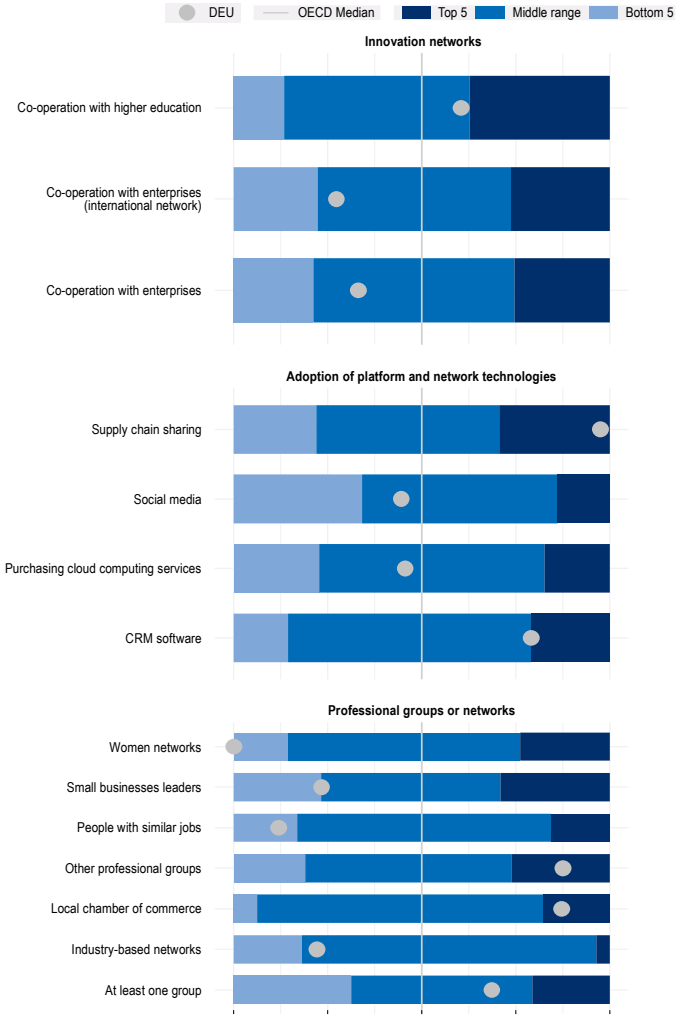
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.76. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

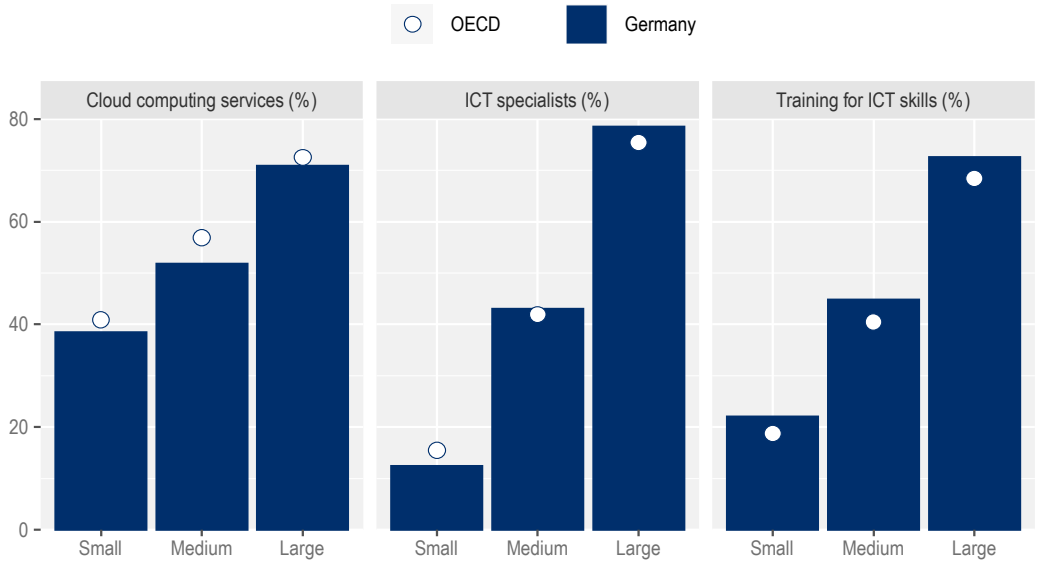
Figure 8.77. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.78. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

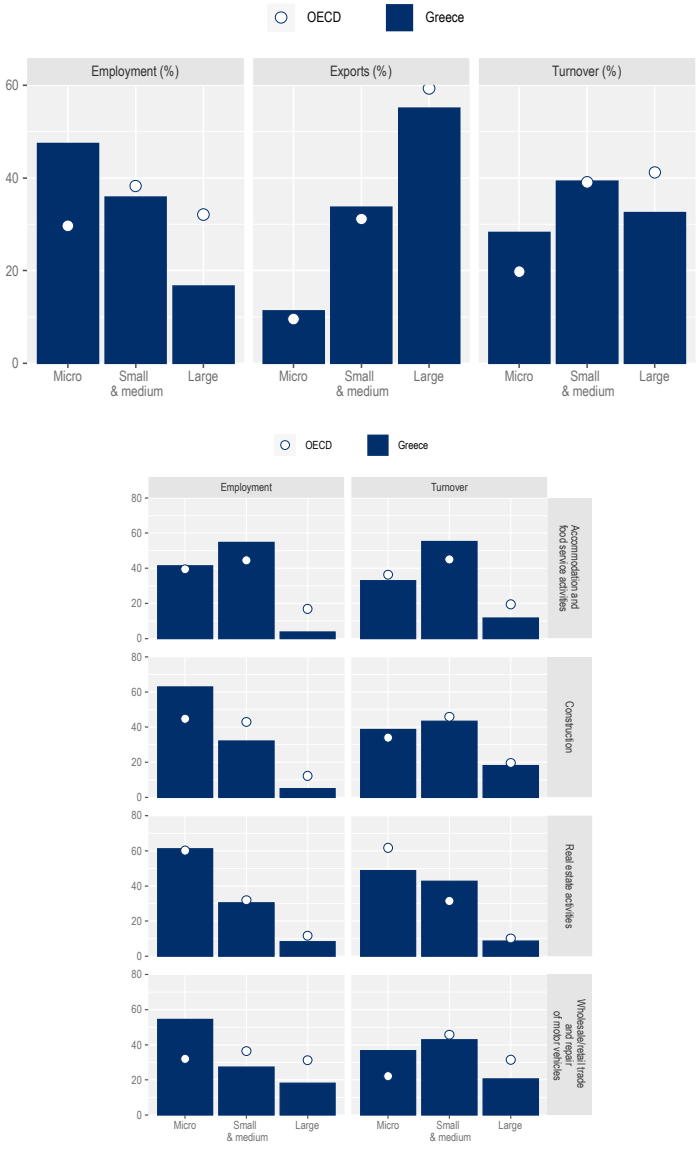


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Greece

SME sector structure and performance

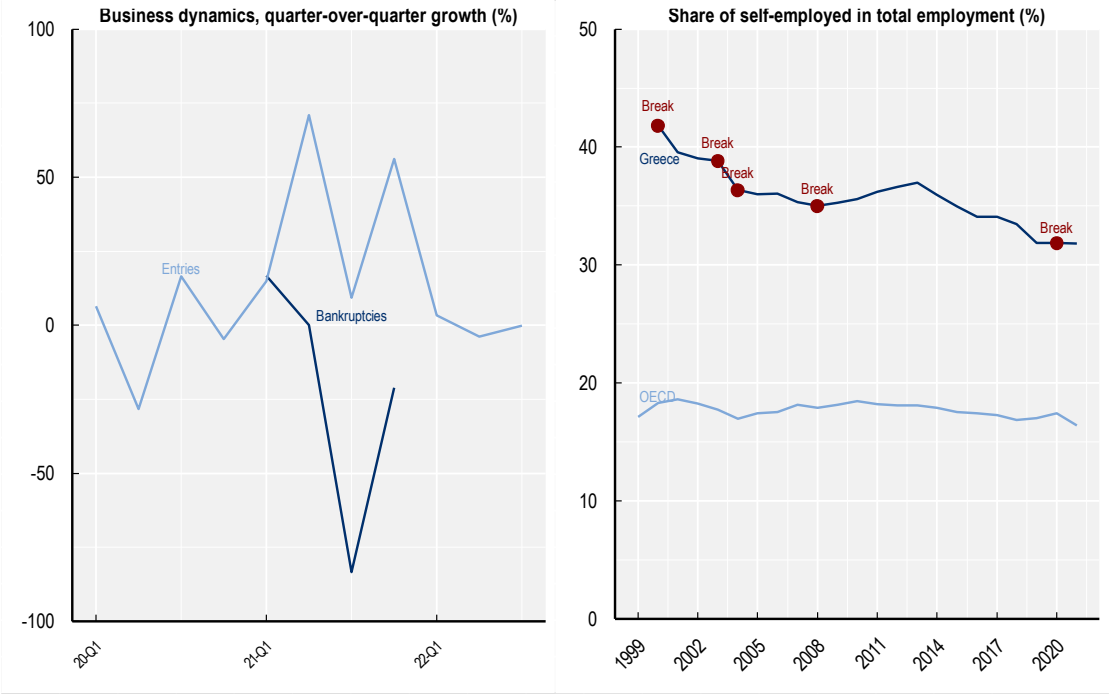
Figure 8.79. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

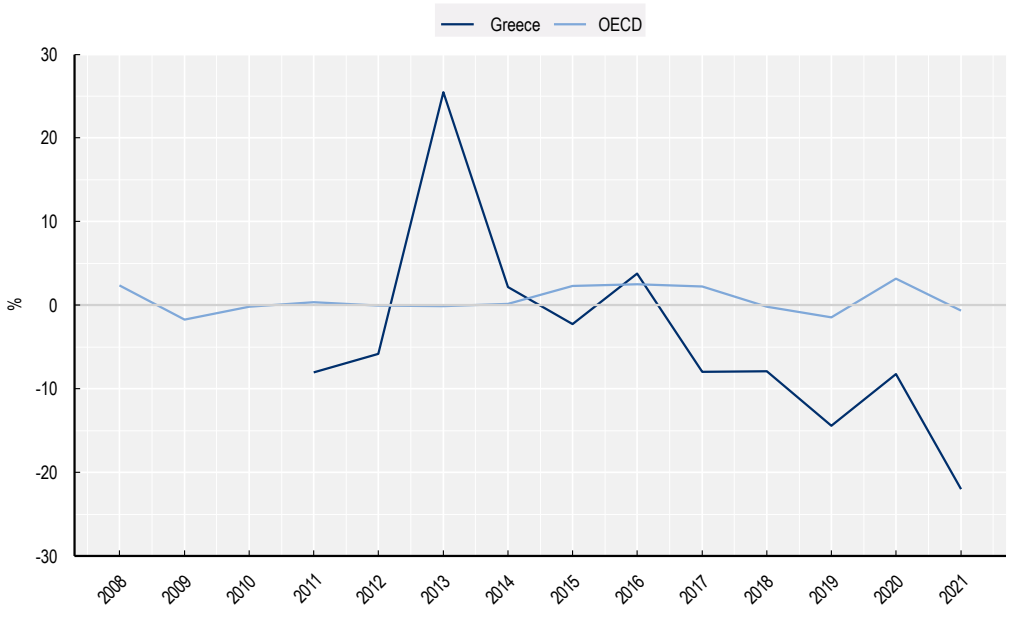
Figure 8.80. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

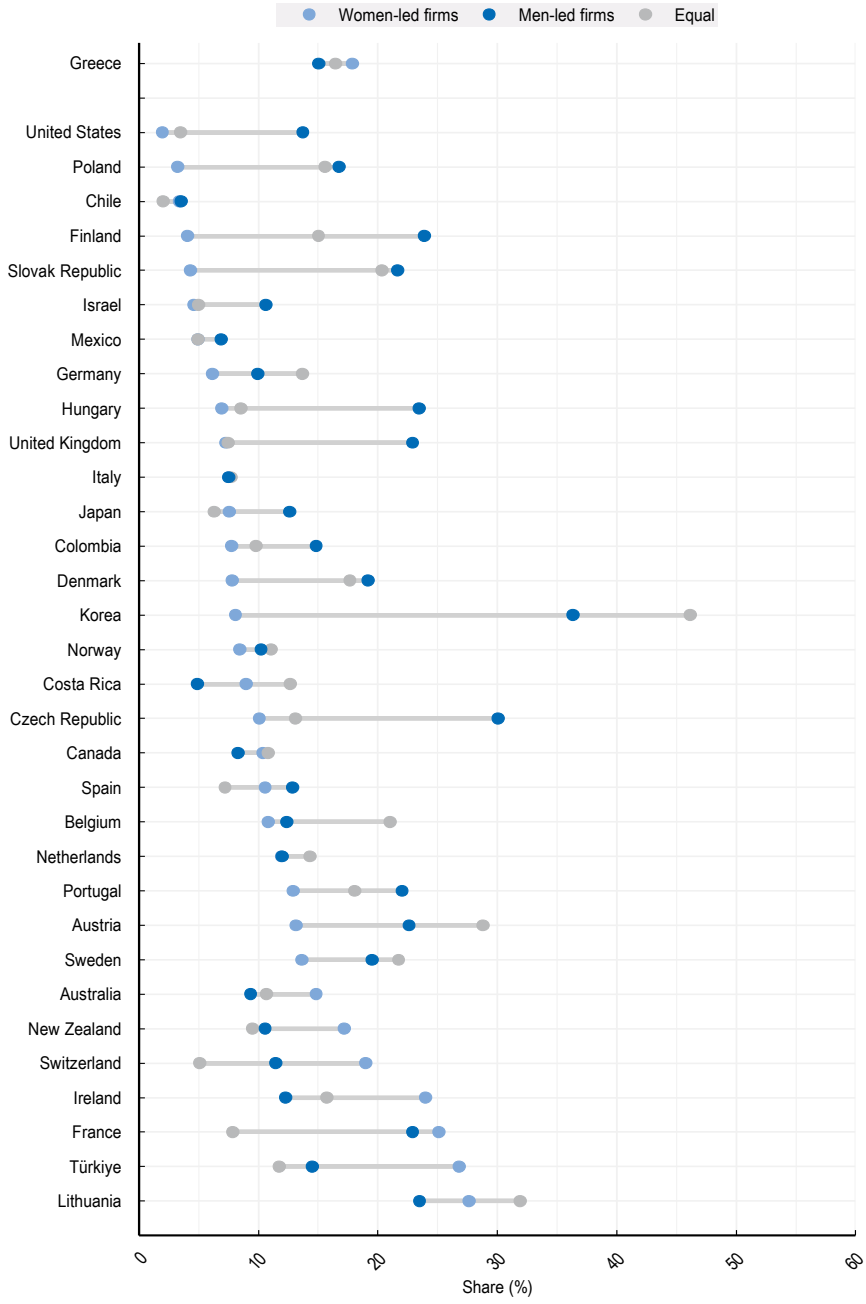
Figure 8.81. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

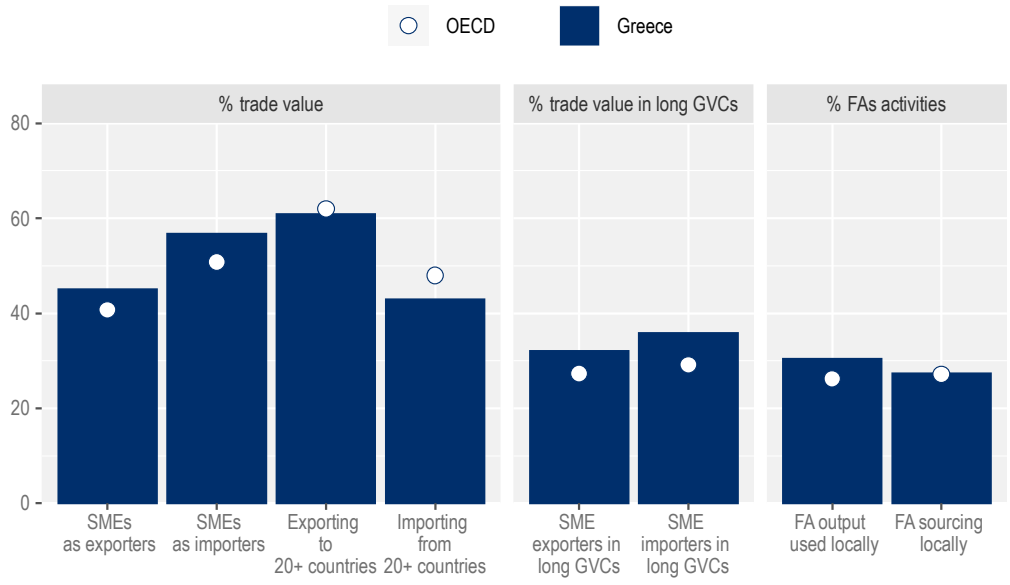
Women in trade and gender export gap

Figure 8.82. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

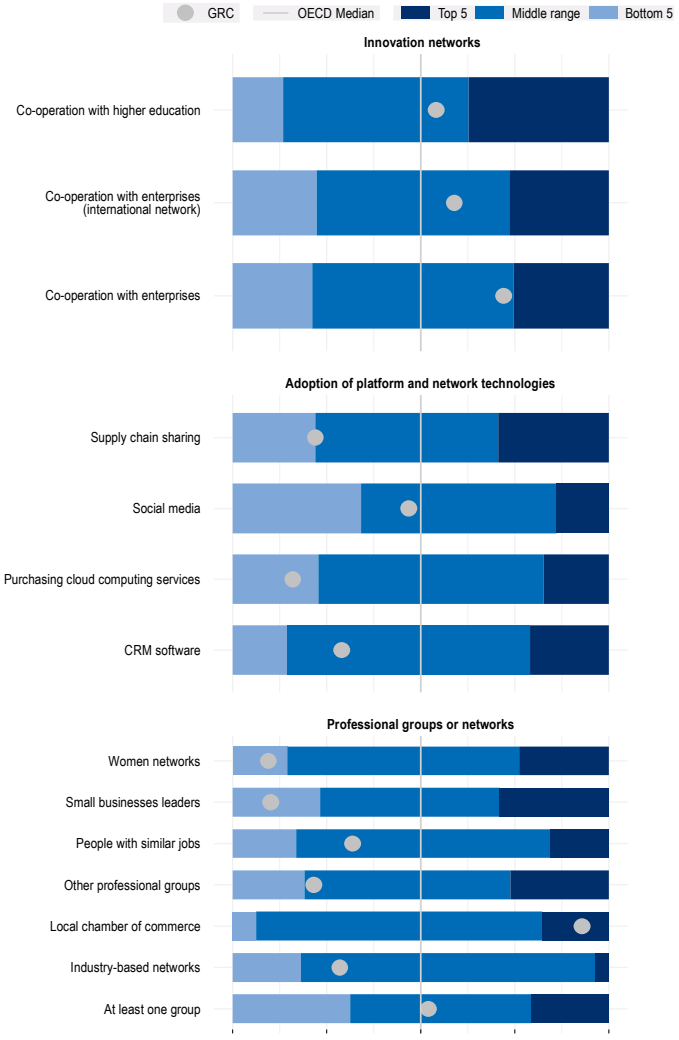
Figure 8.83. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Knowledge and innovation networks

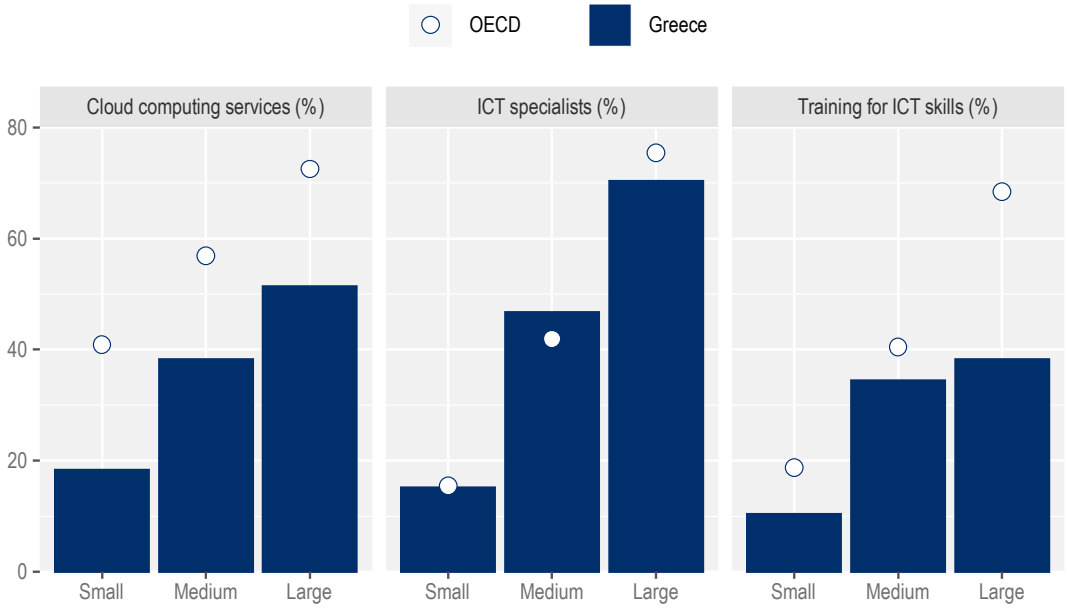
Figure 8.84. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.85. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

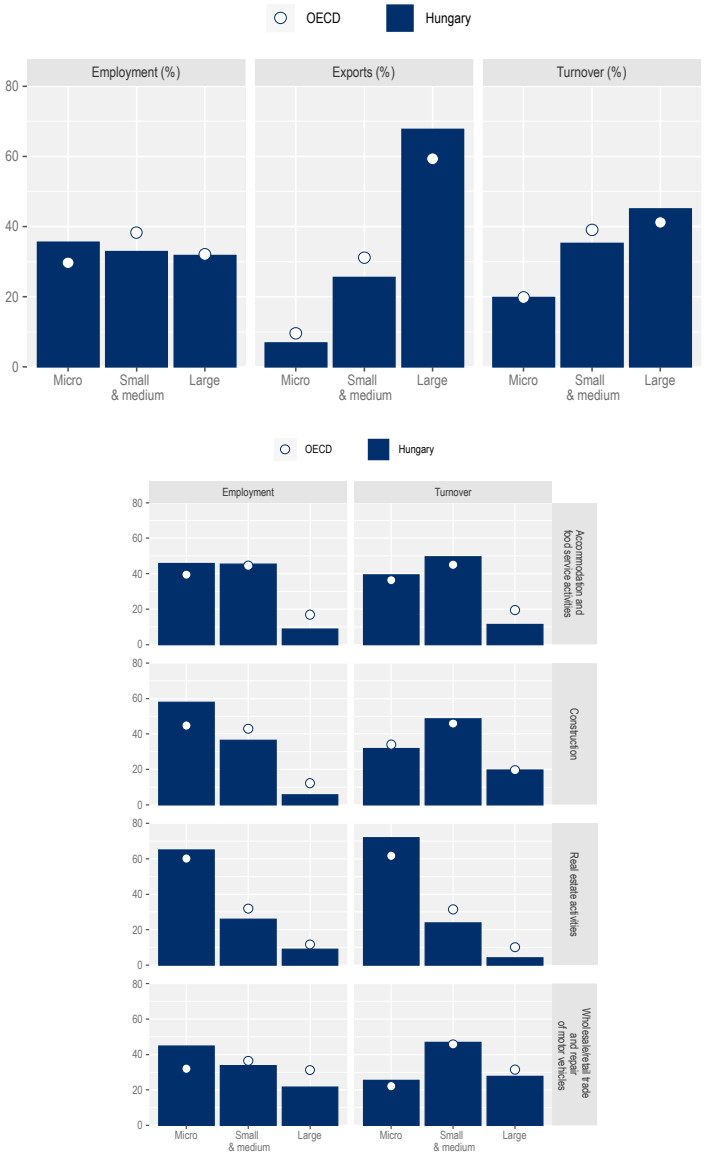


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Hungary

SME sector structure and performance

Figure 8.86. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

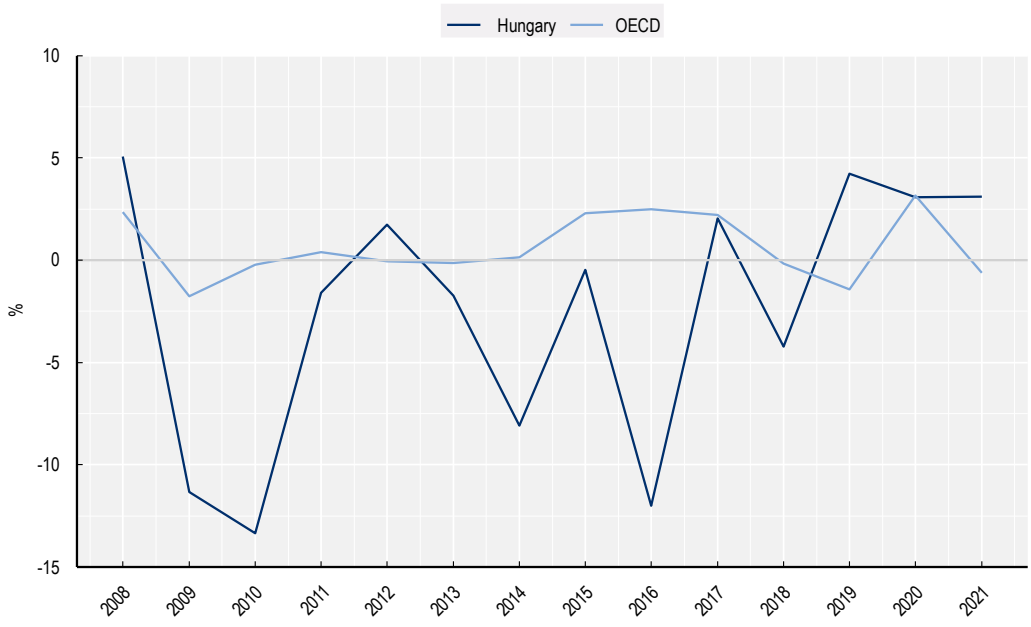
Figure 8.87. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

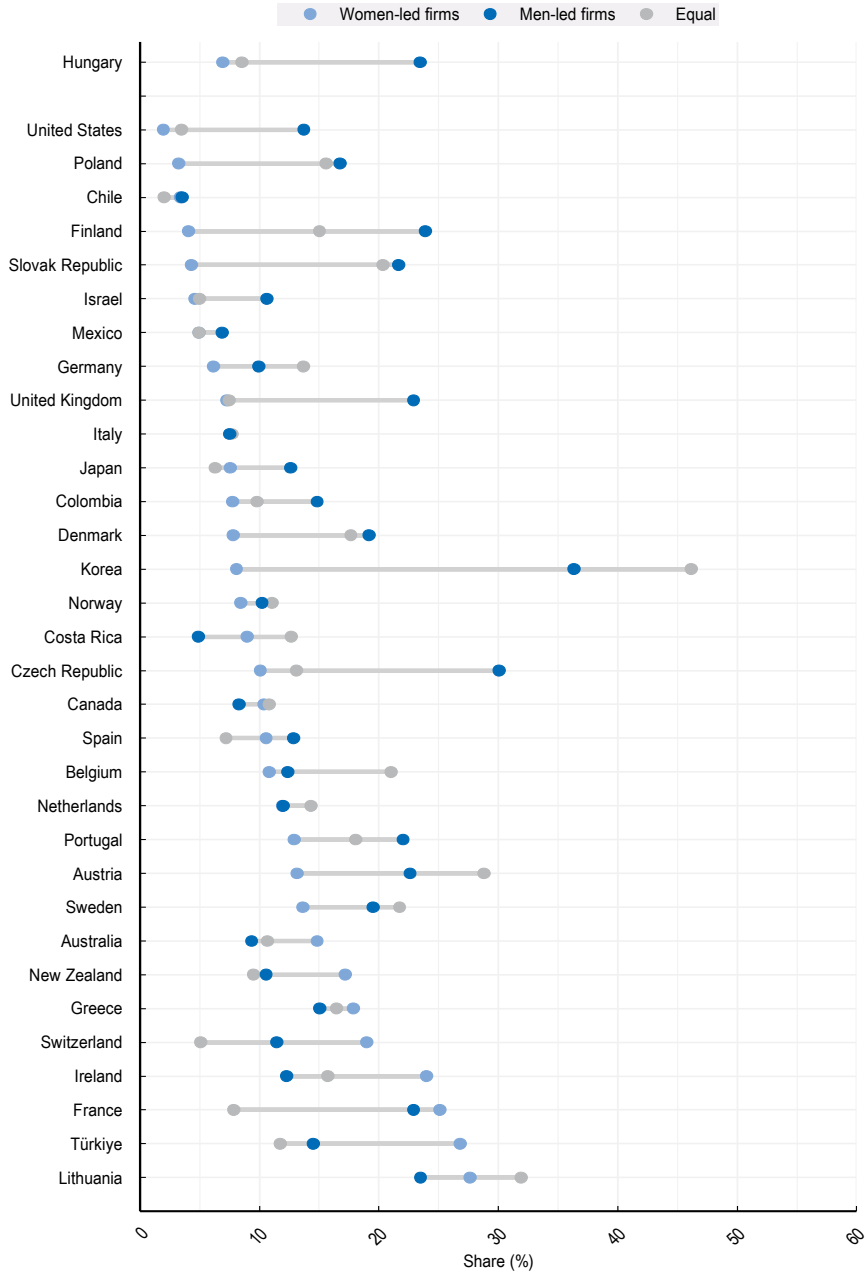
SME indebtedness

Figure 8.88. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

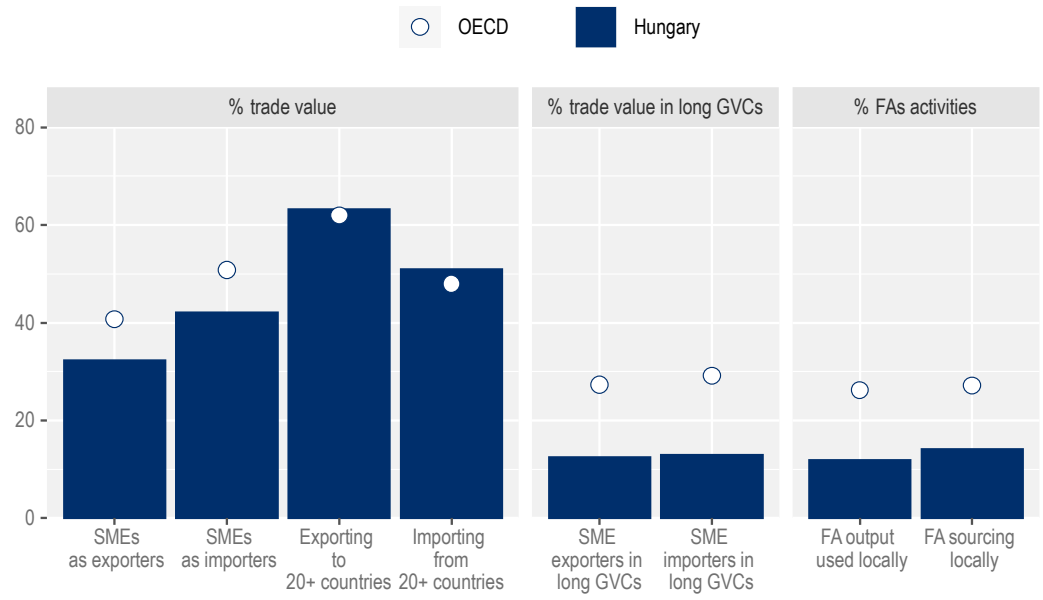
Figure 8.89. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.

Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

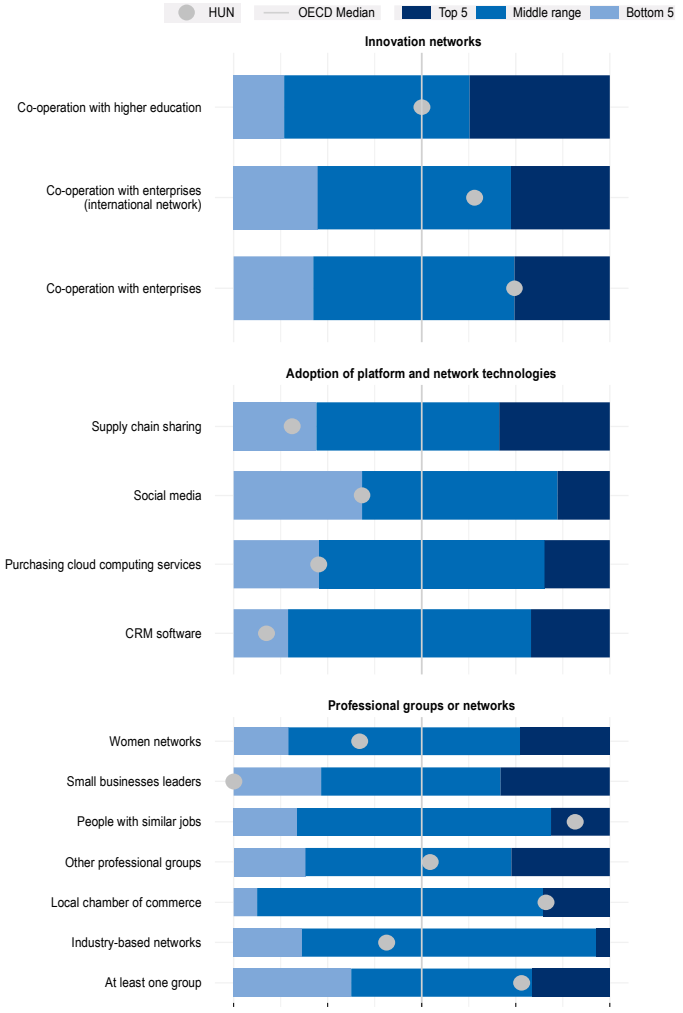
Figure 8.90. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

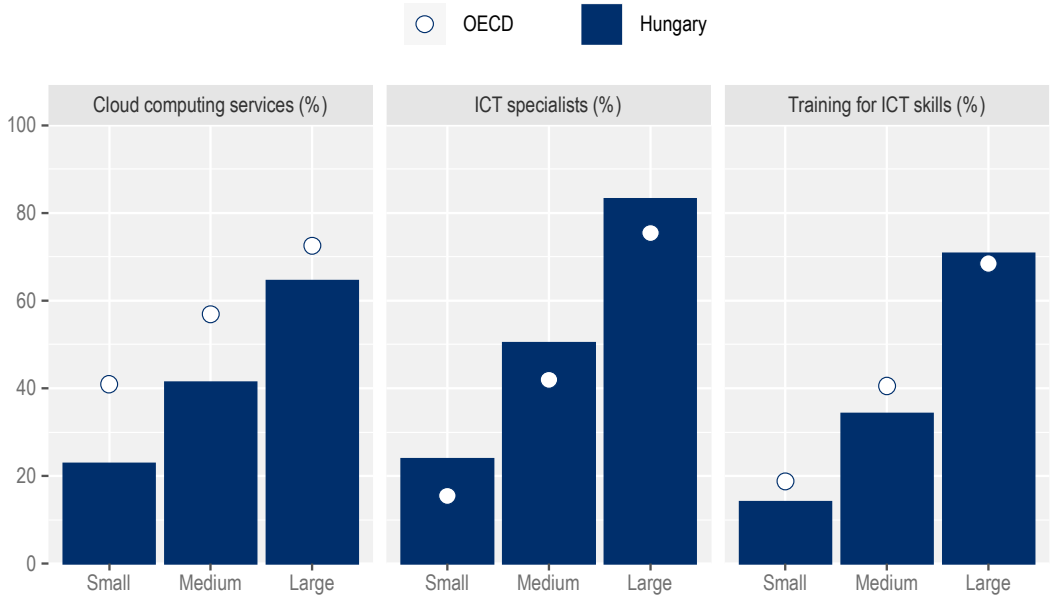
Knowledge and innovation networks

Figure 8.91. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.92. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

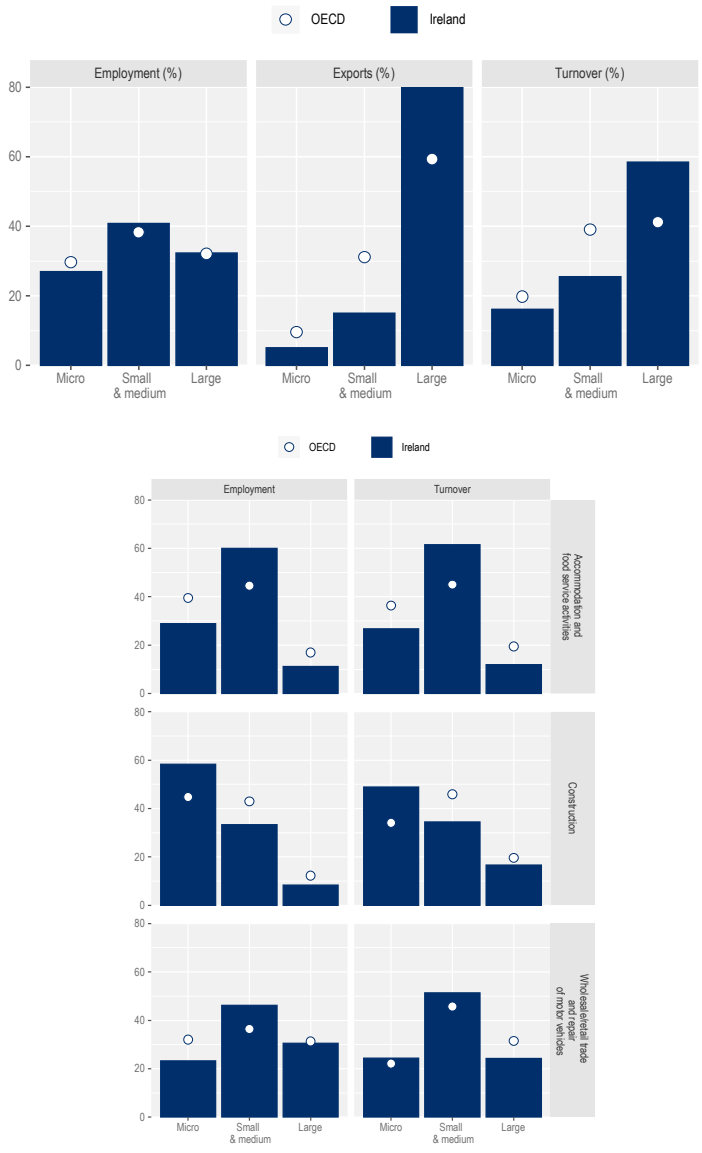


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Ireland

SME sector structure and performance

Figure 8.93. SME share of employment, exports, and turnover

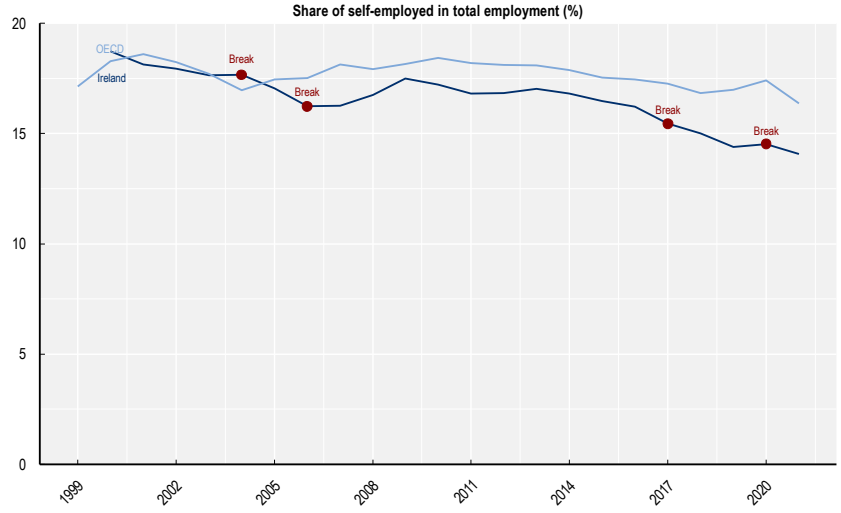


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

Figure 8.94. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Labour Force Statistics (LFS) database.

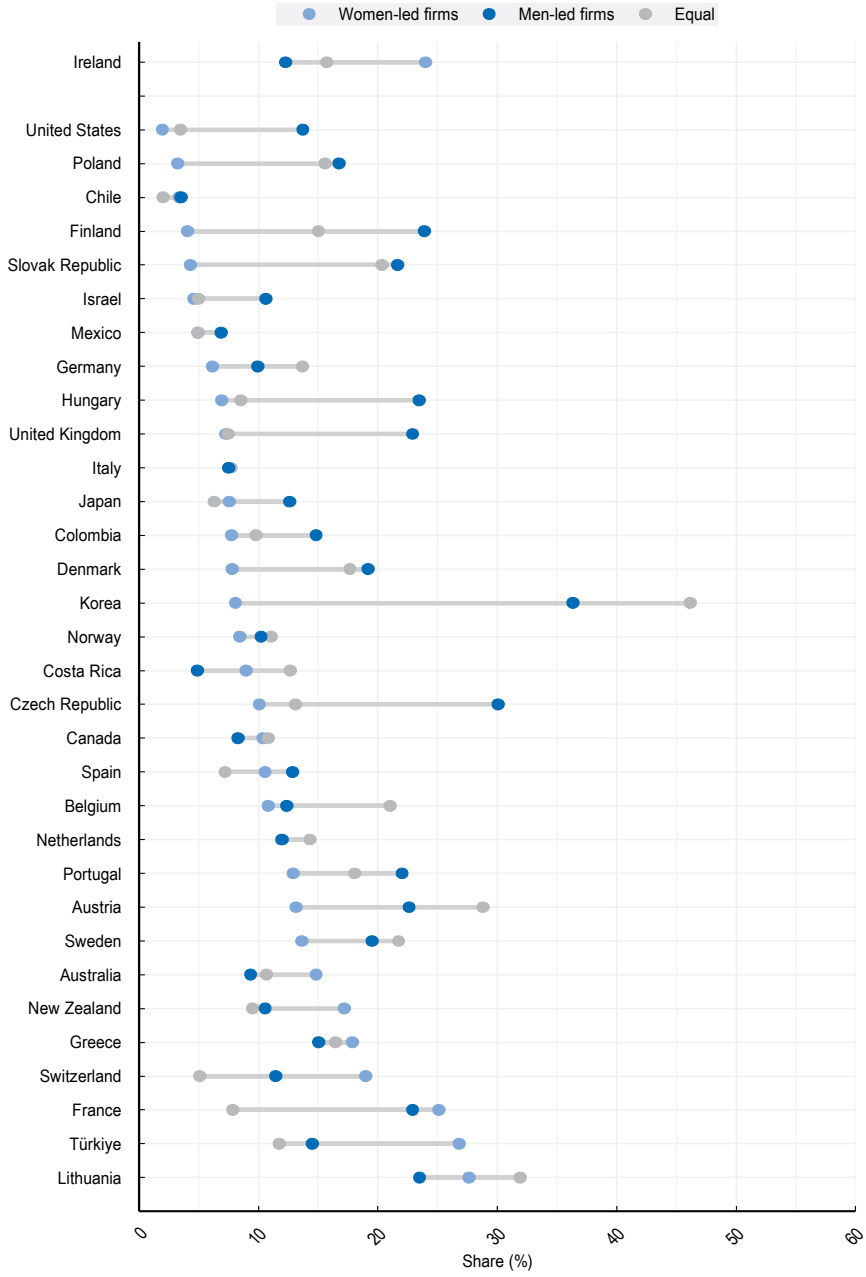
SME indebtedness

Figure 8.95. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

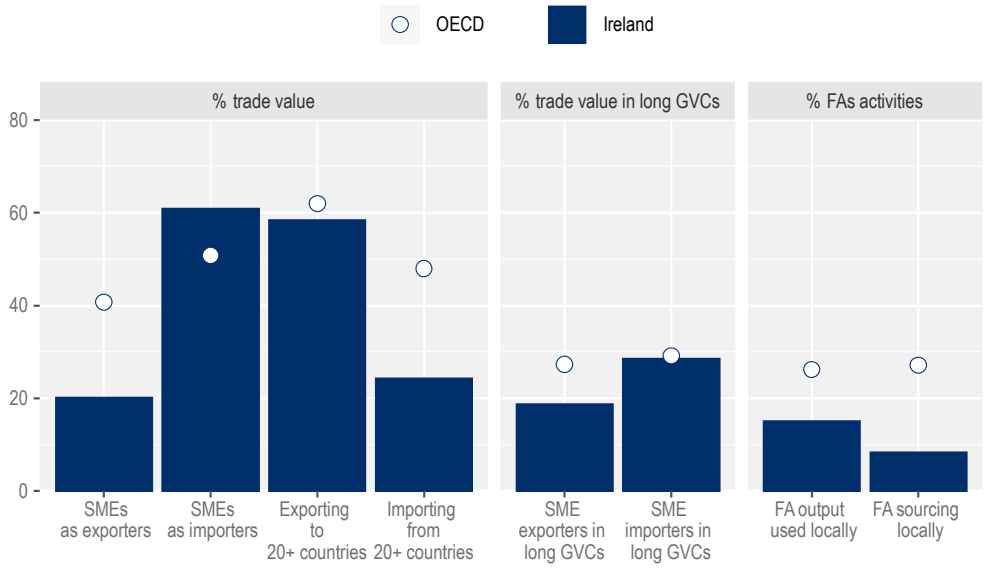
Figure 8.96. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.

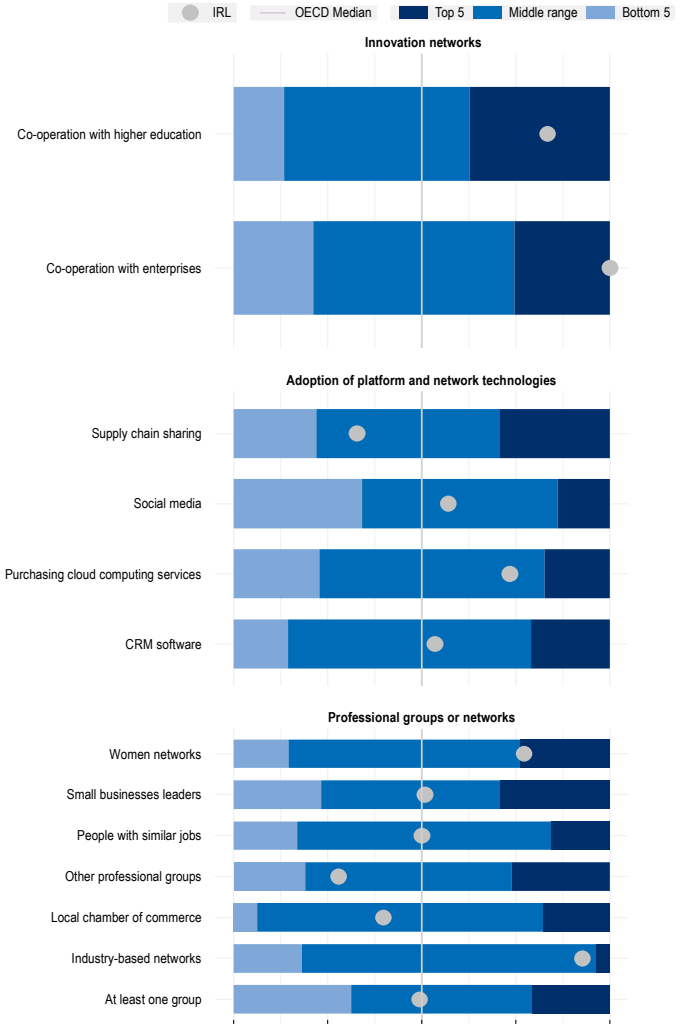
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.97. SME integration in trade and embeddedness of foreign affiliates' activities (%)



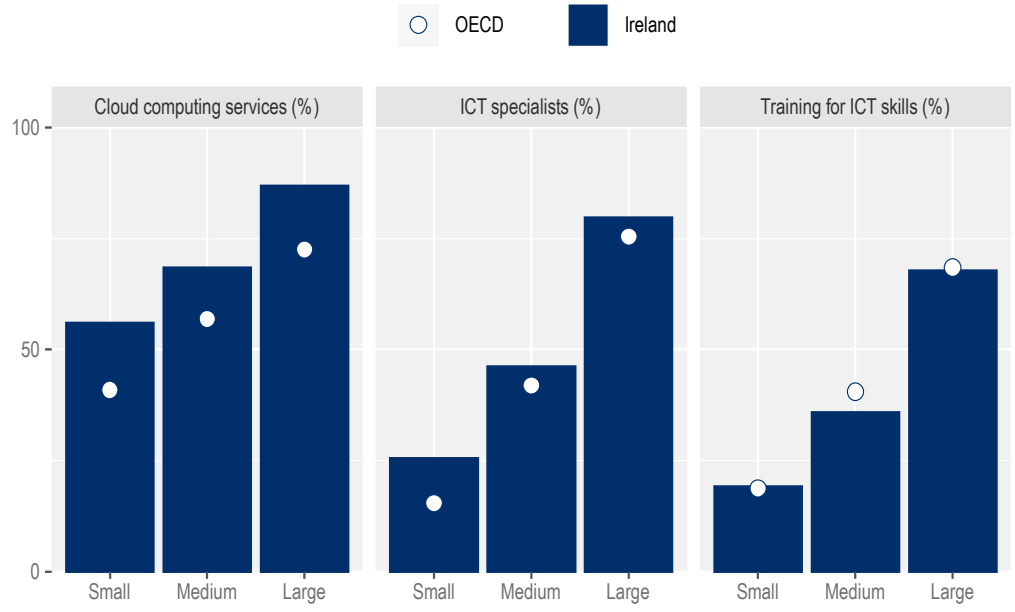
Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Figure 8.98. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.99. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

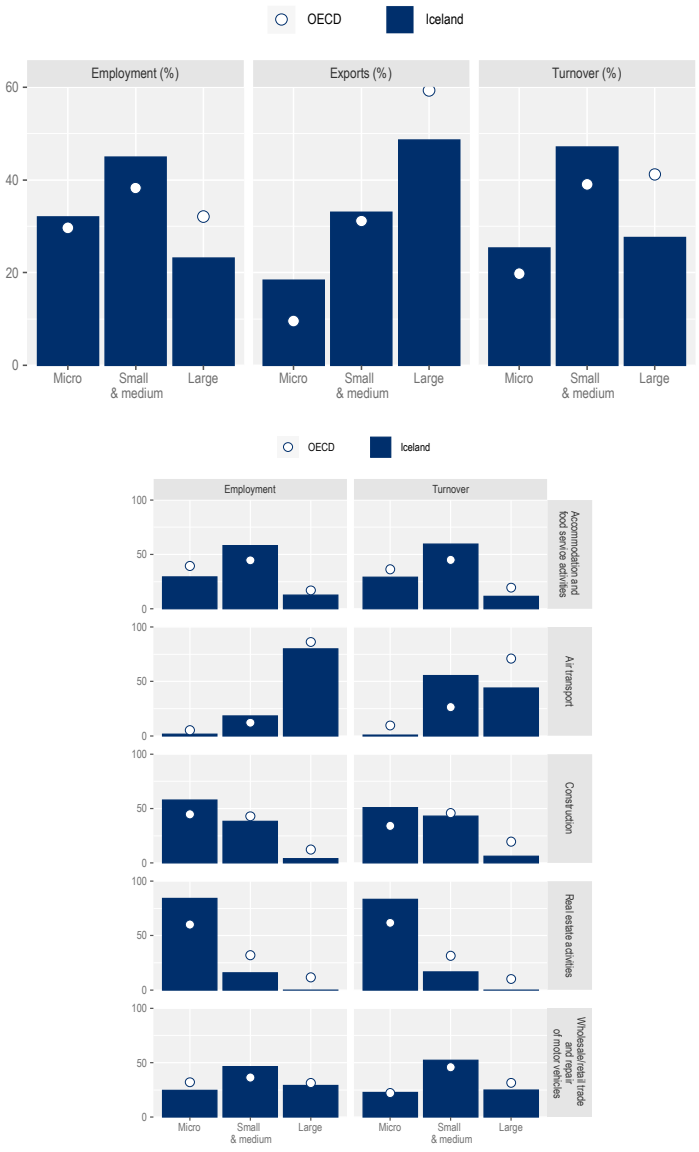


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Iceland

SME sector structure and performance

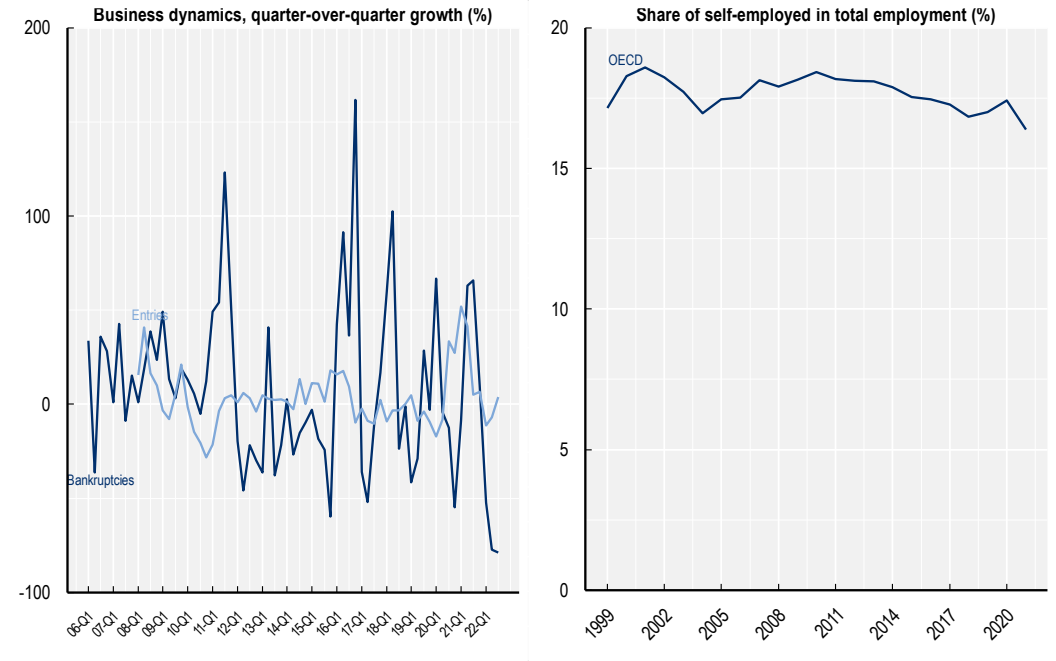
Figure 8.100. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

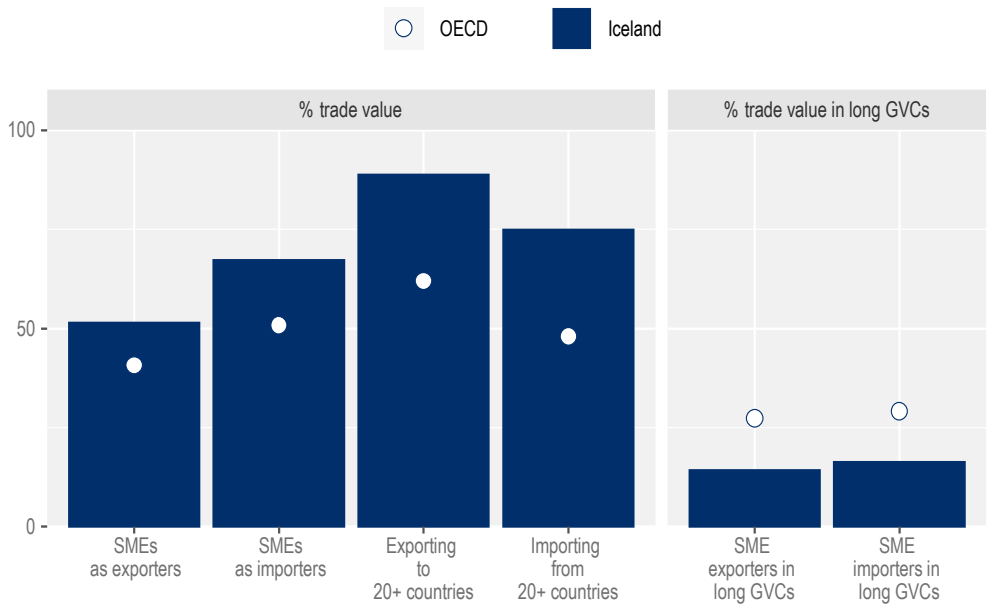
Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Figure 8.101. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

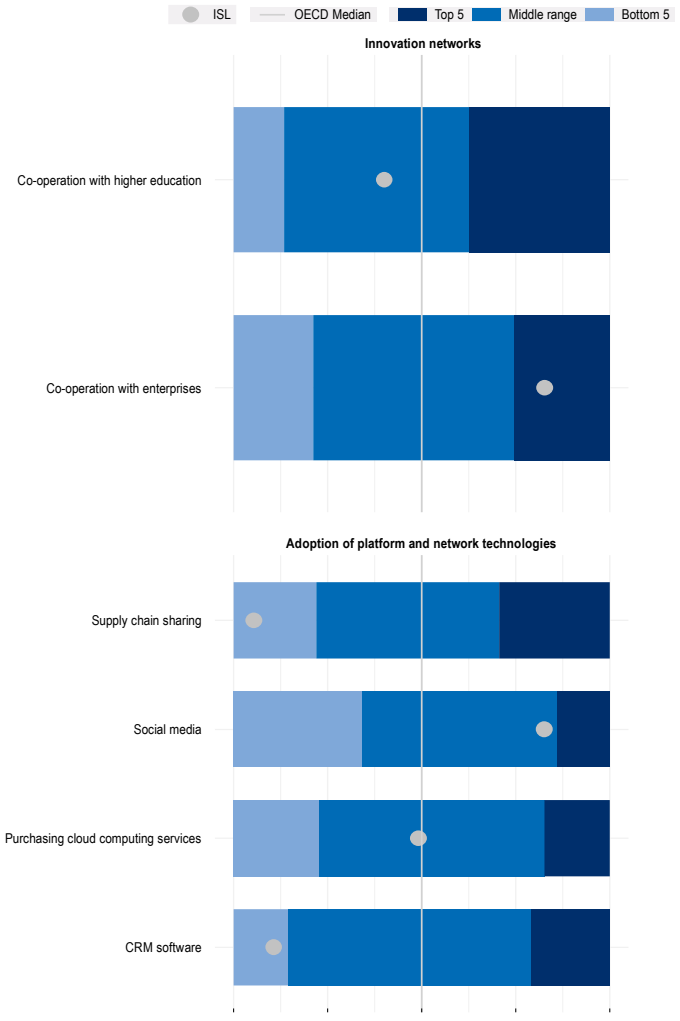
Figure 8.102. SME integration in trade (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30).. Reference year: % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Knowledge and innovation networks

Figure 8.103. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.104. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

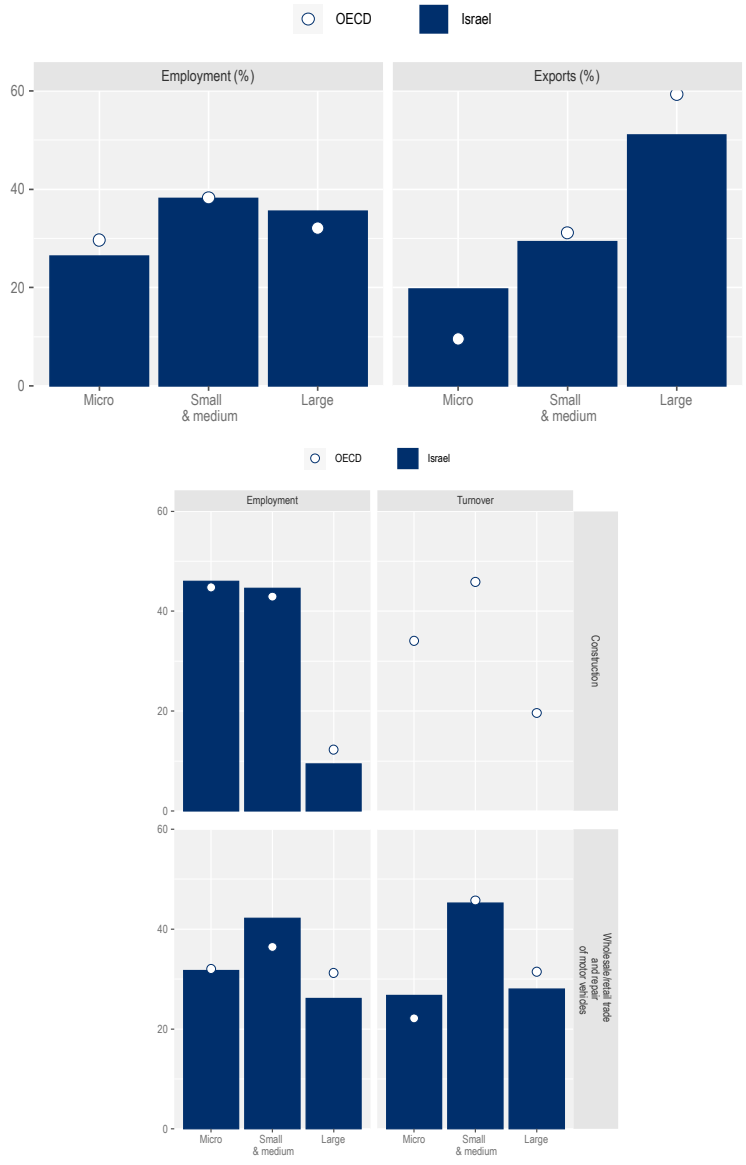


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Israel

SME sector structure and performance

Figure 8.105. SME share of employment and exports

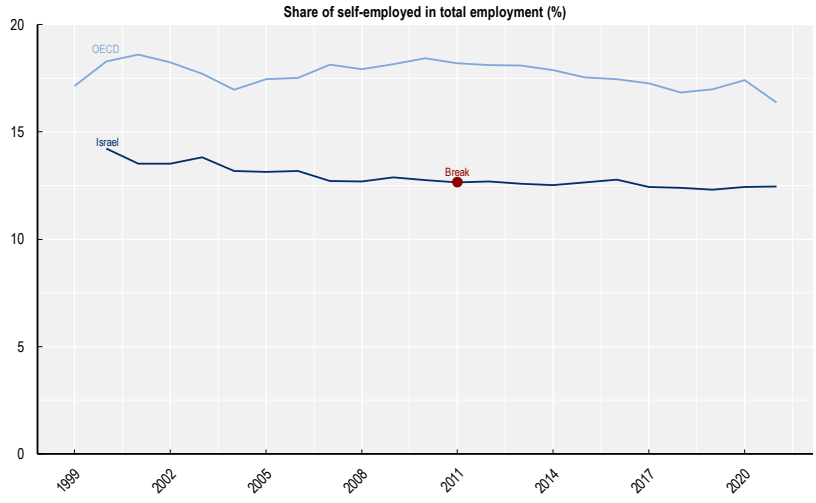


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

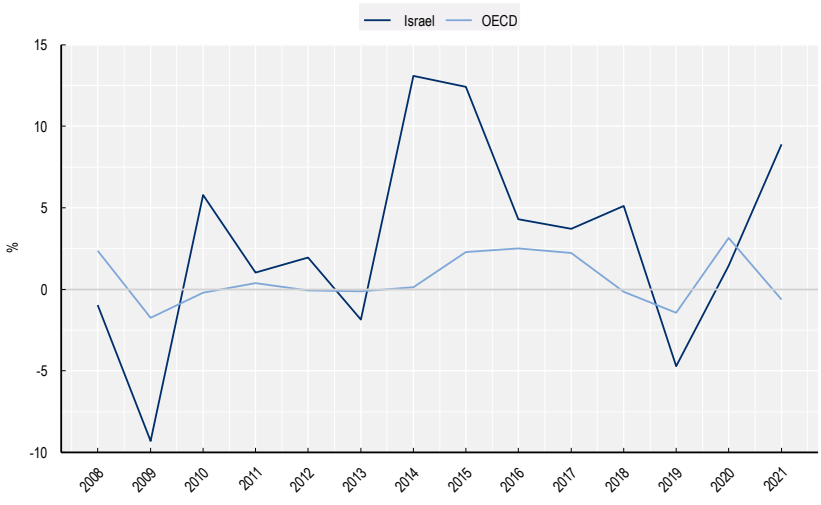
Figure 8.106. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database

SME indebtedness

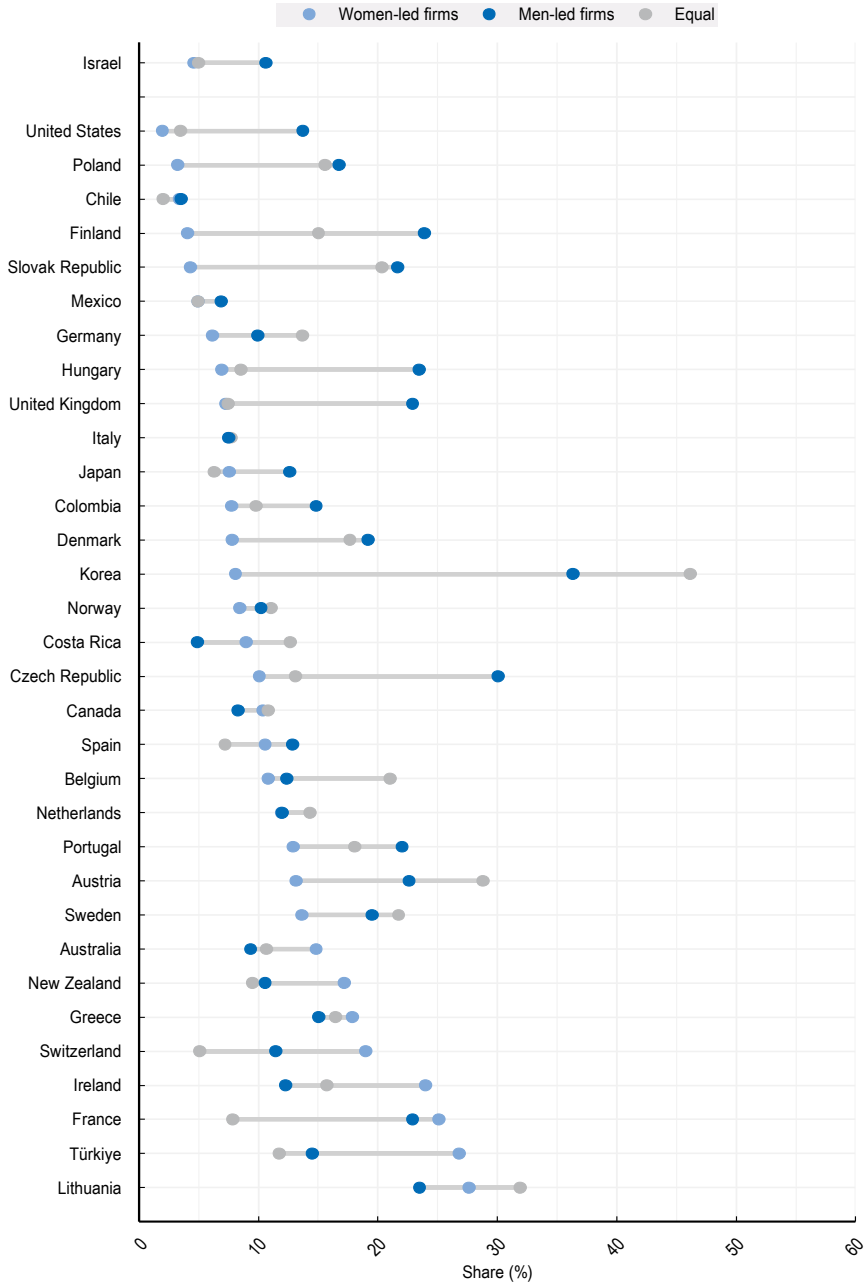
Figure 8.107. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

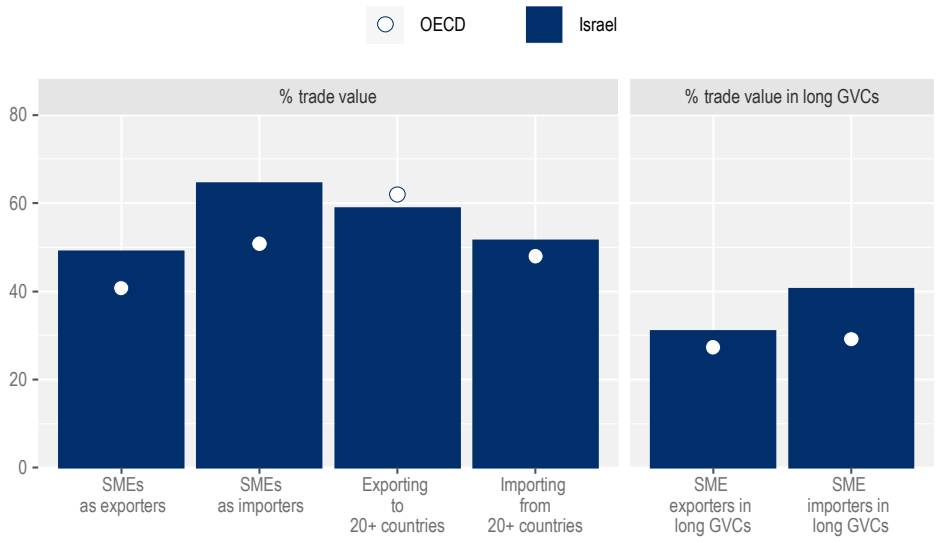
Women in trade and gender export gap

Figure 8.108. Share (%) of firms trading globally by gender of leadership



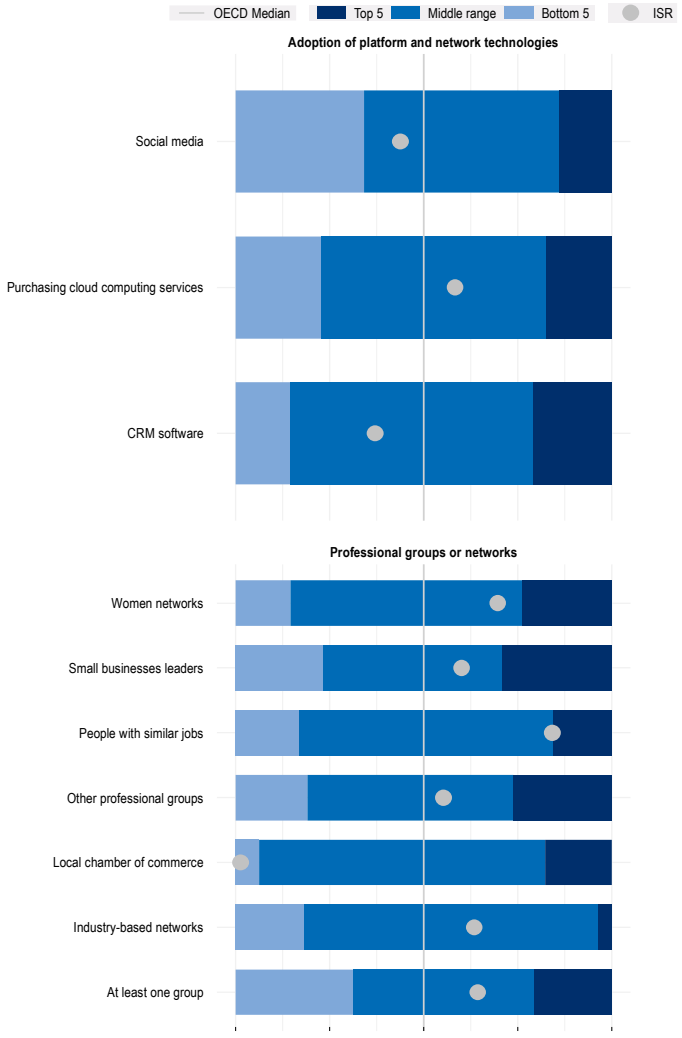
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.109. SME integration in trade and embeddedness of foreign affiliates' activities (%)



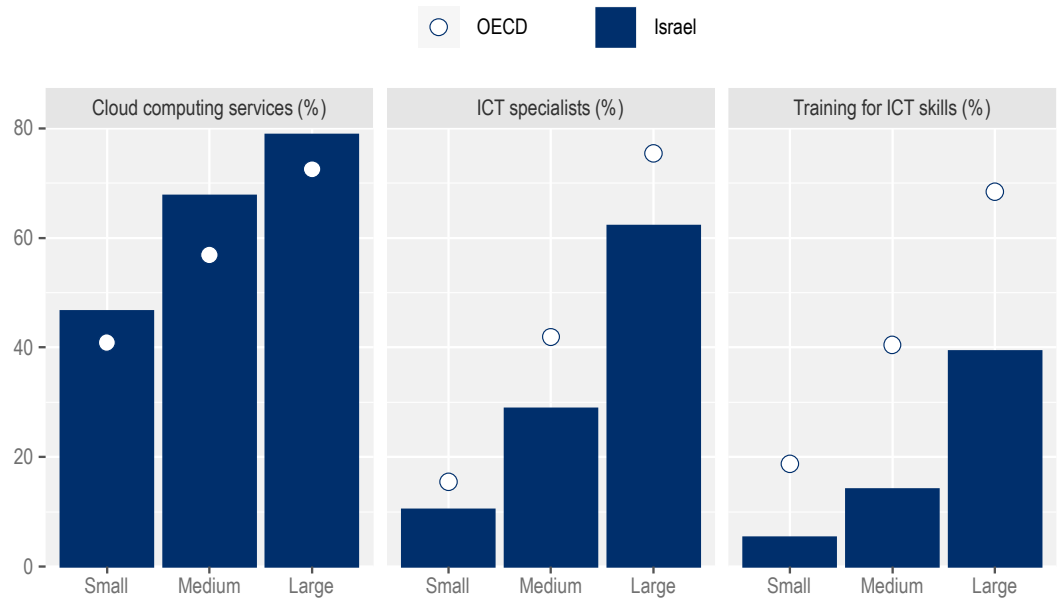
Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Figure 8.110. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.111. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

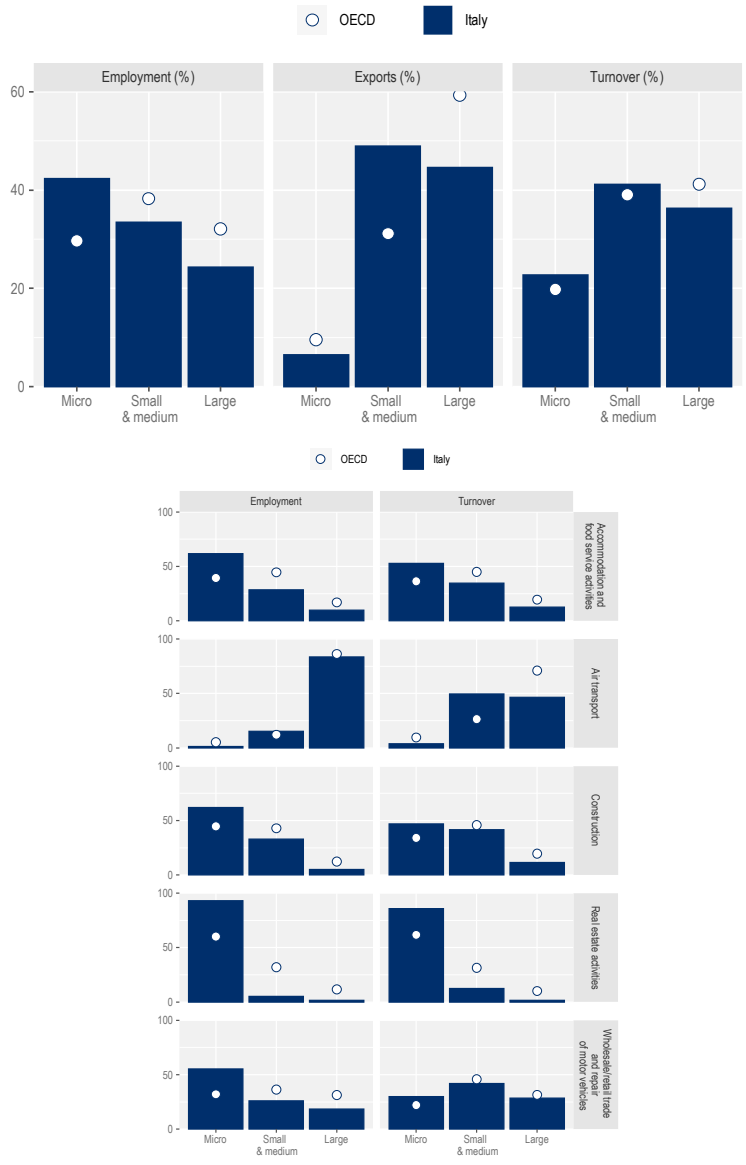


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Italy

SME sector structure and performance

Figure 8.112. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

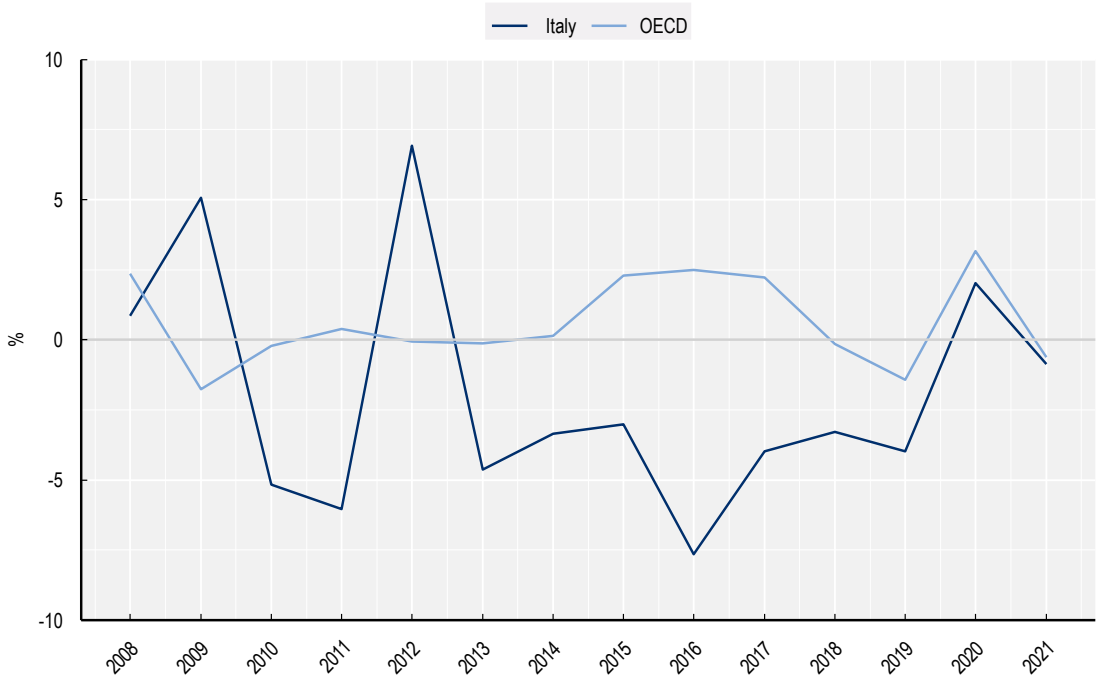
Figure 8.113. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

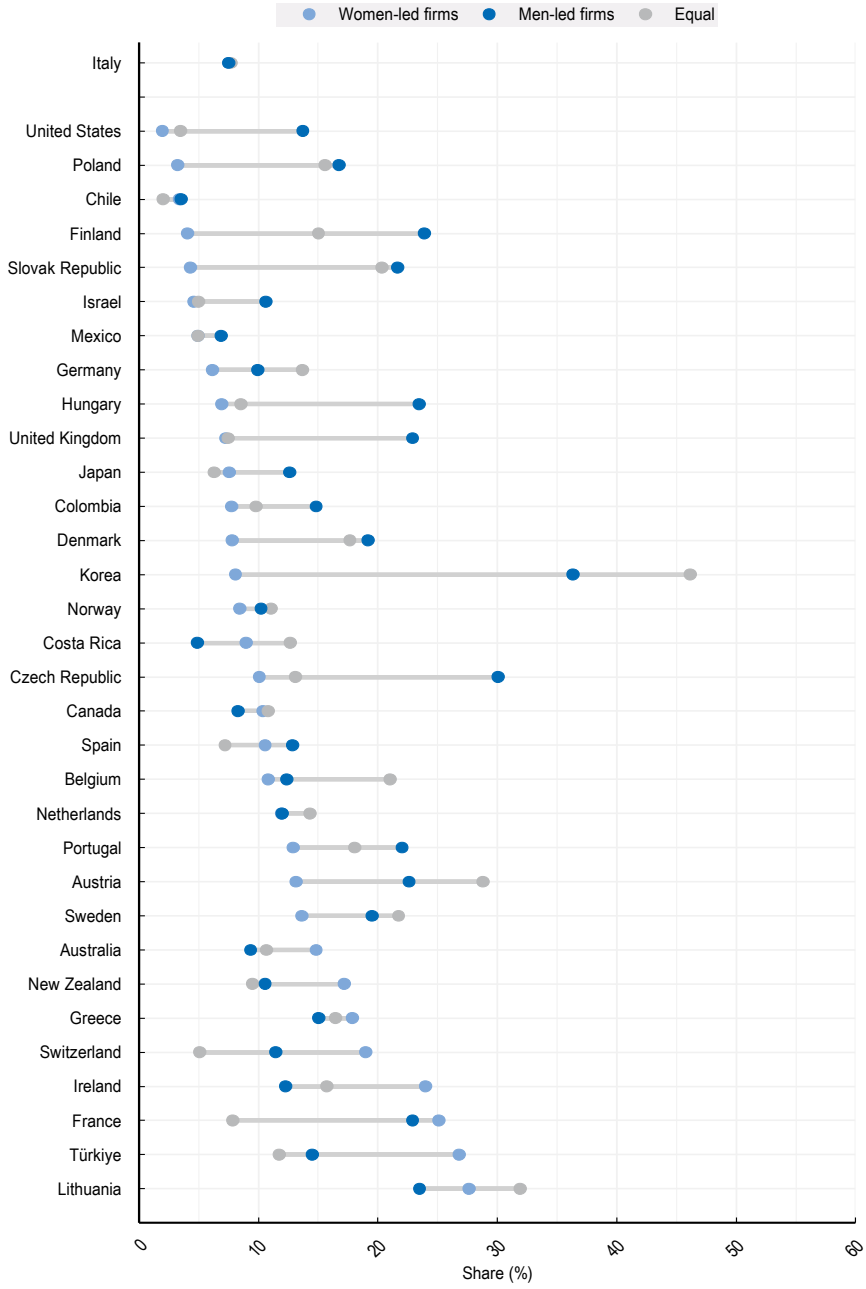
Figure 8.114. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

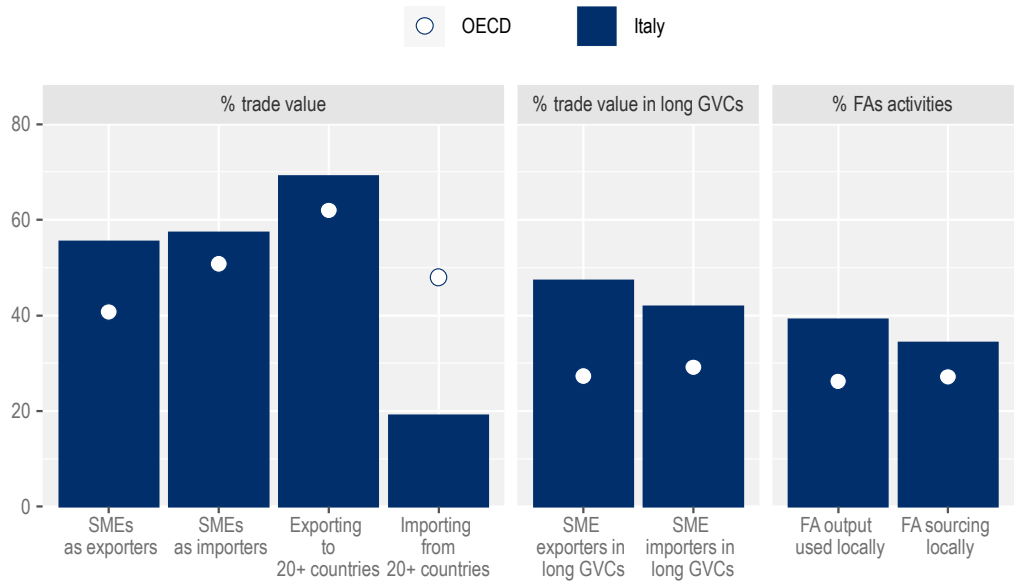
Women in trade and gender export gap

Figure 8.115. Share (%) of firms trading globally by gender of leadership



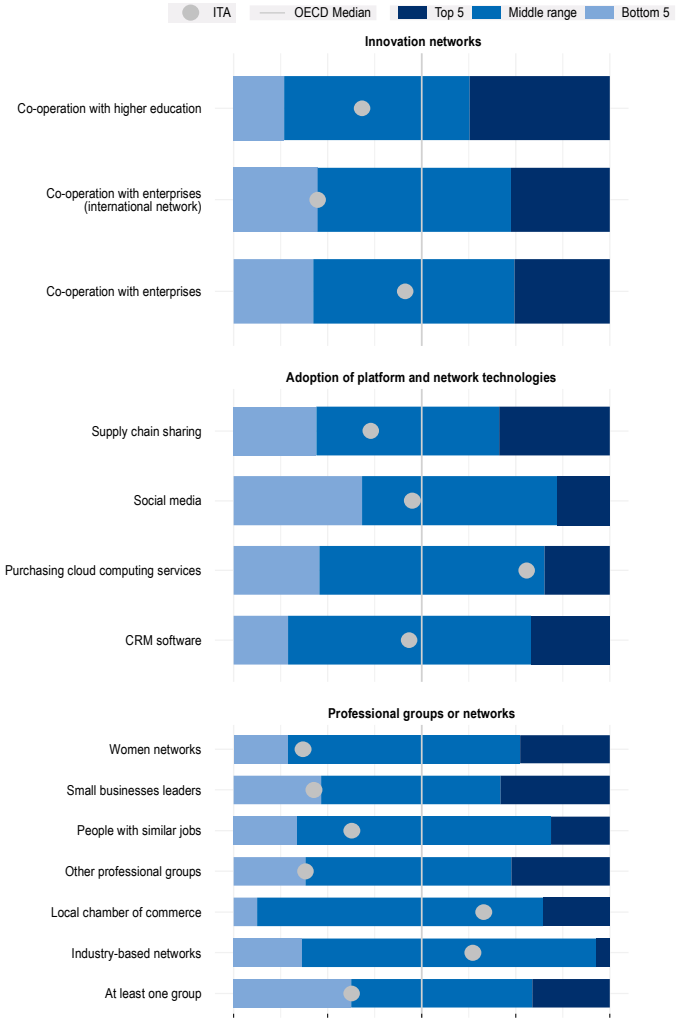
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.116. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

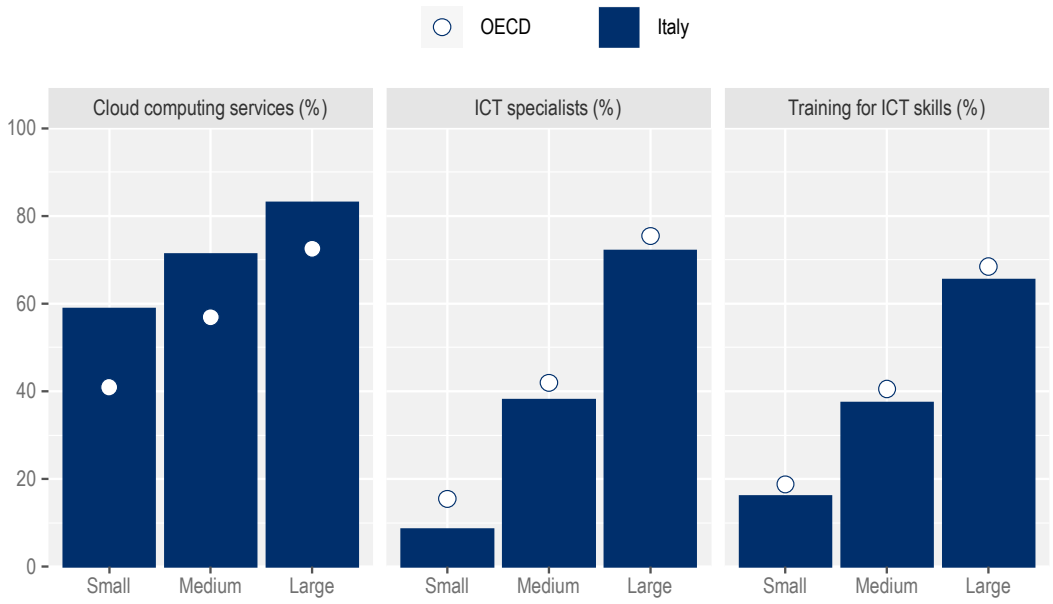
Figure 8.117. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.118. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

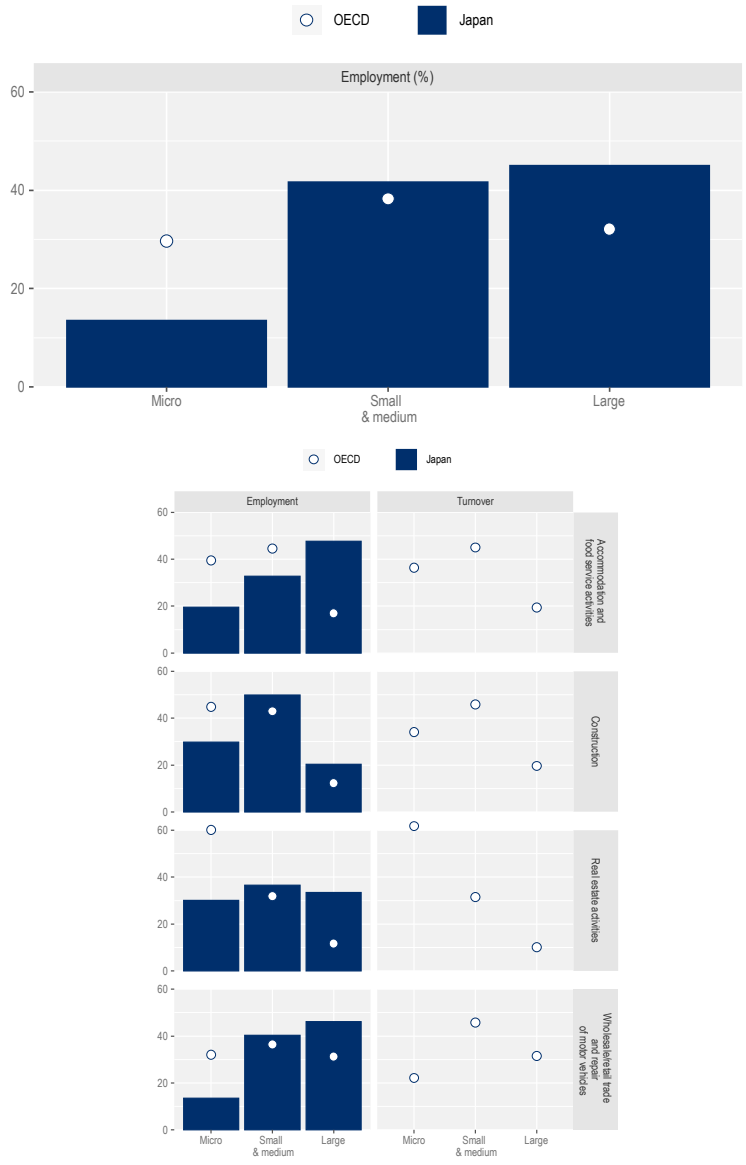


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Japan

SME sector structure and performance

Figure 8.119. SME share of employment

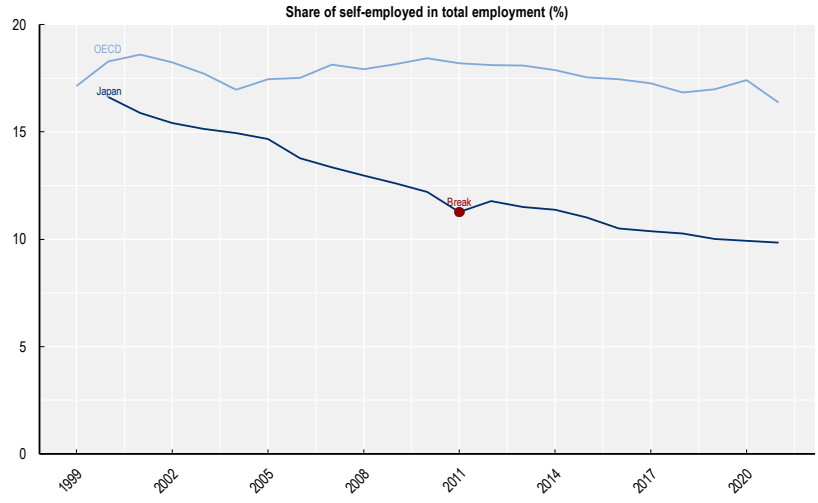


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

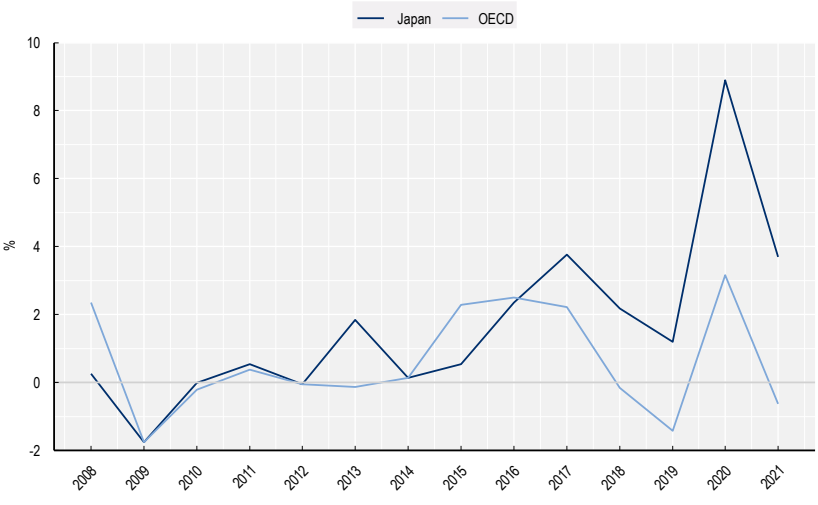
Figure 8.120. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

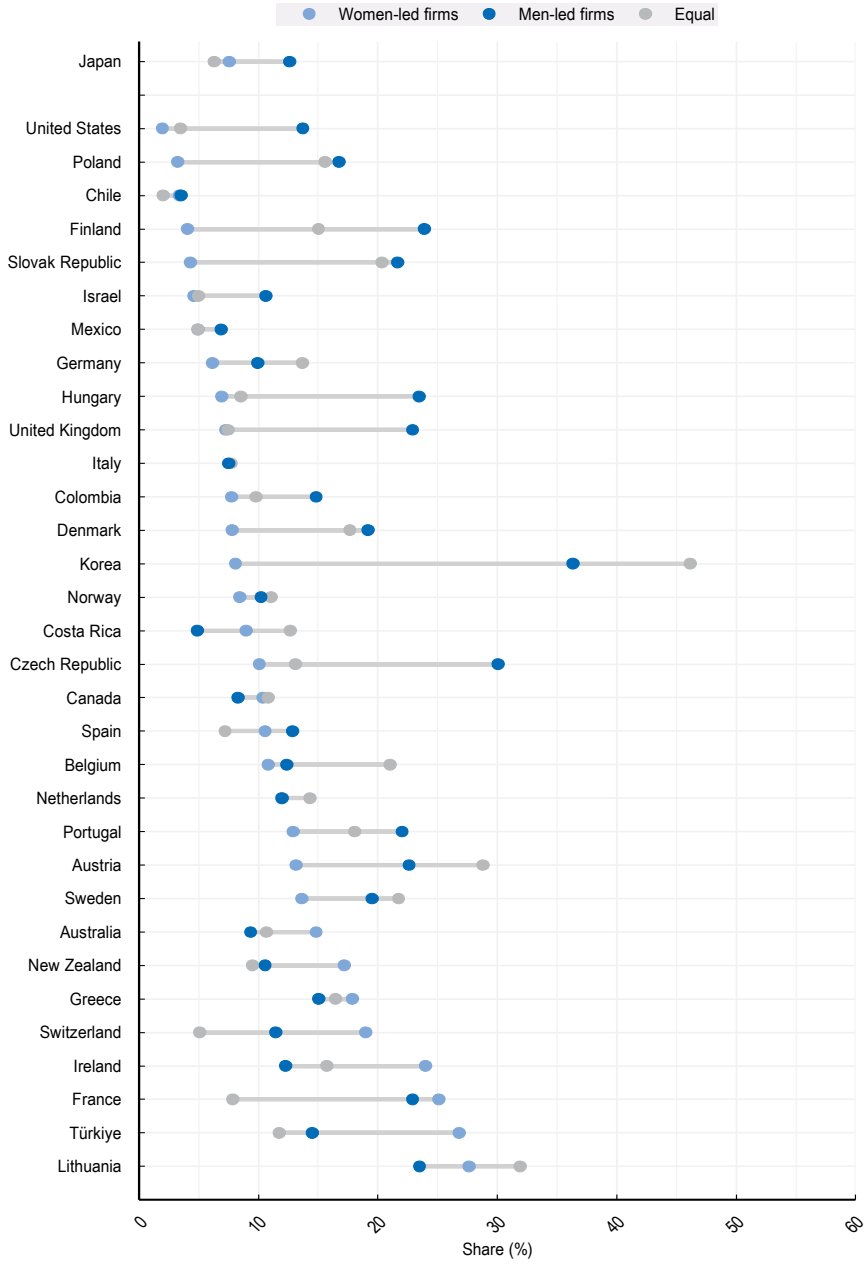
Figure 8.121. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

Women in trade and gender export gap

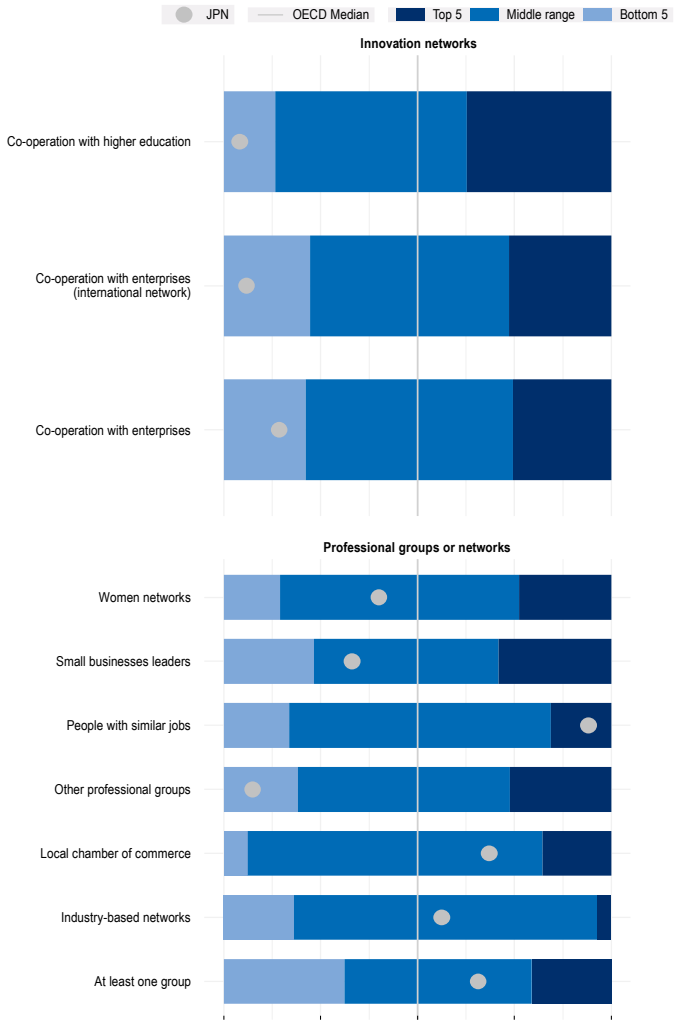
Figure 8.122. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

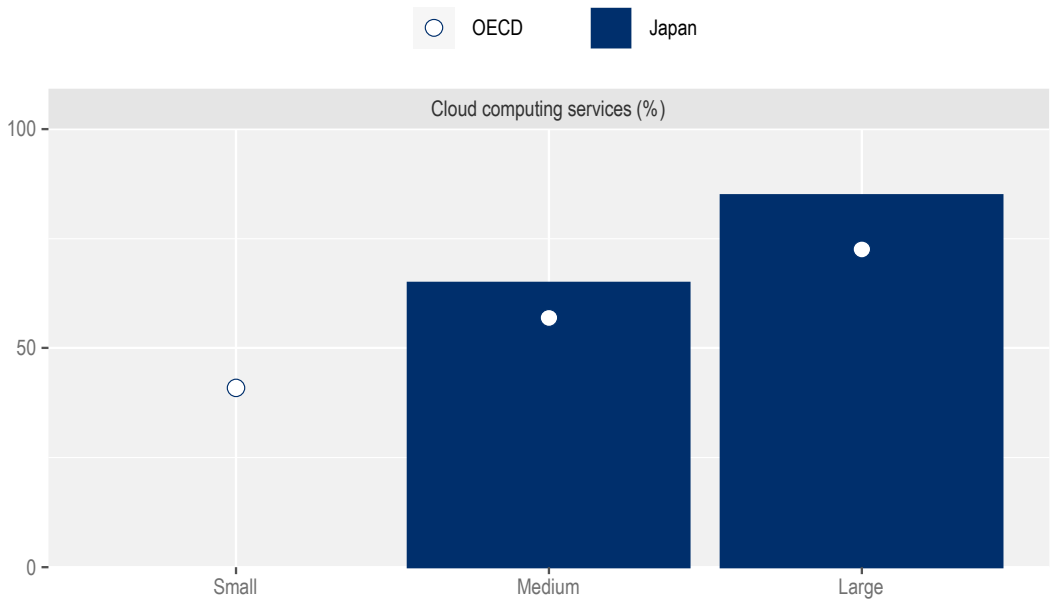
Knowledge and innovation networks

Figure 8.123. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.124. Share of firms accessing digital skills (%) by outsourcing

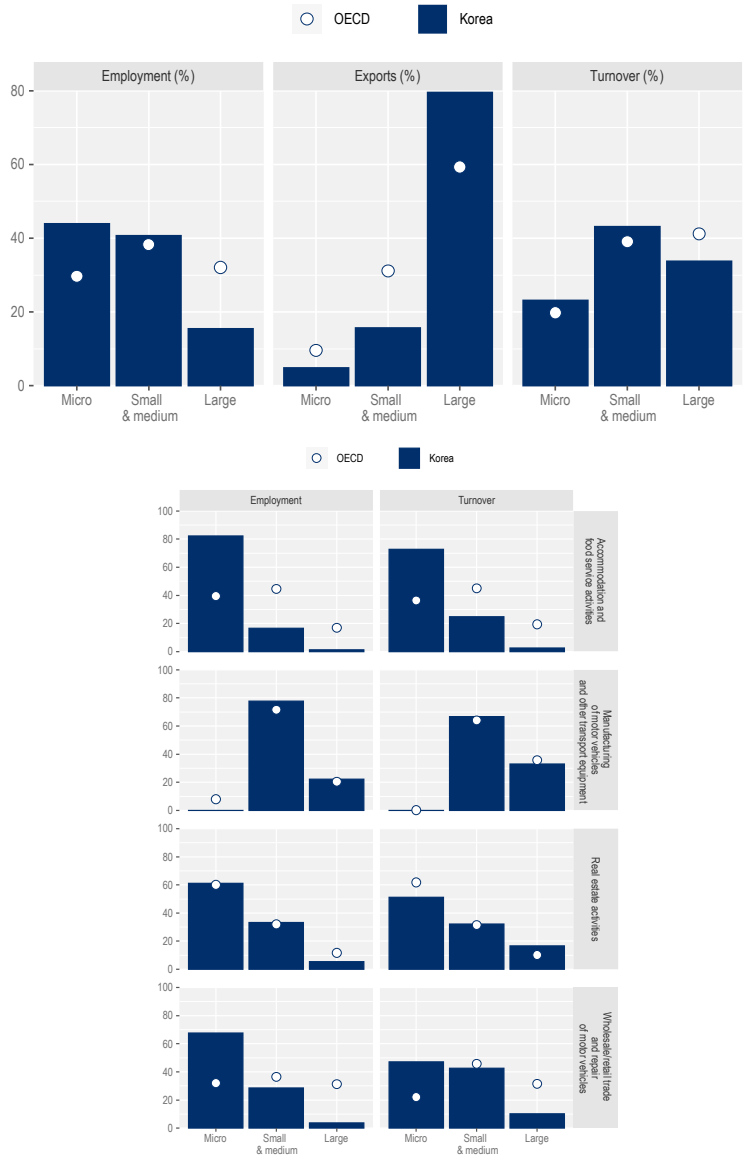


Note: Share (%) of businesses that purchased cloud computing services (%), latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Korea

SME sector structure and performance

Figure 8.125. SME share of employment, exports, and turnover

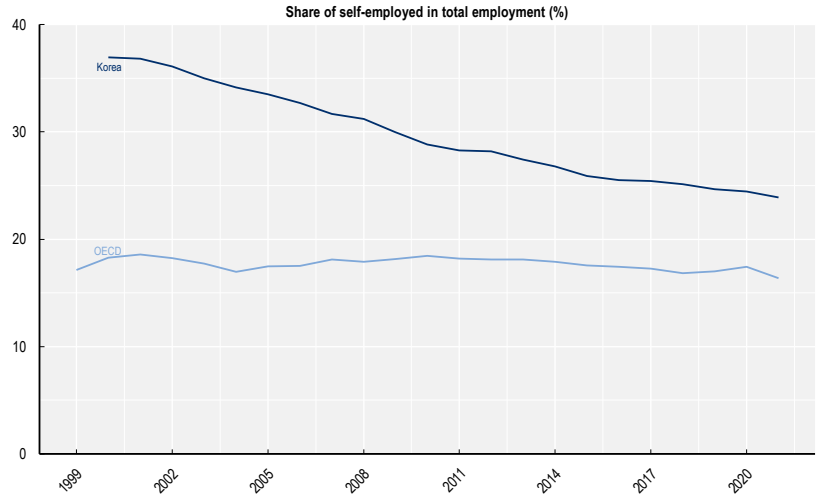


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

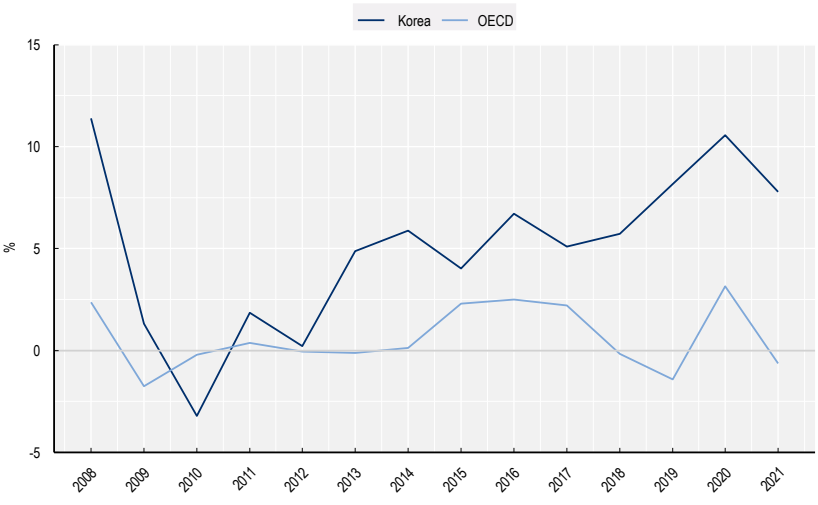
Figure 8.126. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

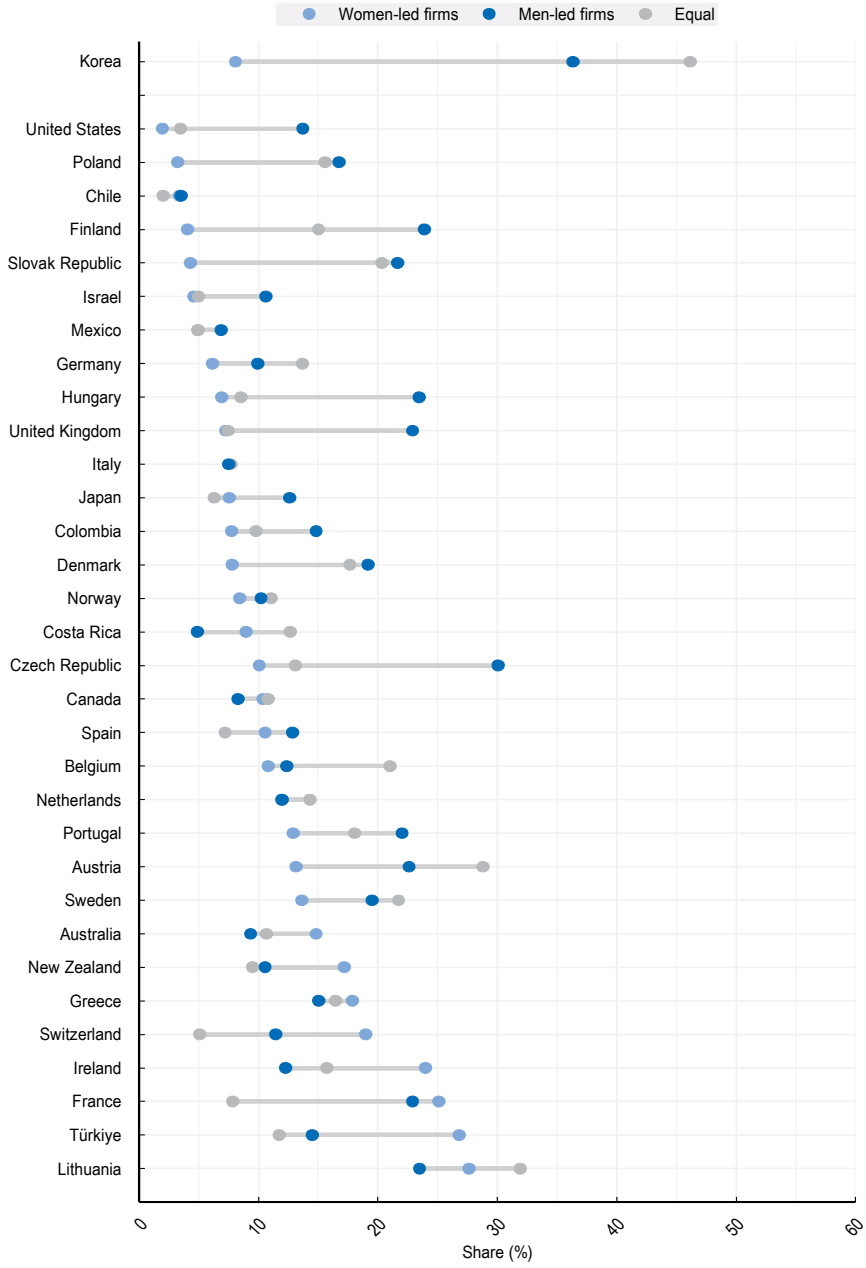
Figure 8.127. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

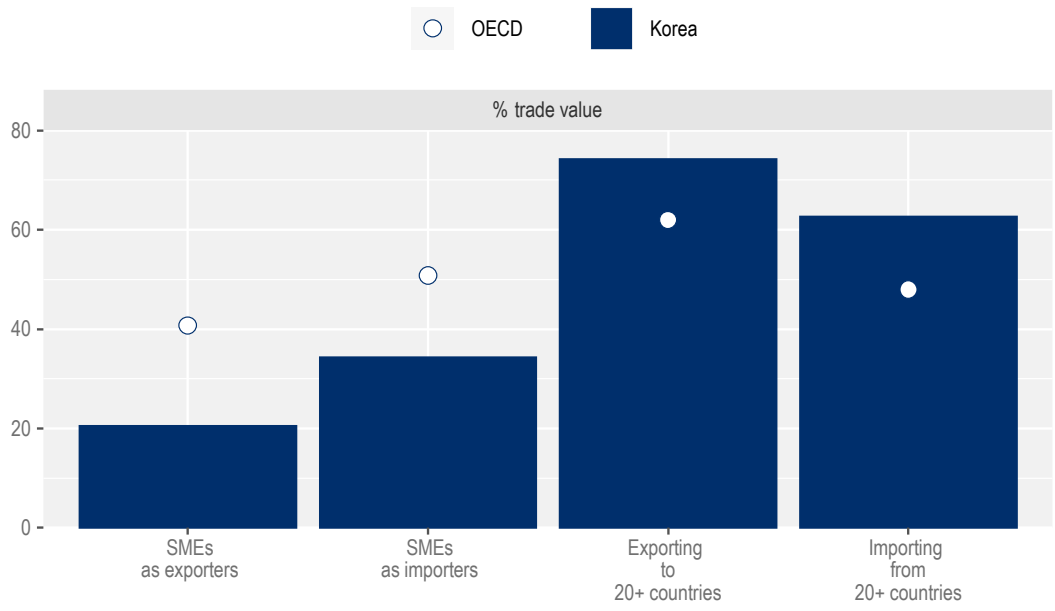
Women in trade and gender export gap

Figure 8.128. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

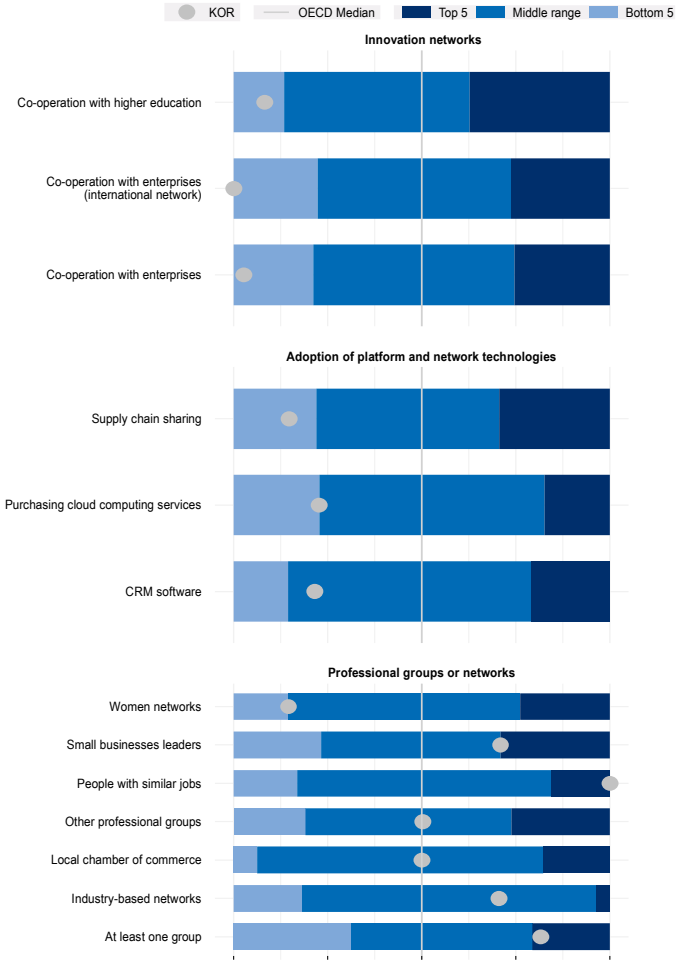
Figure 8.129. SME integration in trade (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. Reference year: % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Knowledge and innovation networks

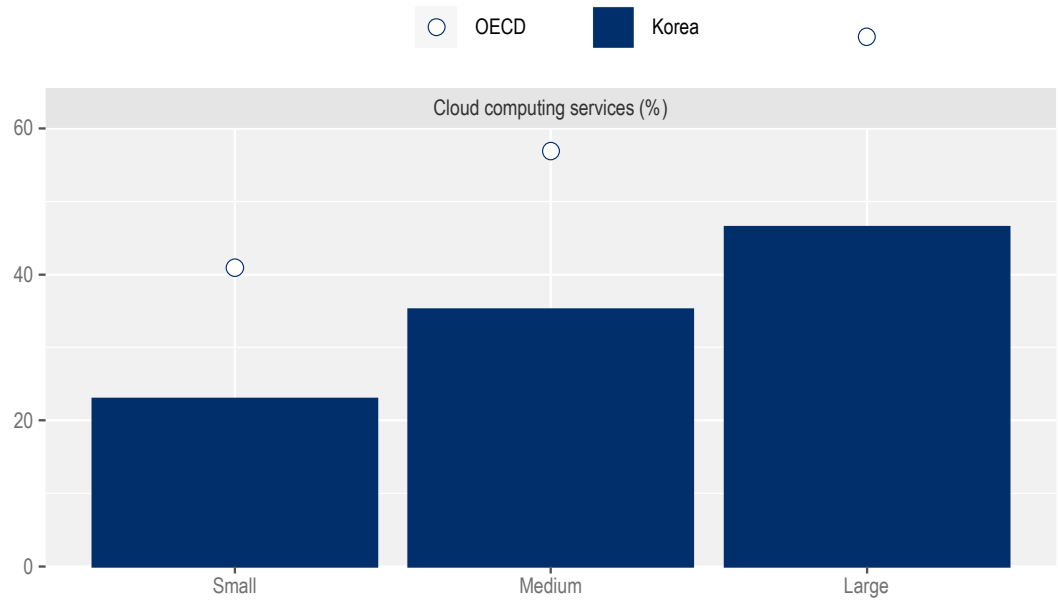
Figure 8.130. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.131. Share of firms accessing digital skills (%) by outsourcing, by firm size class

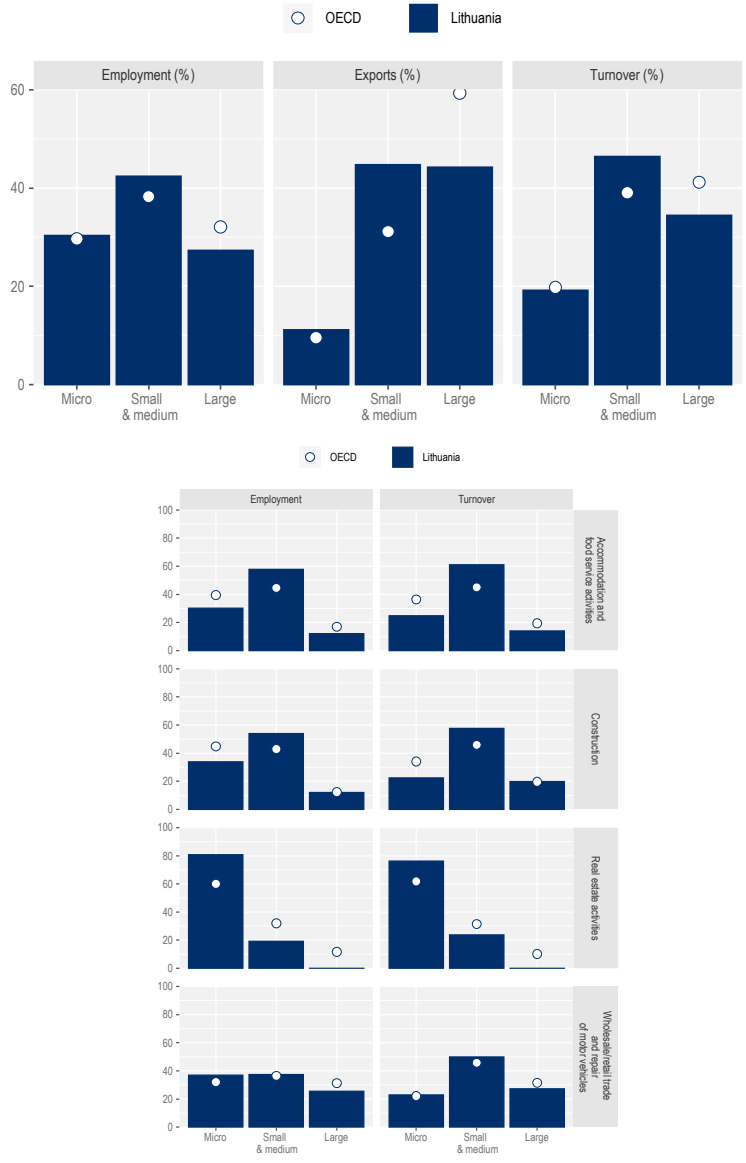


Note: Share (%) of businesses that purchased cloud computing services (%), latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Lithuania

SME sector structure and performance

Figure 8.132. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

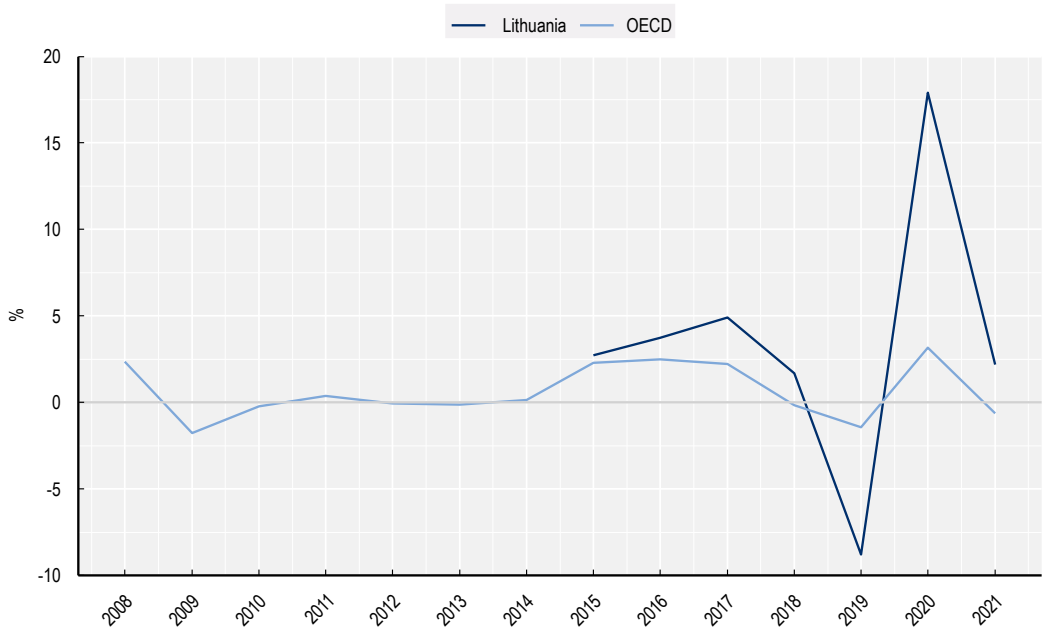
Figure 8.133. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

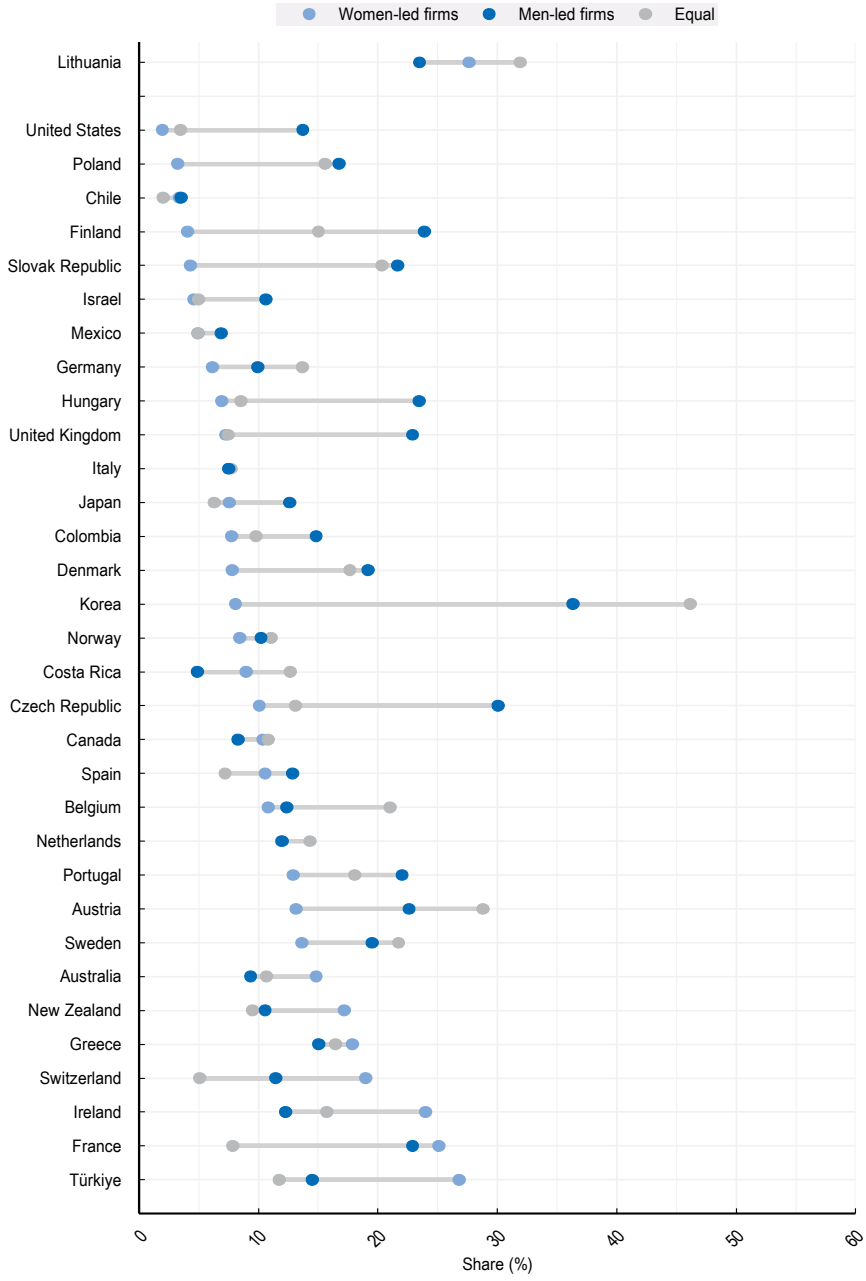
Figure 8.134. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

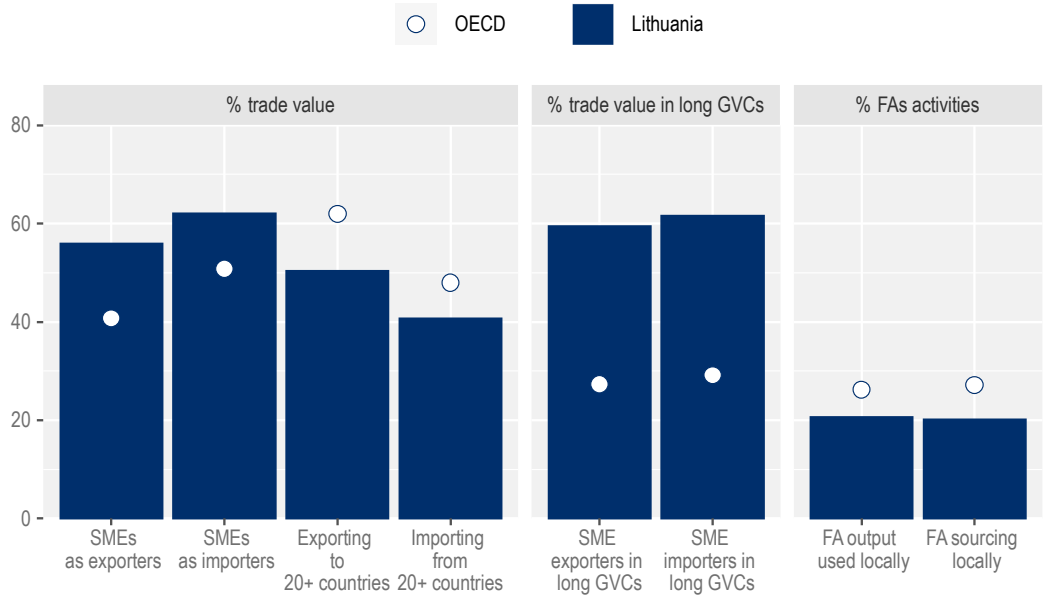
Women in trade and gender export gap

Figure 8.135. Share (%) of firms trading globally by gender of leadership



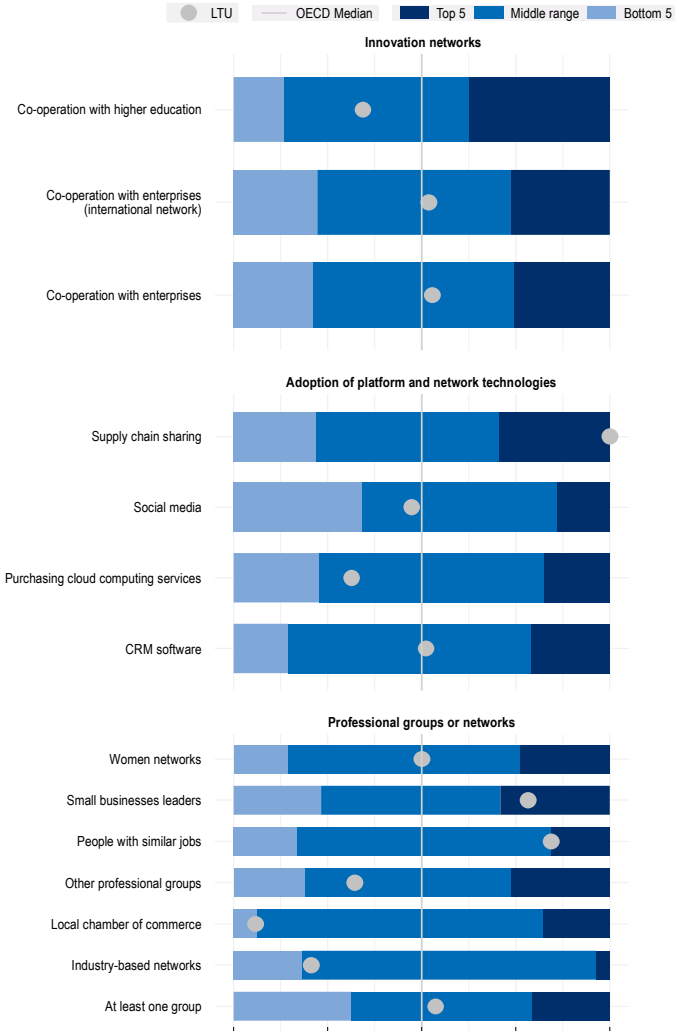
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.136. SME integration in trade and embeddedness of foreign affiliates' activities (%)



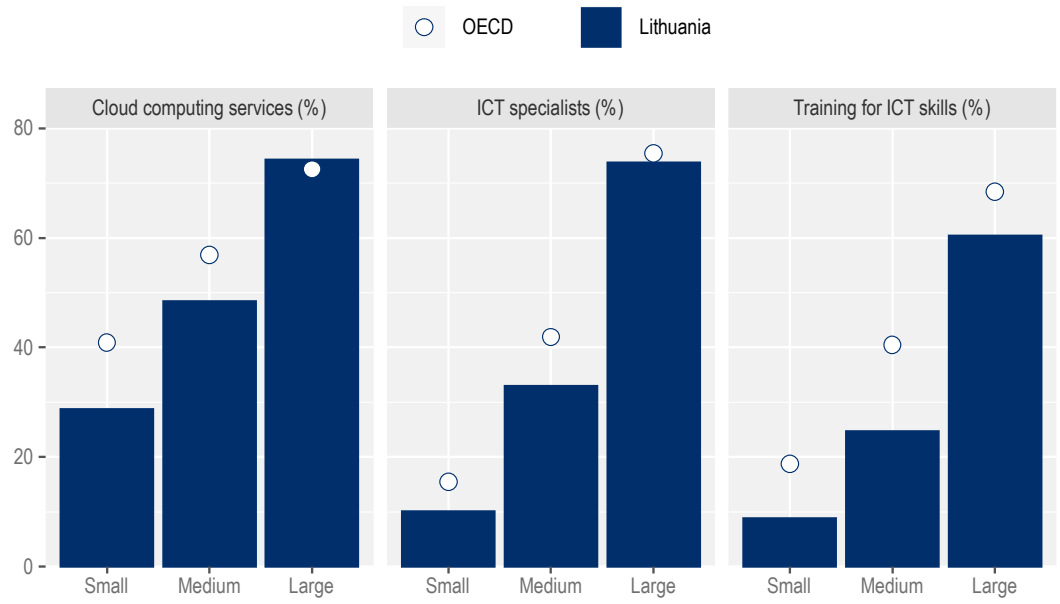
Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Figure 8.137. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.138. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

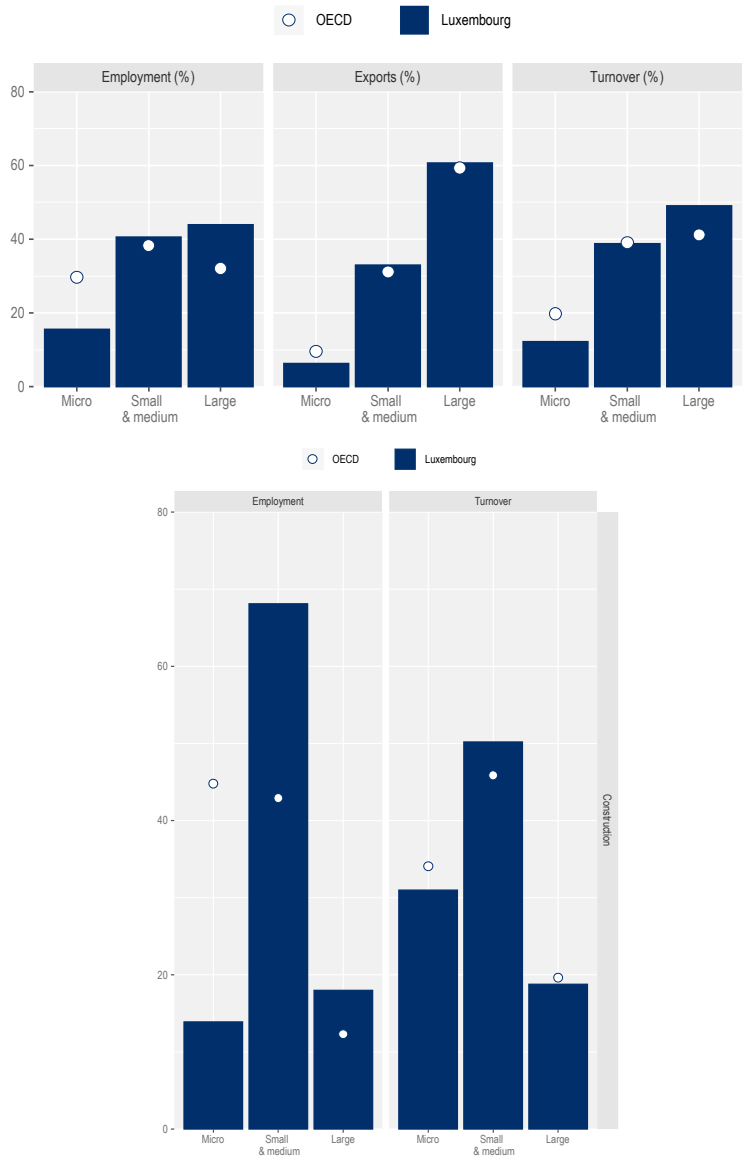


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Luxembourg

SME sector structure and performance

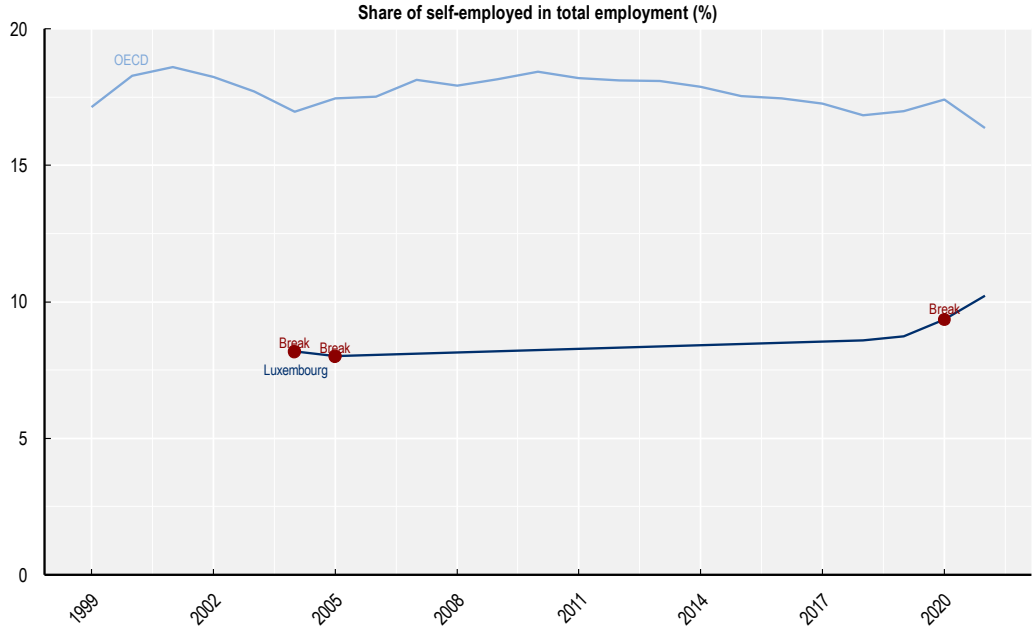
Figure 8.139. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

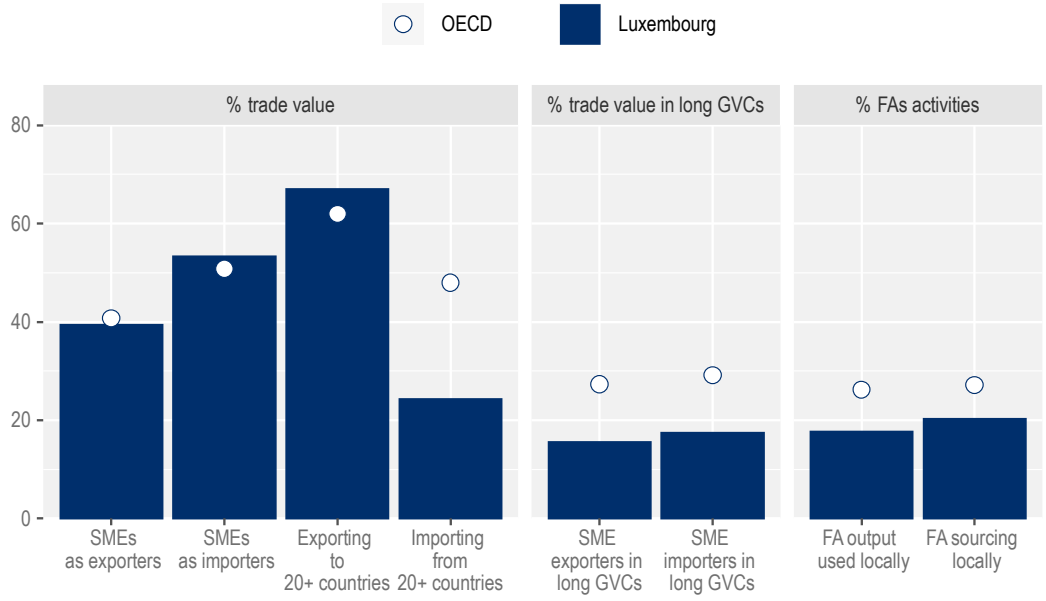
Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Figure 8.140. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

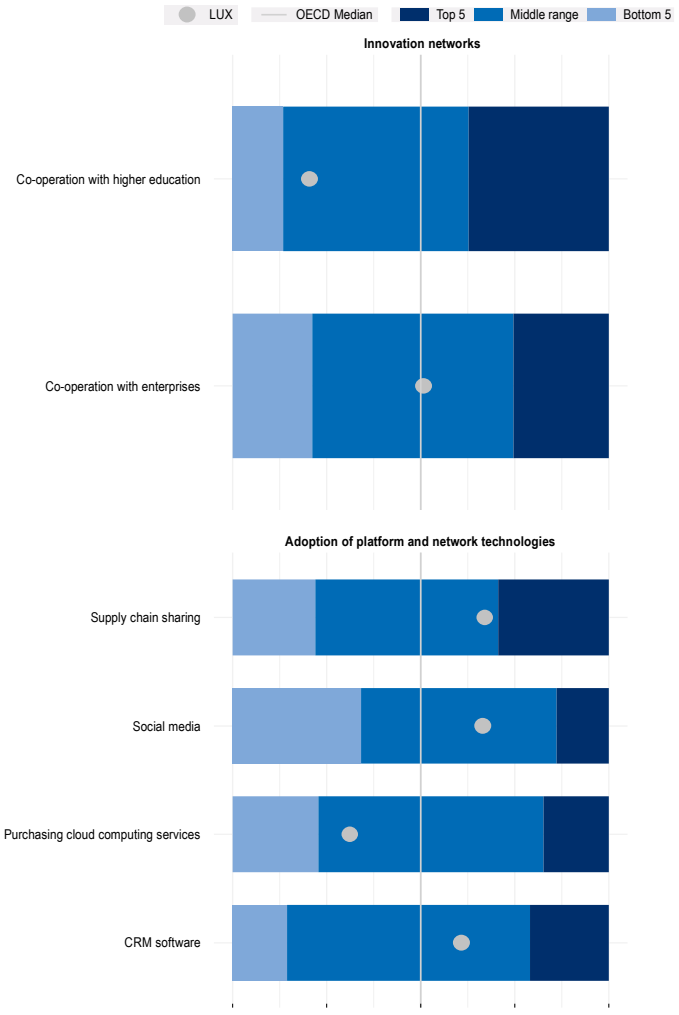
Figure 8.141. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Knowledge and innovation networks

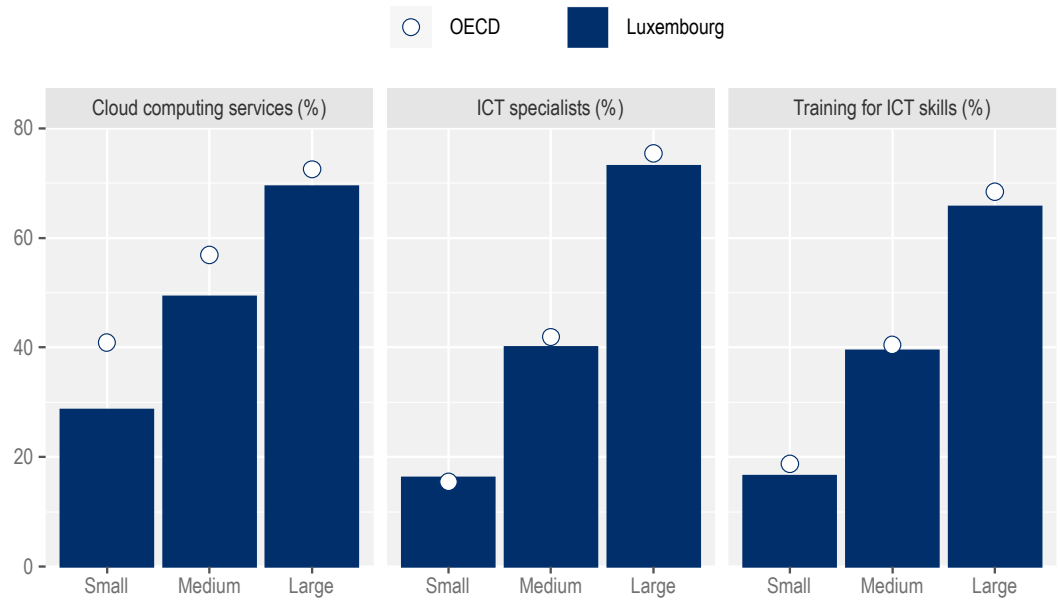
Figure 8.142. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.143. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

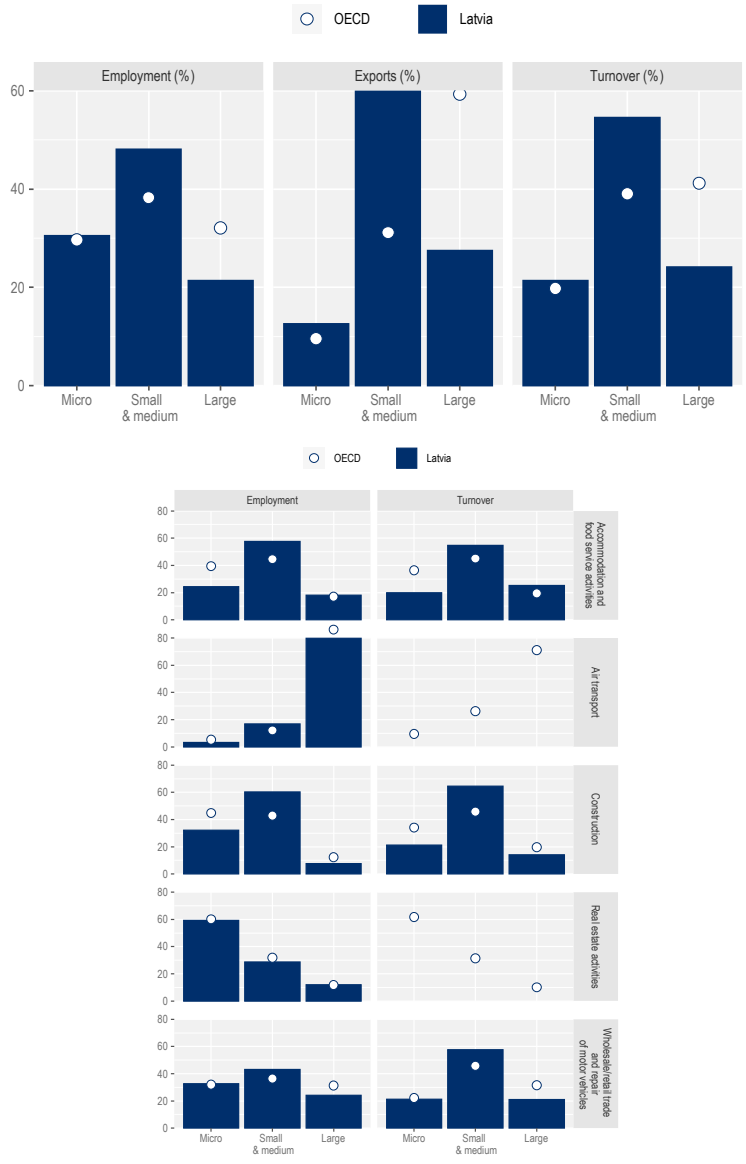


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Latvia

SME sector structure and performance

Figure 8.144. SME share of employment, exports, and turnover

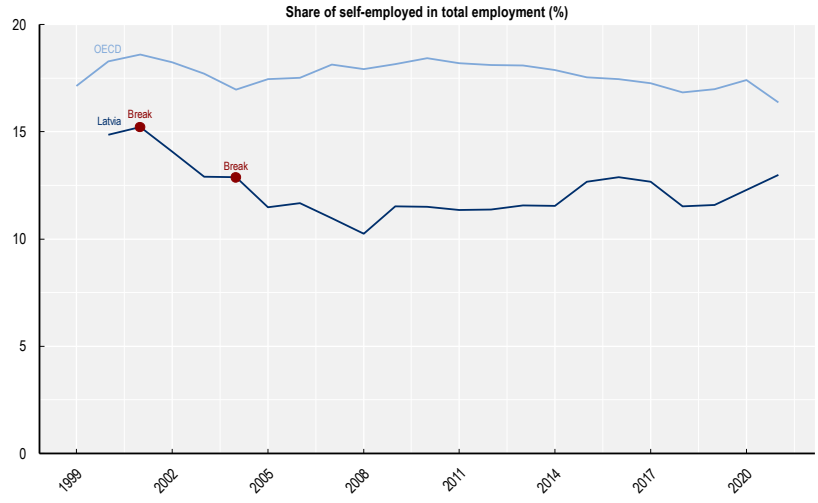


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

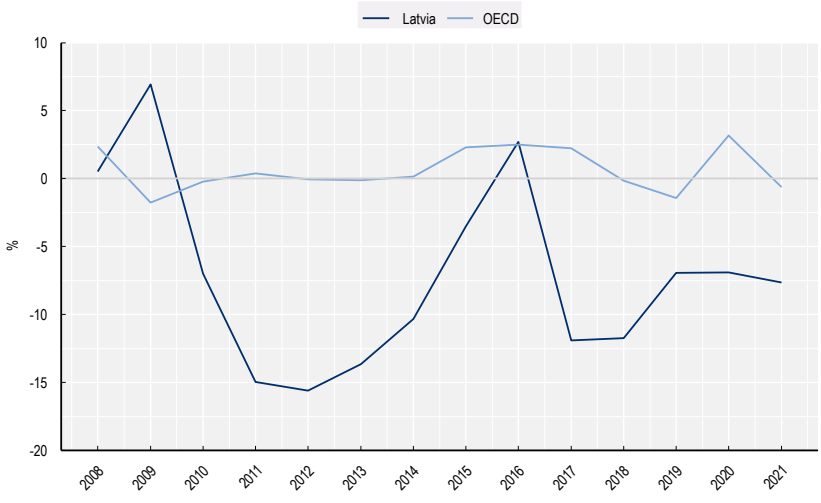
Figure 8.145. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

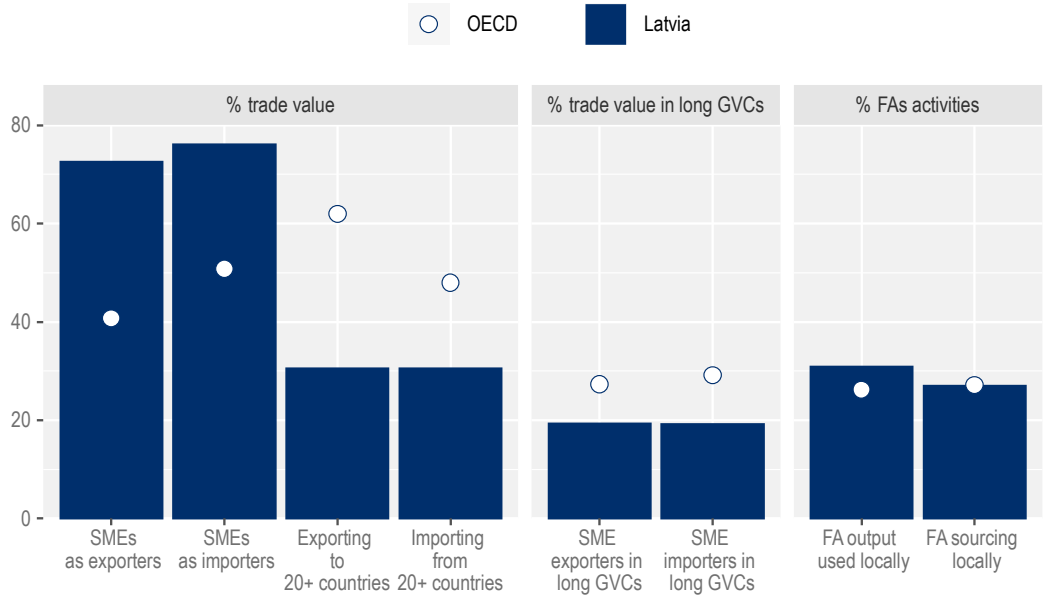
SME indebtedness

Figure 8.146. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



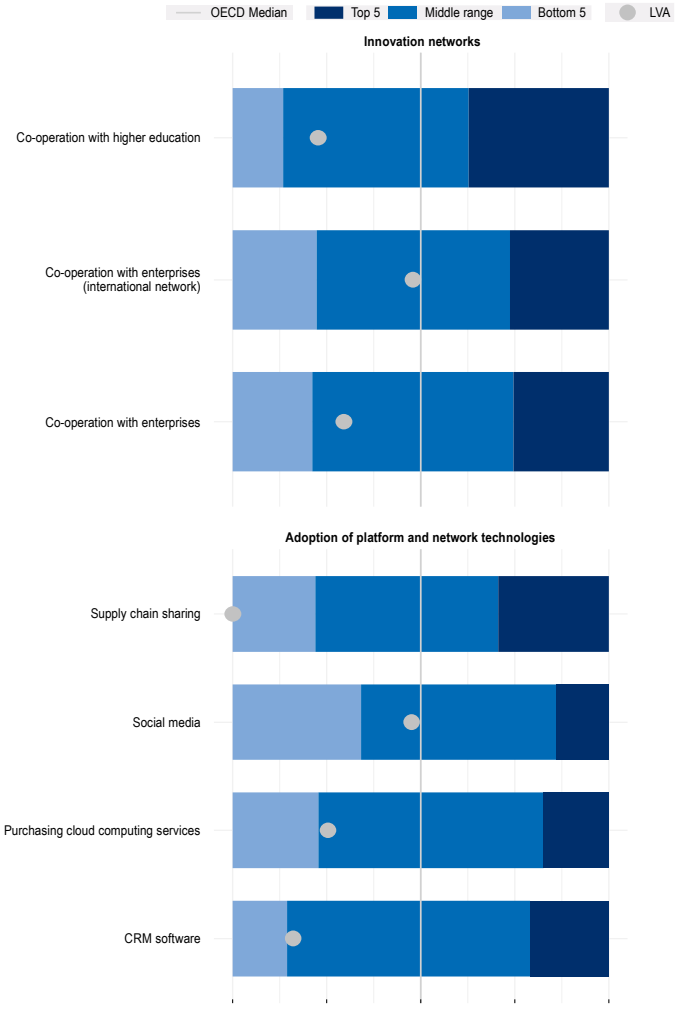
Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

Figure 8.147. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

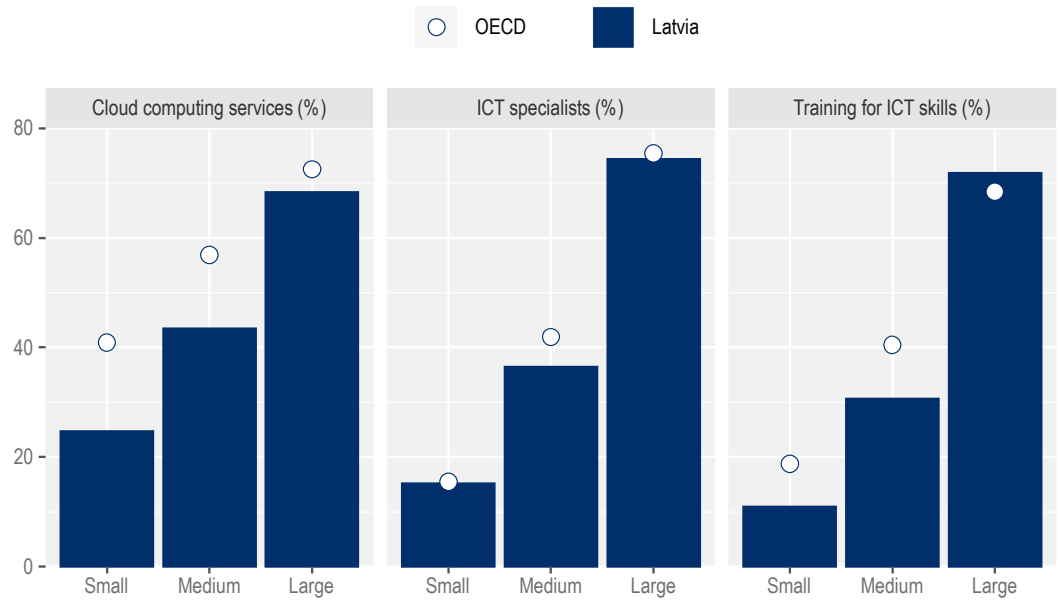
Figure 8.148. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.149. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

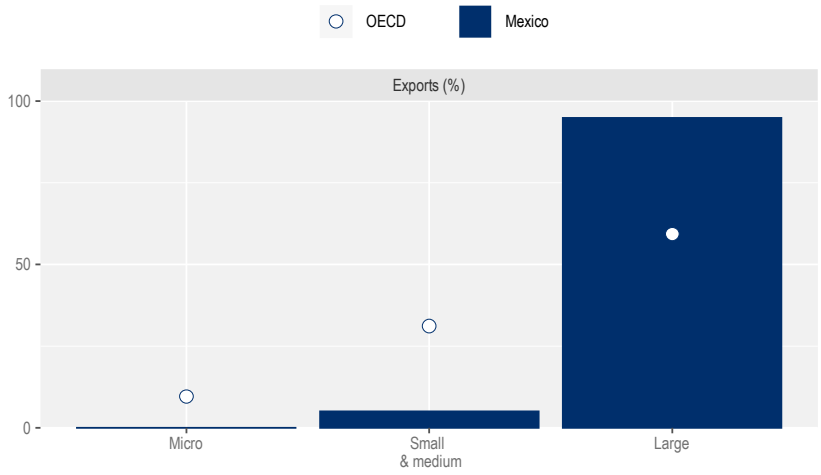


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Mexico

SME sector structure and performance

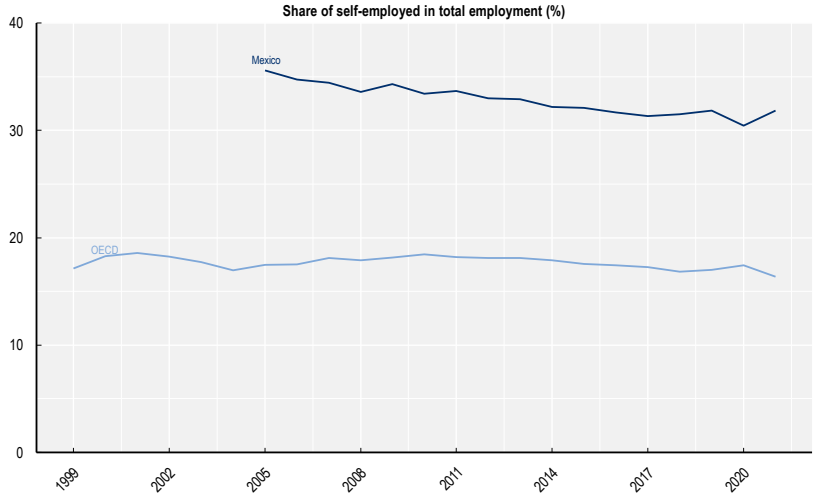
Figure 8.150. SME share of exports



.Note: Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.
Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

Figure 8.151. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

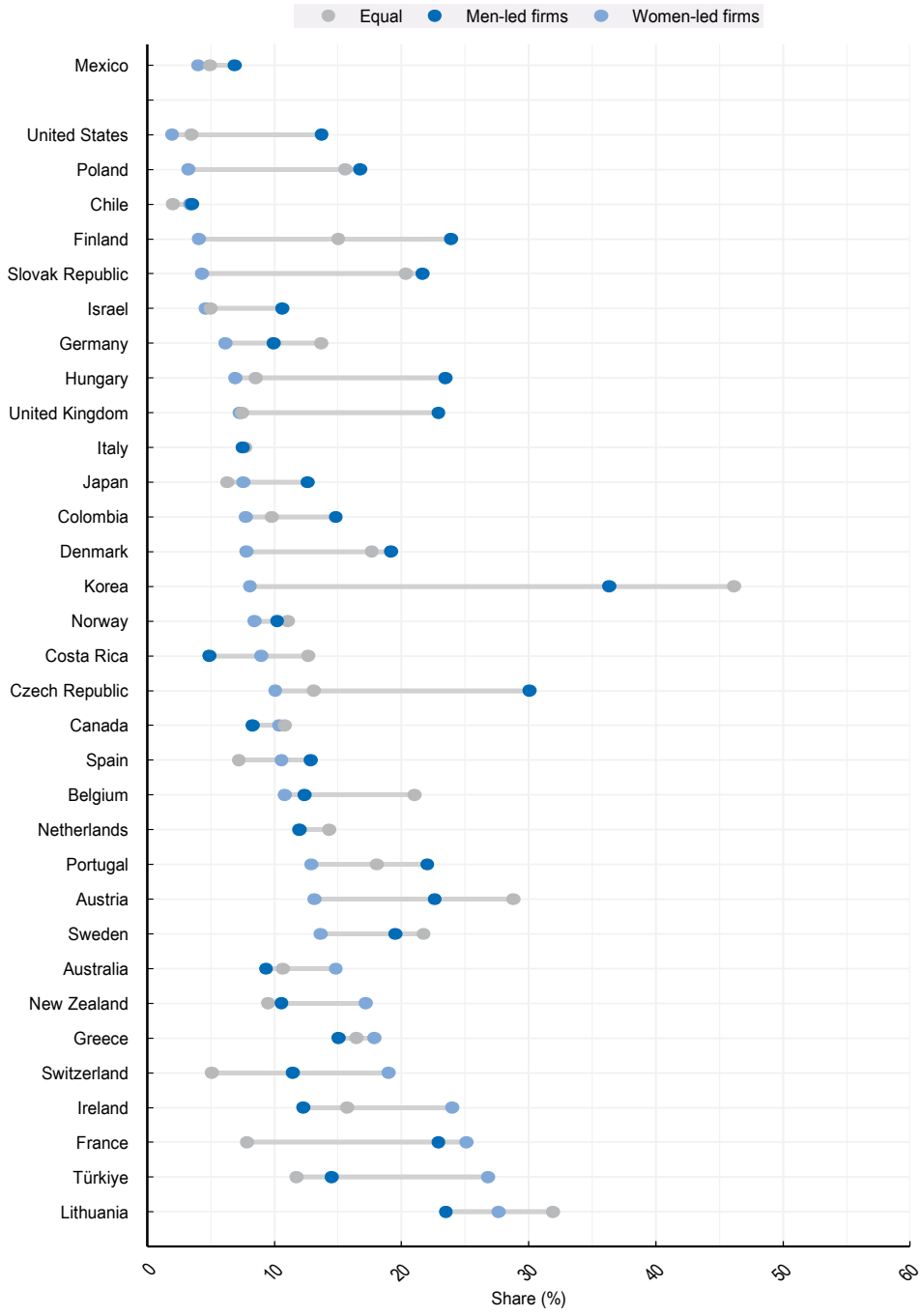
Figure 8.152. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

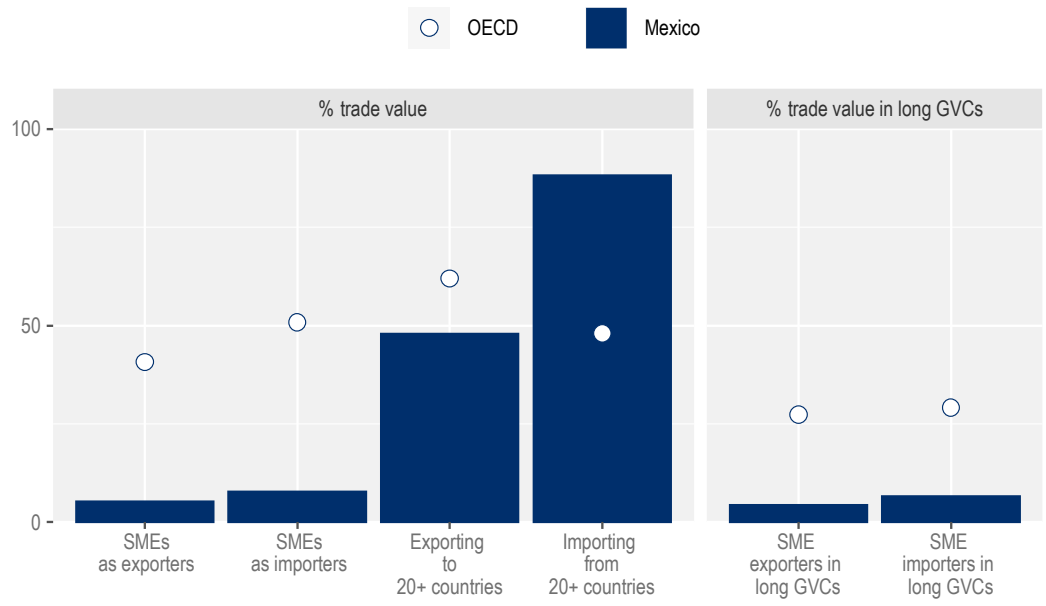
Women in trade and gender export gap

Figure 8.153. Share (%) of firms trading globally by gender of leadership



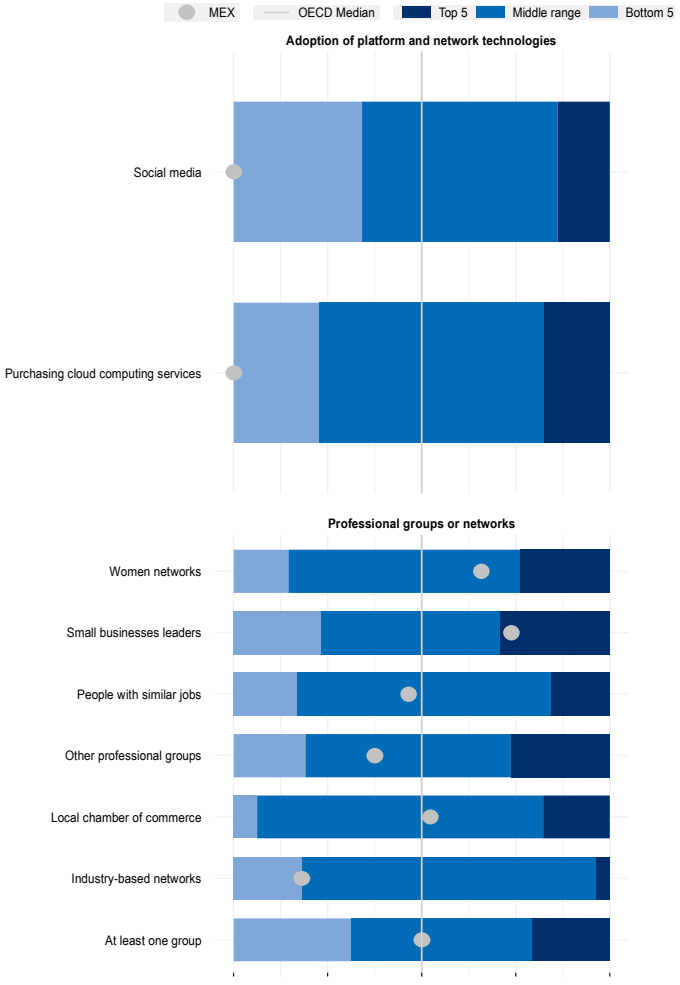
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.154. SME integration in trade (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Reference year: % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database.

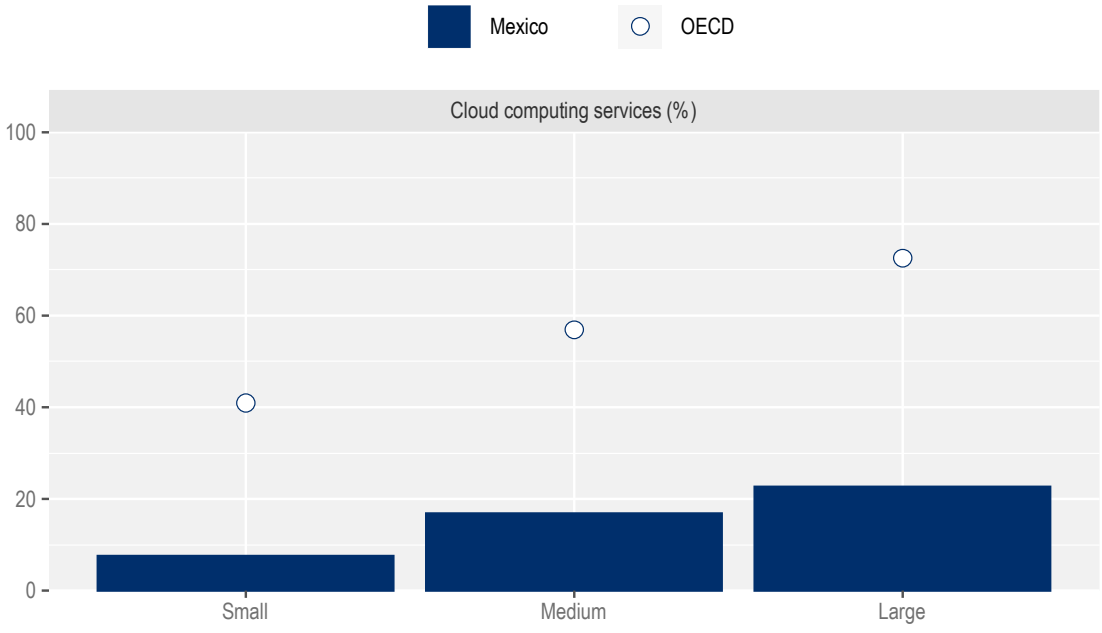
Figure 8.155. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.156. Share of firms accessing digital skills (%) by outsourcing, by firm size class

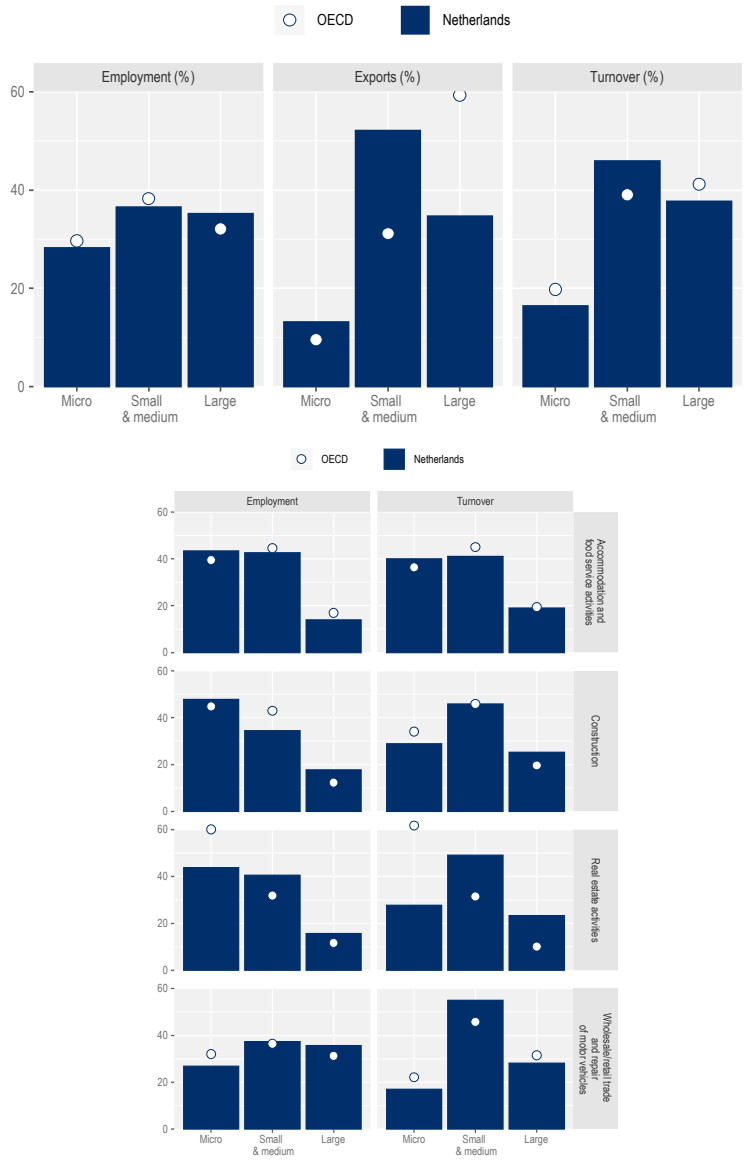


Note: Share (%) of businesses that purchased cloud computing services (%), latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Netherlands

SME sector structure and performance

Figure 8.157. SME share of employment, exports, and turnover

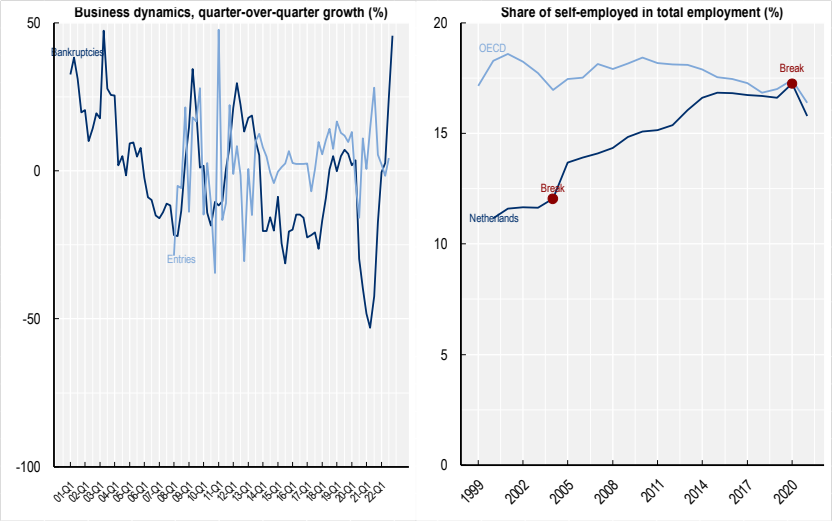


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

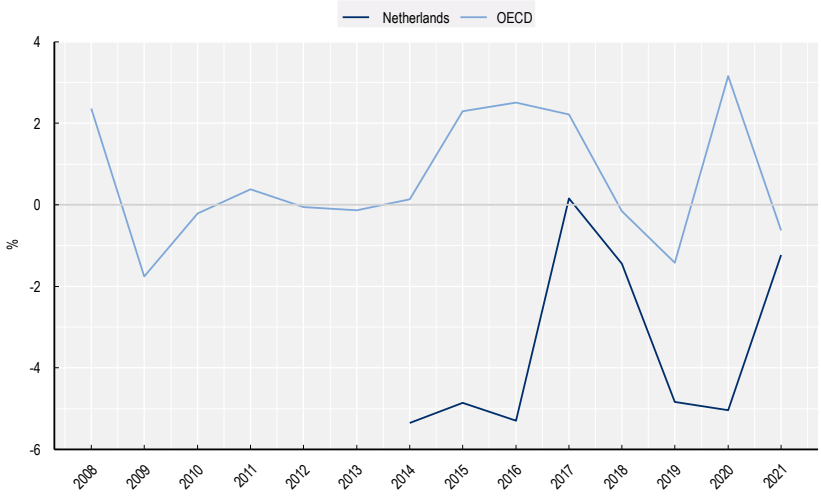
Figure 8.158. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

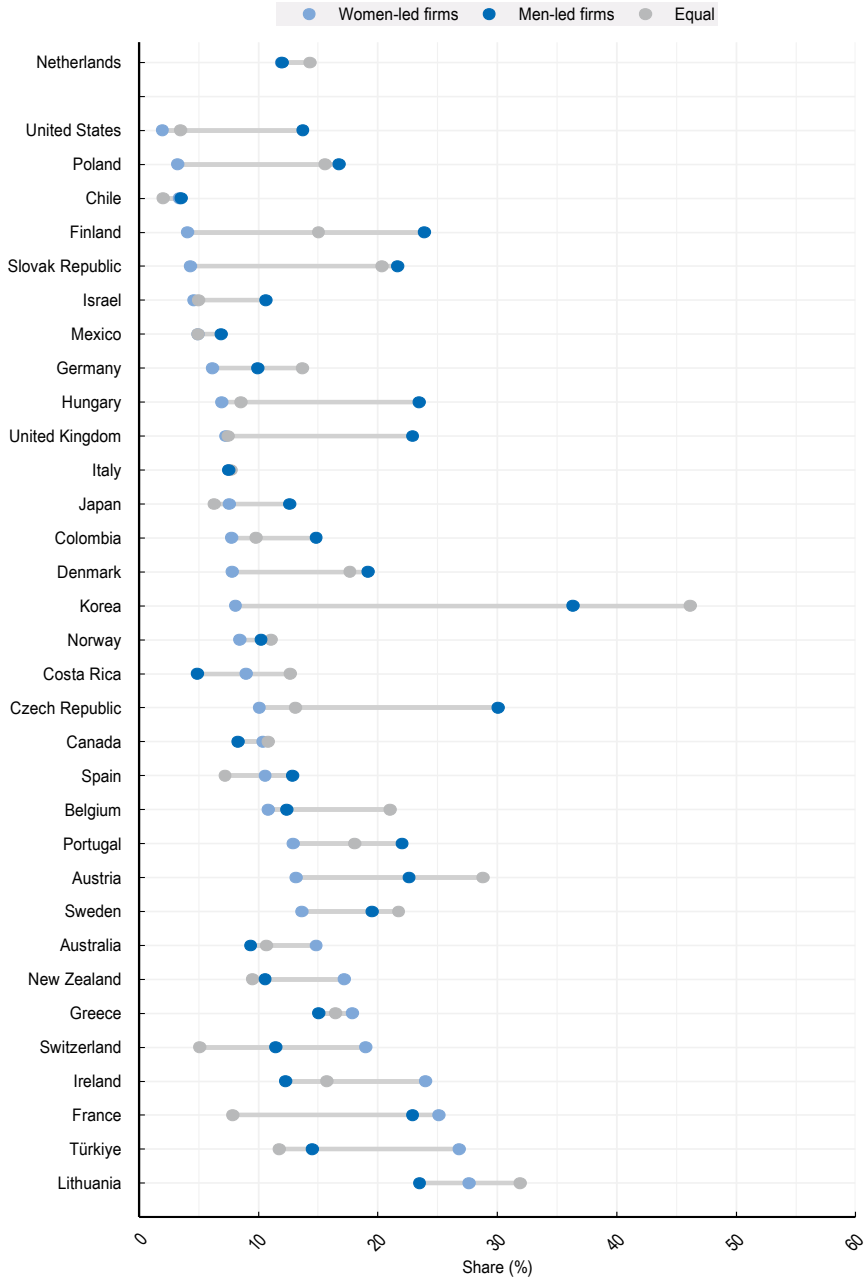
Figure 8.159. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

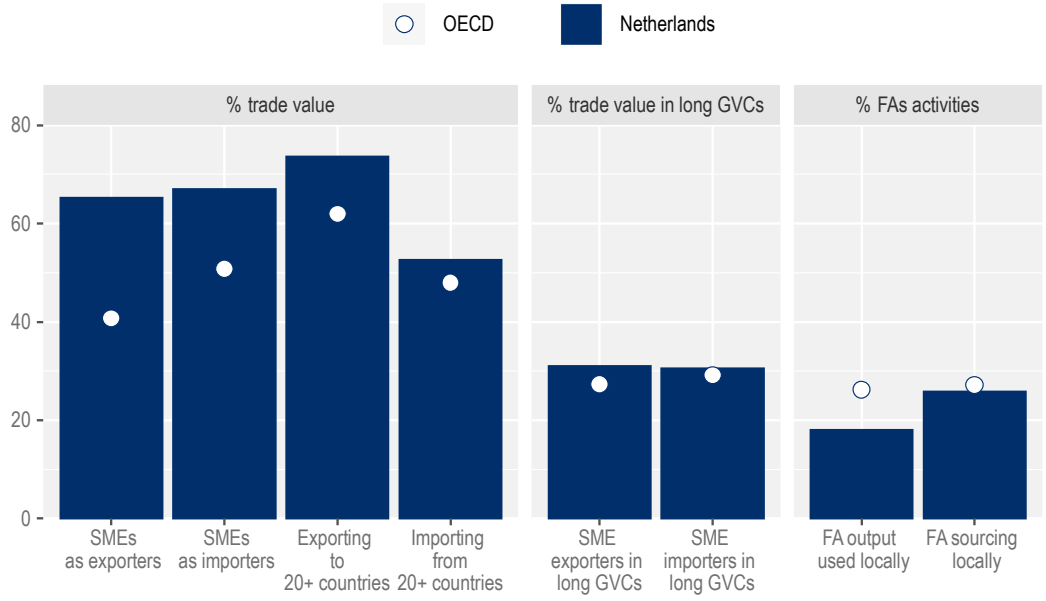
Women in trade and gender export gap

Figure 8.160. Share (%) of firms trading globally by gender of leadership



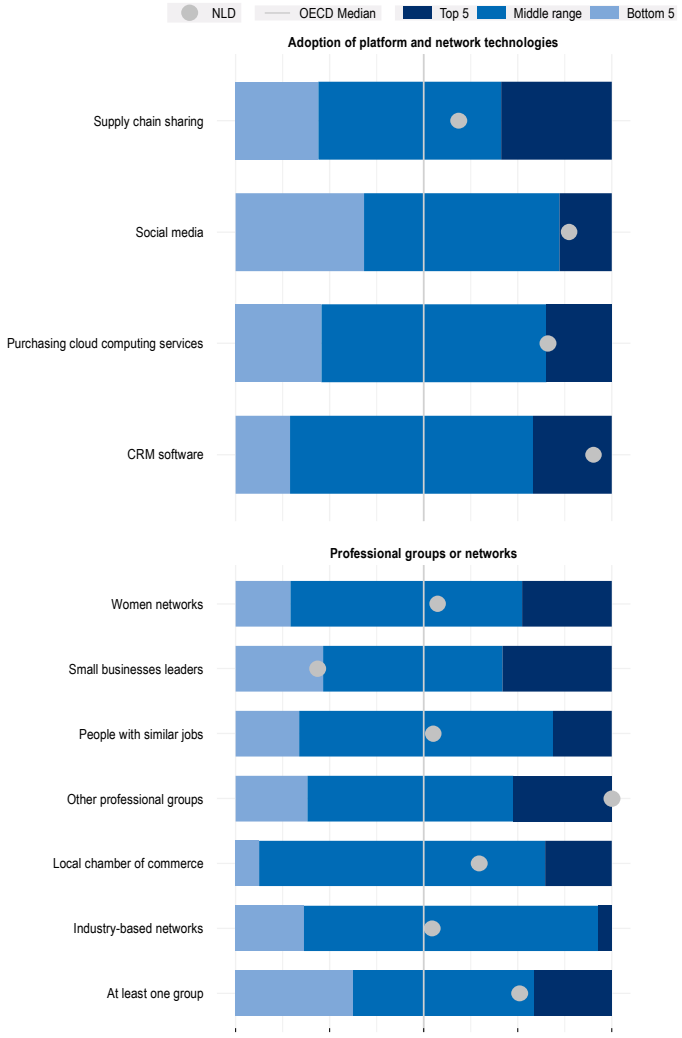
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.161. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

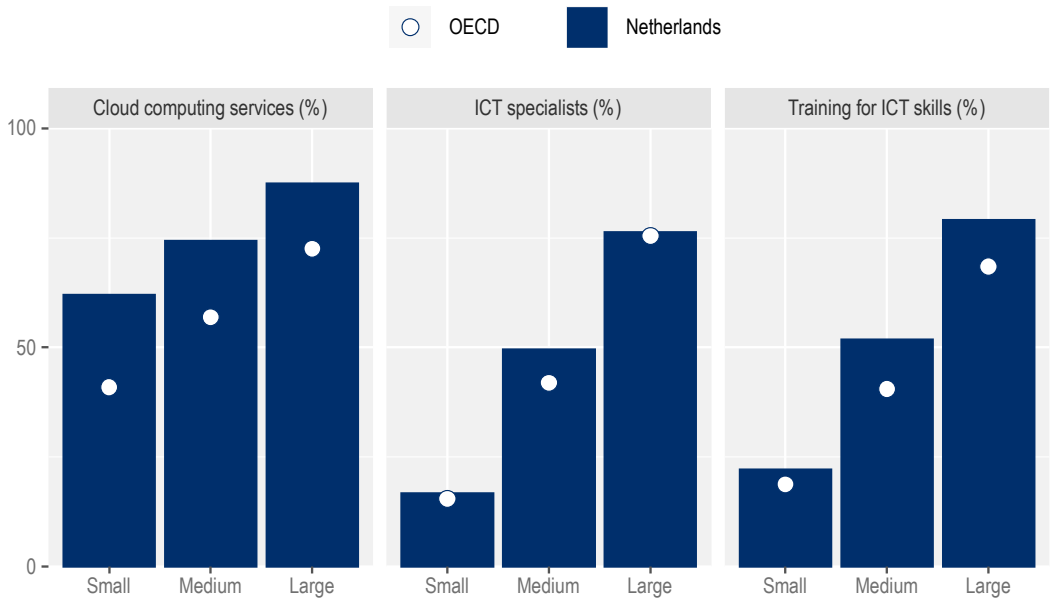
Figure 8.162. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.163. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

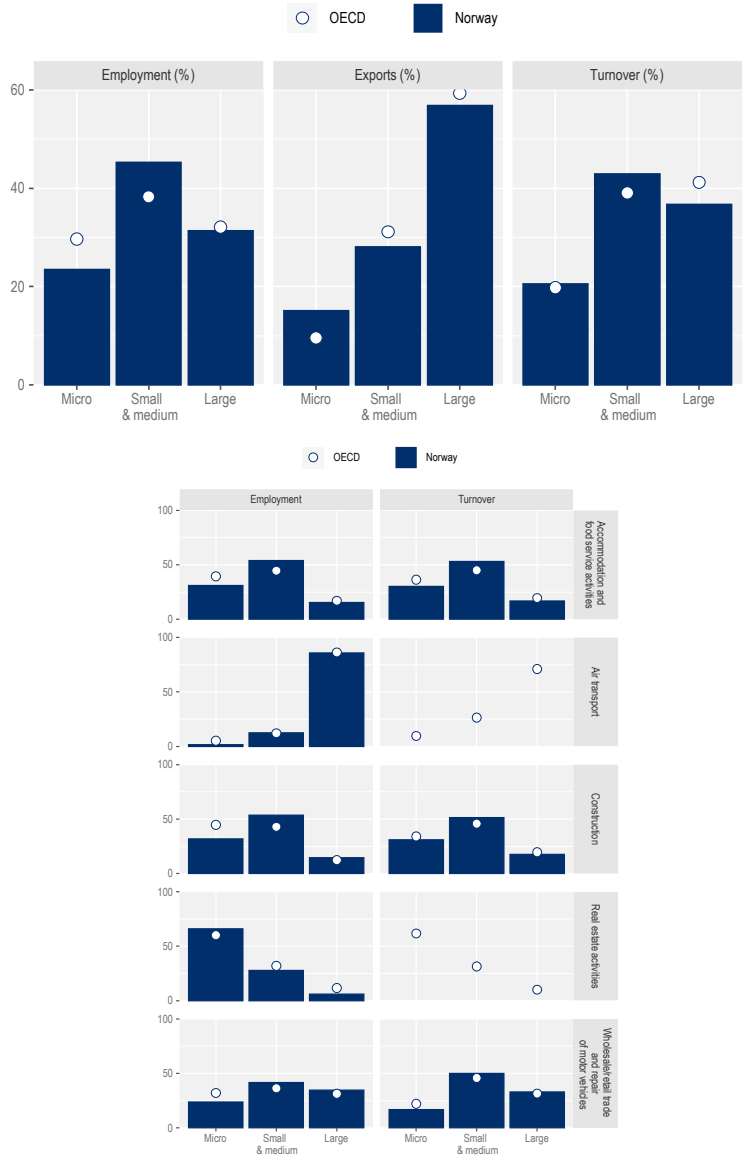


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Norway

SME sector structure and performance

Figure 8.164. SME share of employment, exports, and turnover

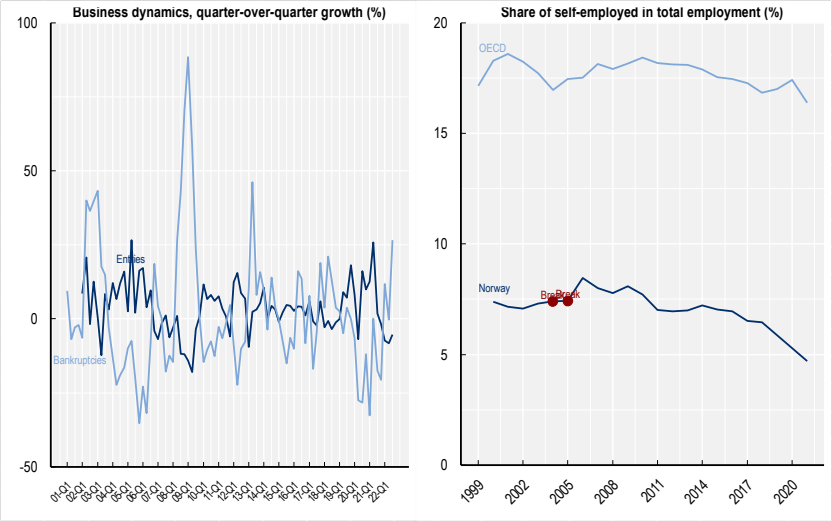


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

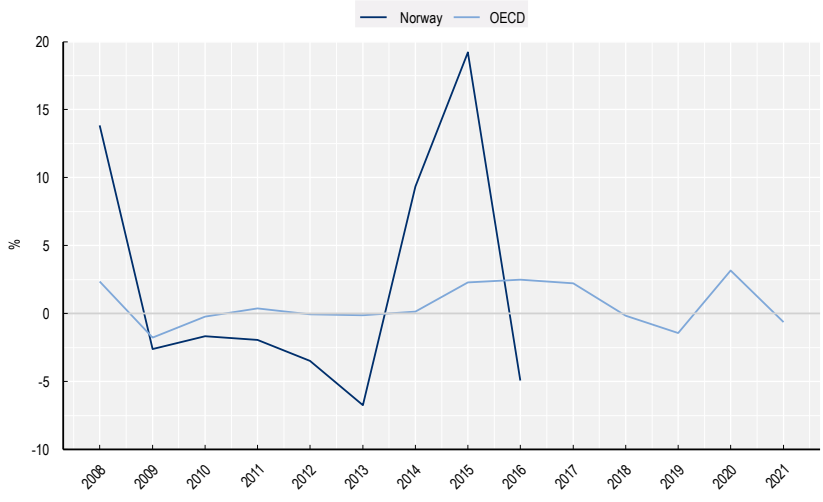
Figure 8.165. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

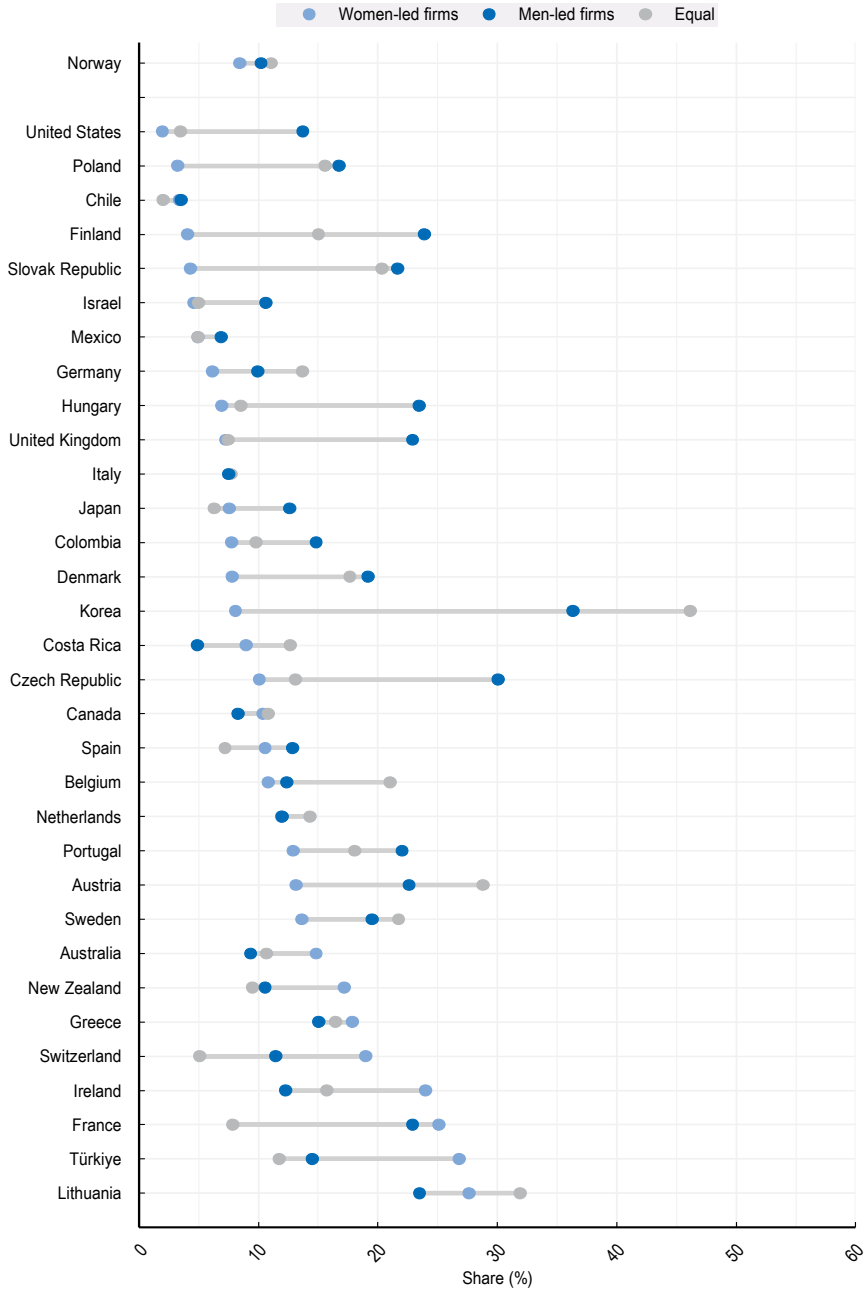
Figure 8.166. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

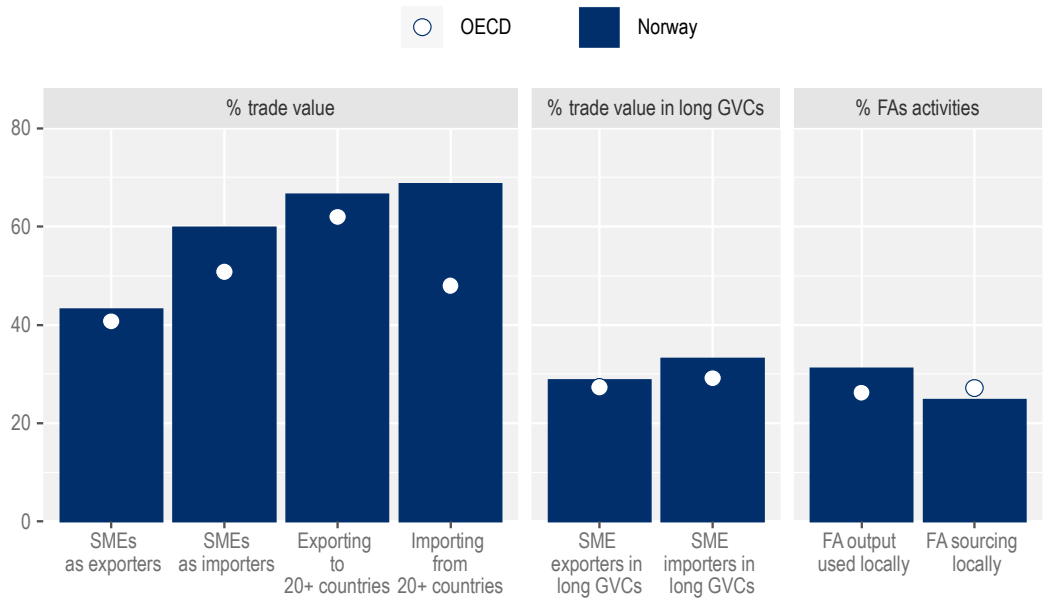
Women in trade and gender export gap

Figure 8.167. Share (%) of firms trading globally by gender of leadership



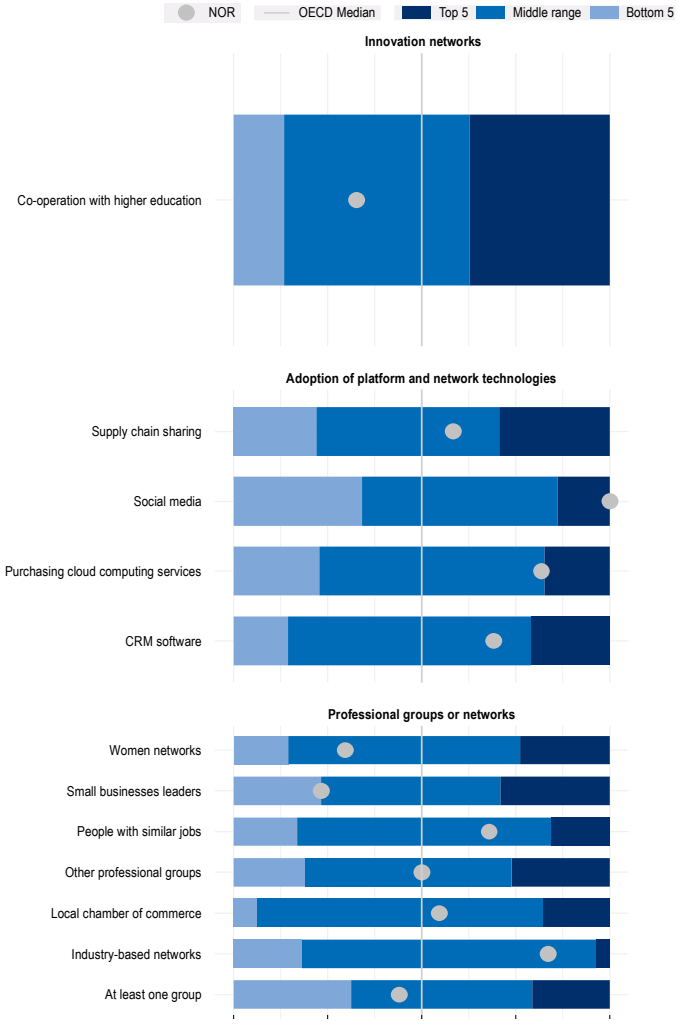
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.168. SME integration in trade and embeddedness of foreign affiliates' activities (%)



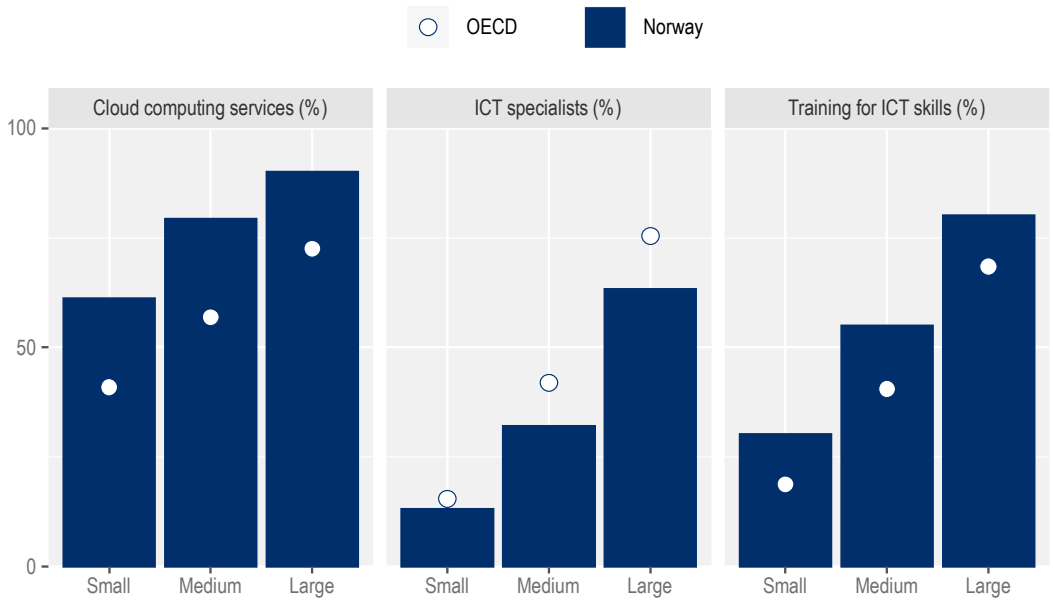
Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Figure 8.169. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.170. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

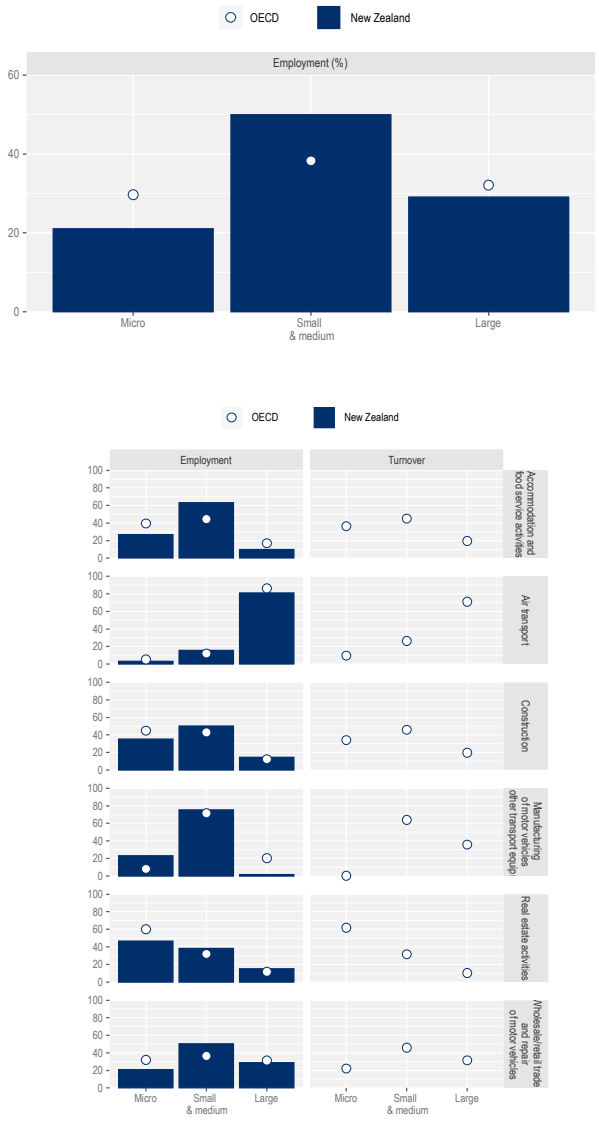


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

New Zealand

SME sector structure and performance

Figure 8.171. SME share of employment

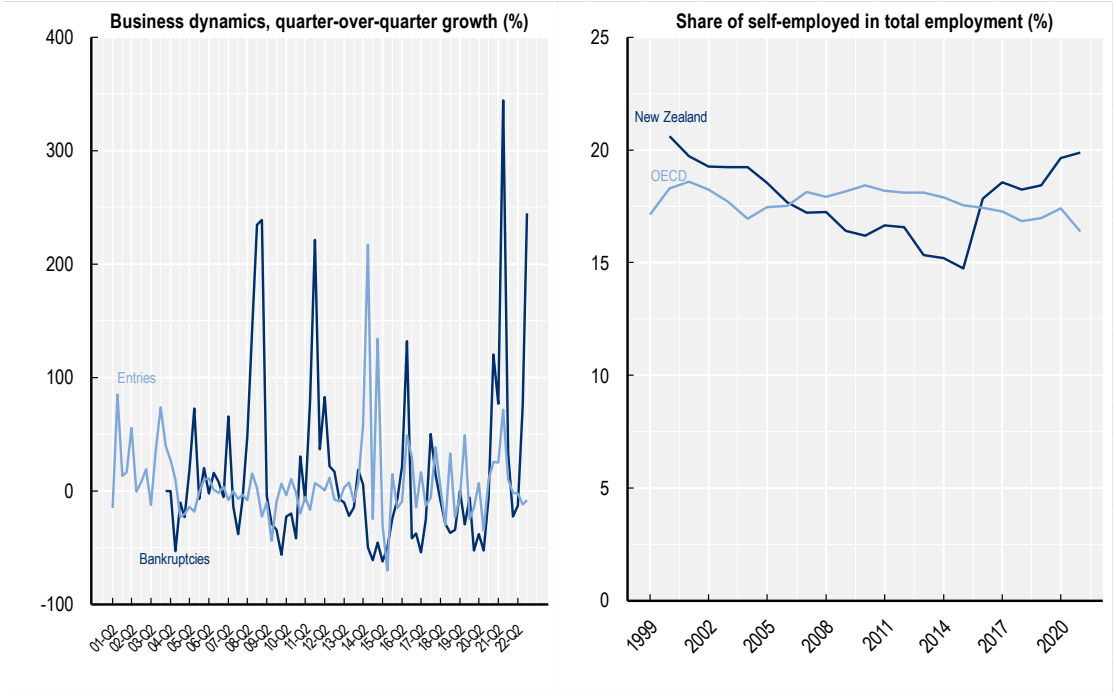


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

Figure 8.172. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

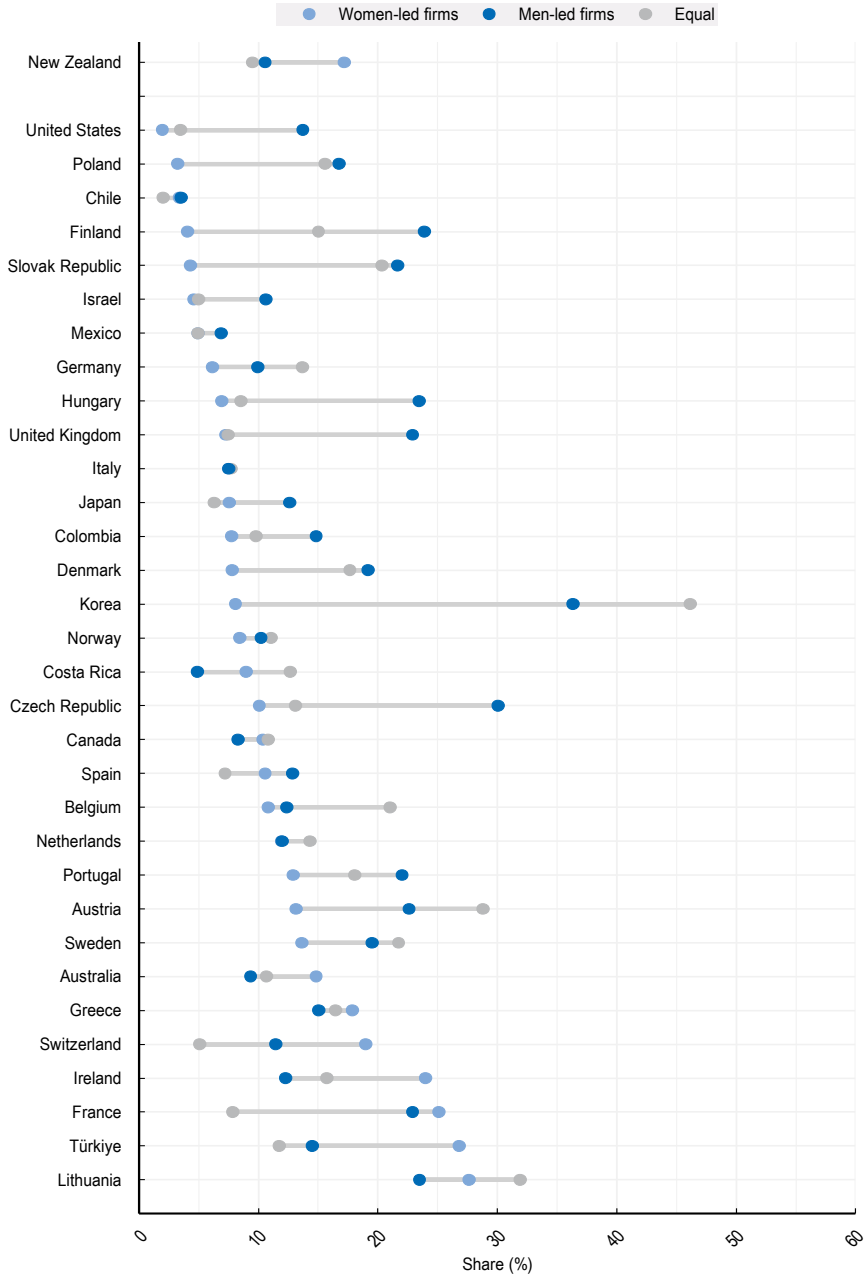
Figure 8.173. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

Women in trade and gender export gap

Figure 8.174. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

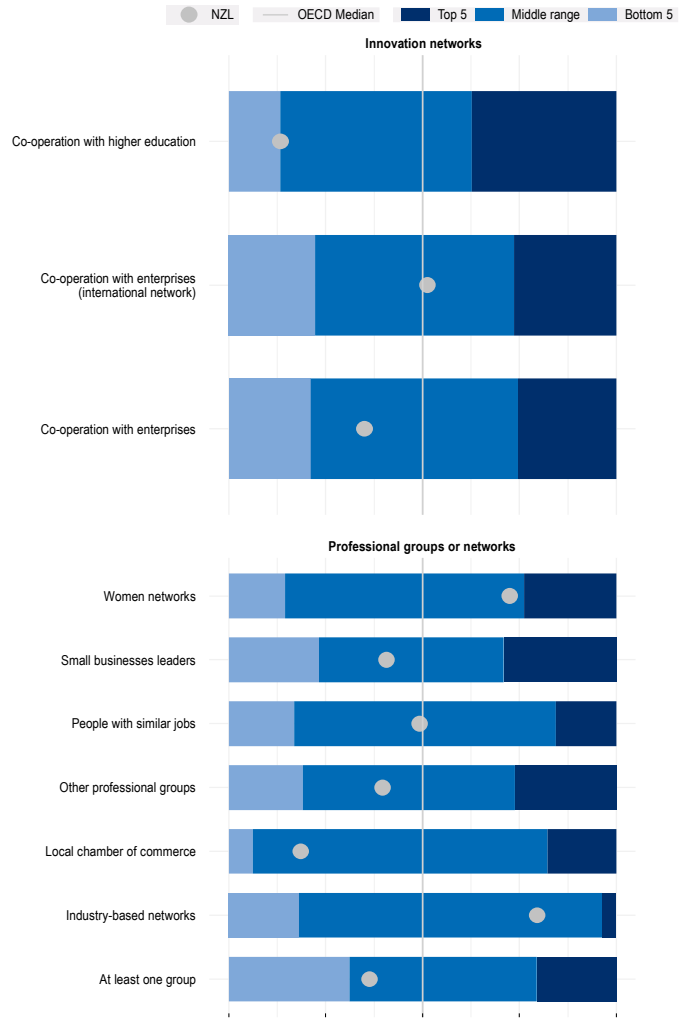
Figure 8.175. SME integration in trade (%)



Note: SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. Reference year: % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database.

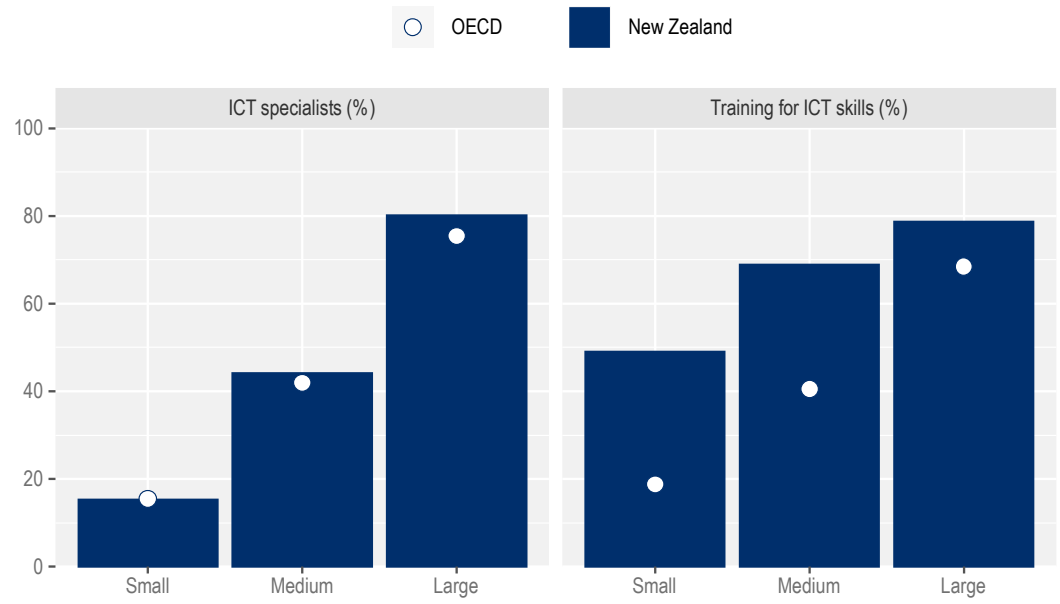
Knowledge and innovation networks

Figure 8.176. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.177. Share of firms accessing digital skills (%) by hiring or training, by firm size class

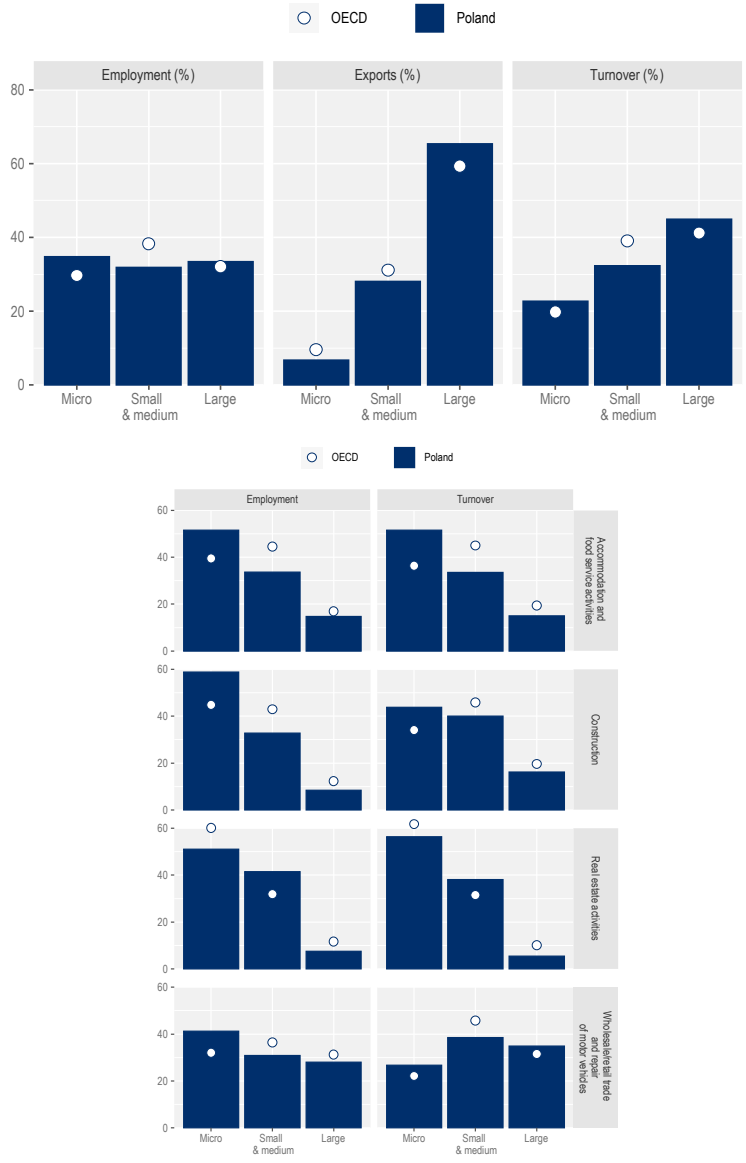


Note: Share (%) of businesses that employed ICT specialists in the last 12 months and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Poland

SME sector structure and performance

Figure 8.178. SME share of employment, exports, and turnover

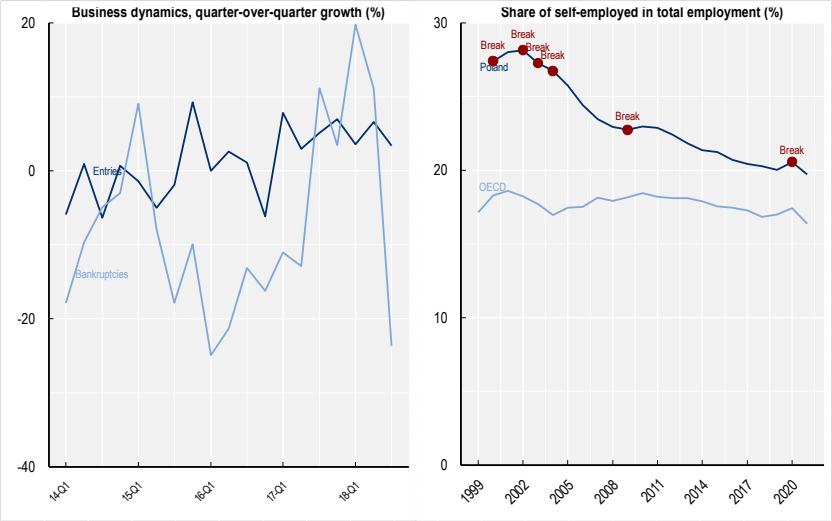


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

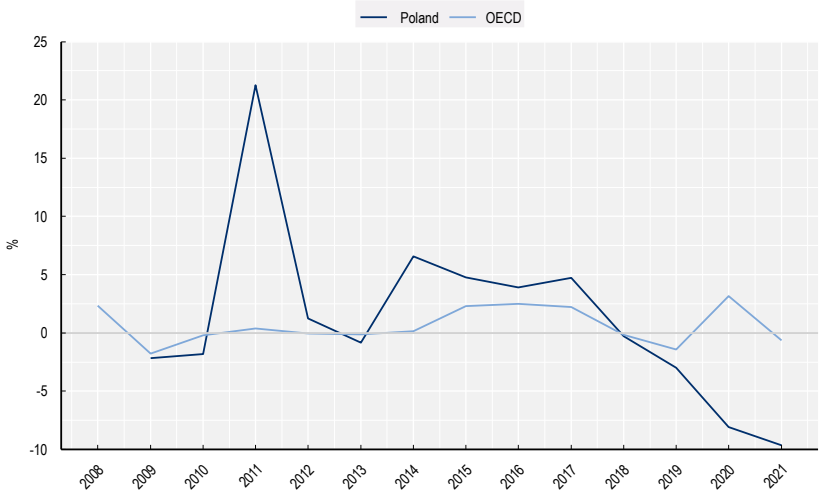
Figure 8.179. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

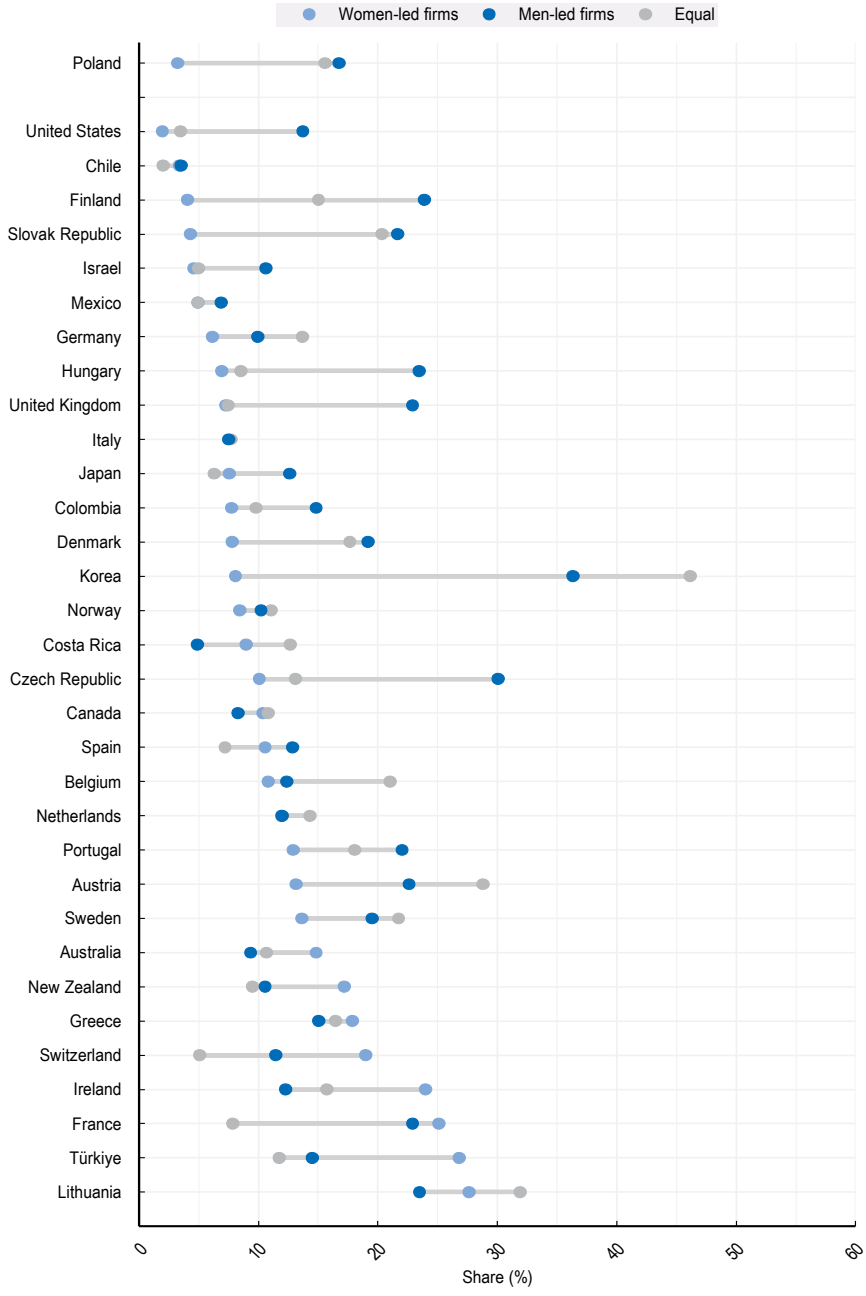
Figure 8.180. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

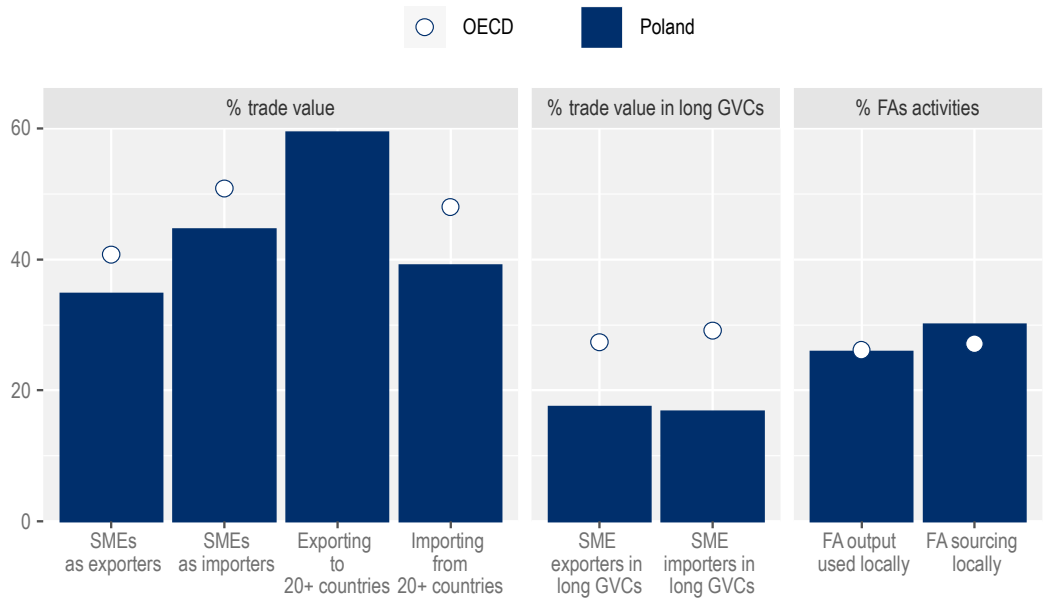
Women in trade and gender export gap

Figure 8.181. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

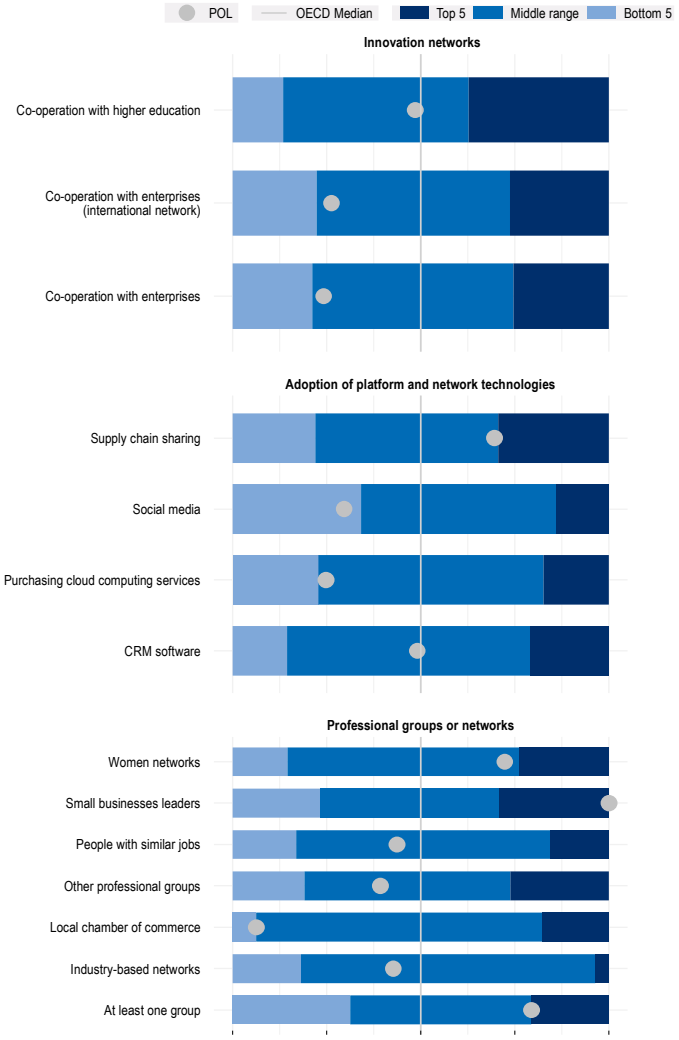
Figure 8.182. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

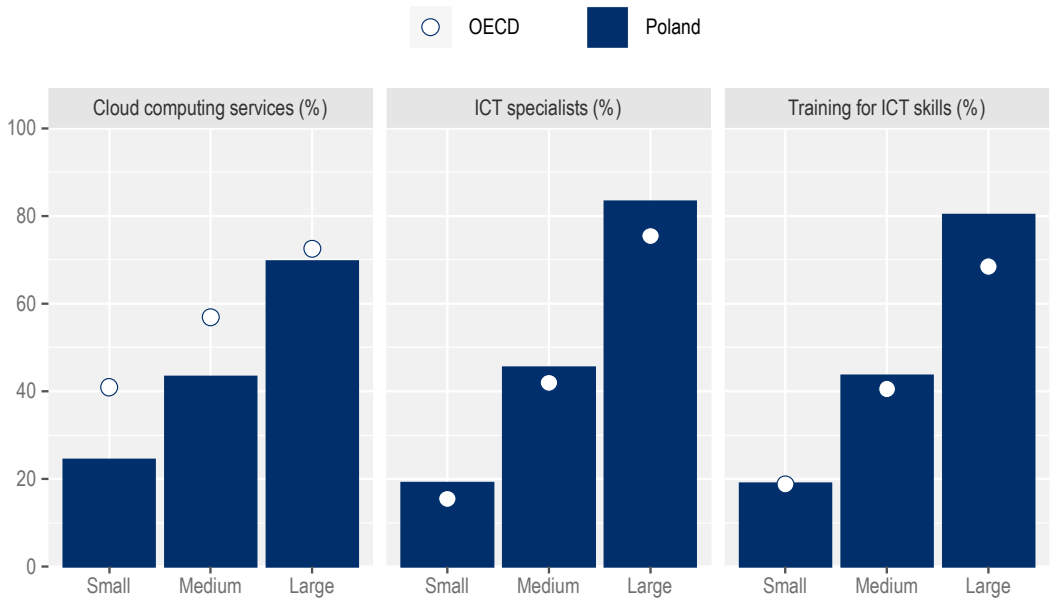
Knowledge and innovation networks

Figure 8.183. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.184. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

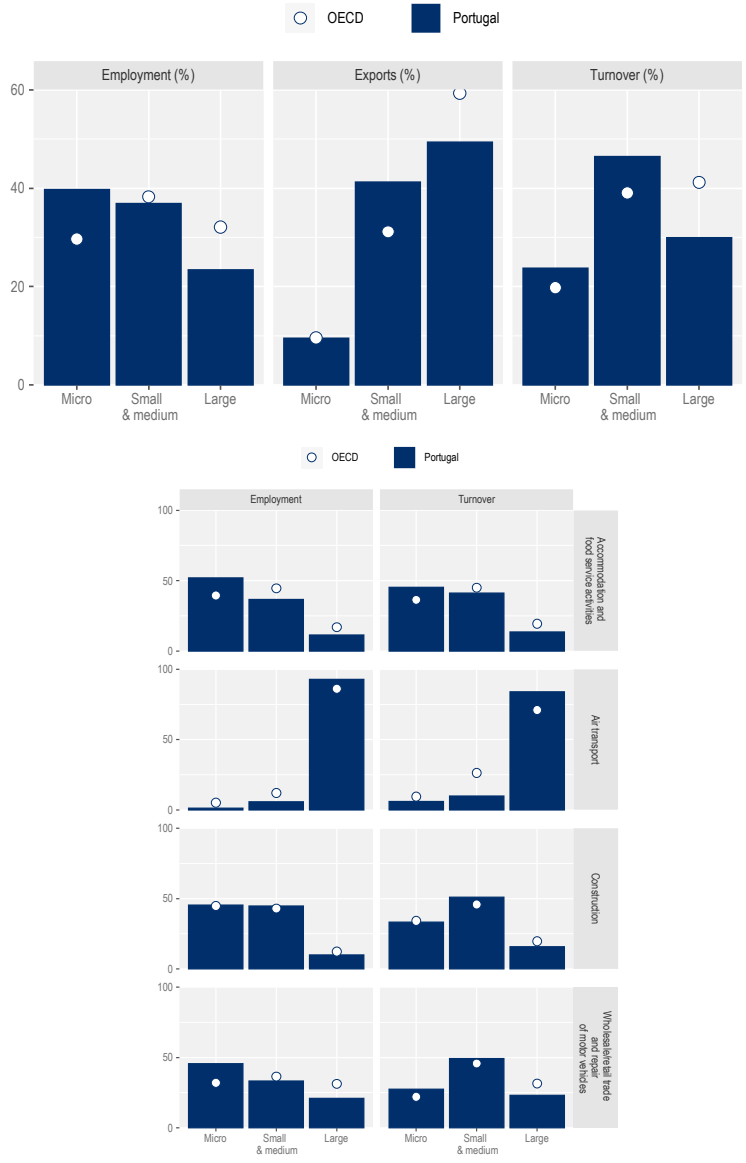


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Portugal

SME sector structure and performance

Figure 8.185. SME share of employment, exports, and turnover

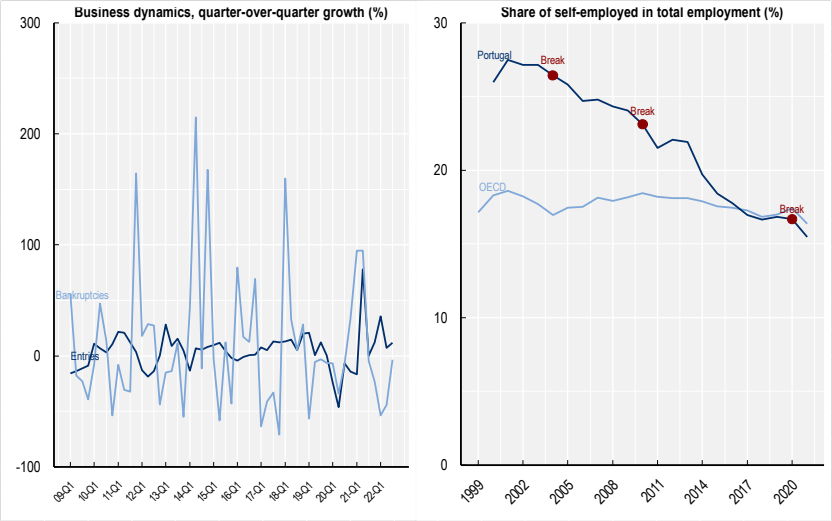


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

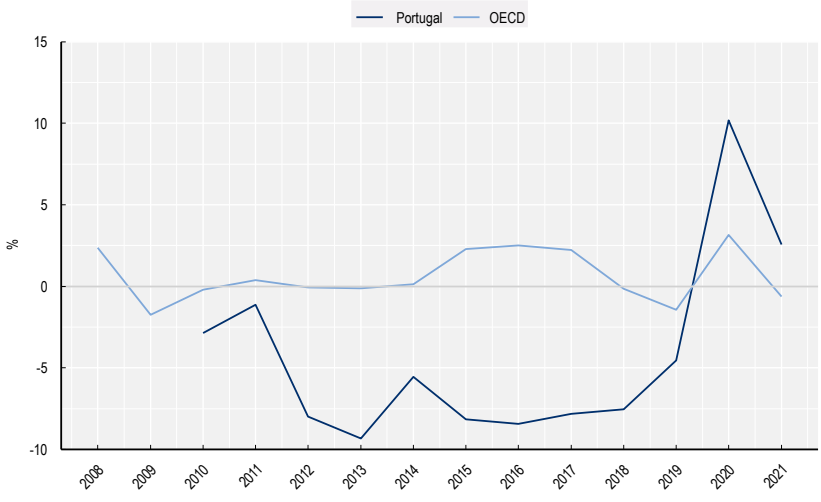
Figure 8.186. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

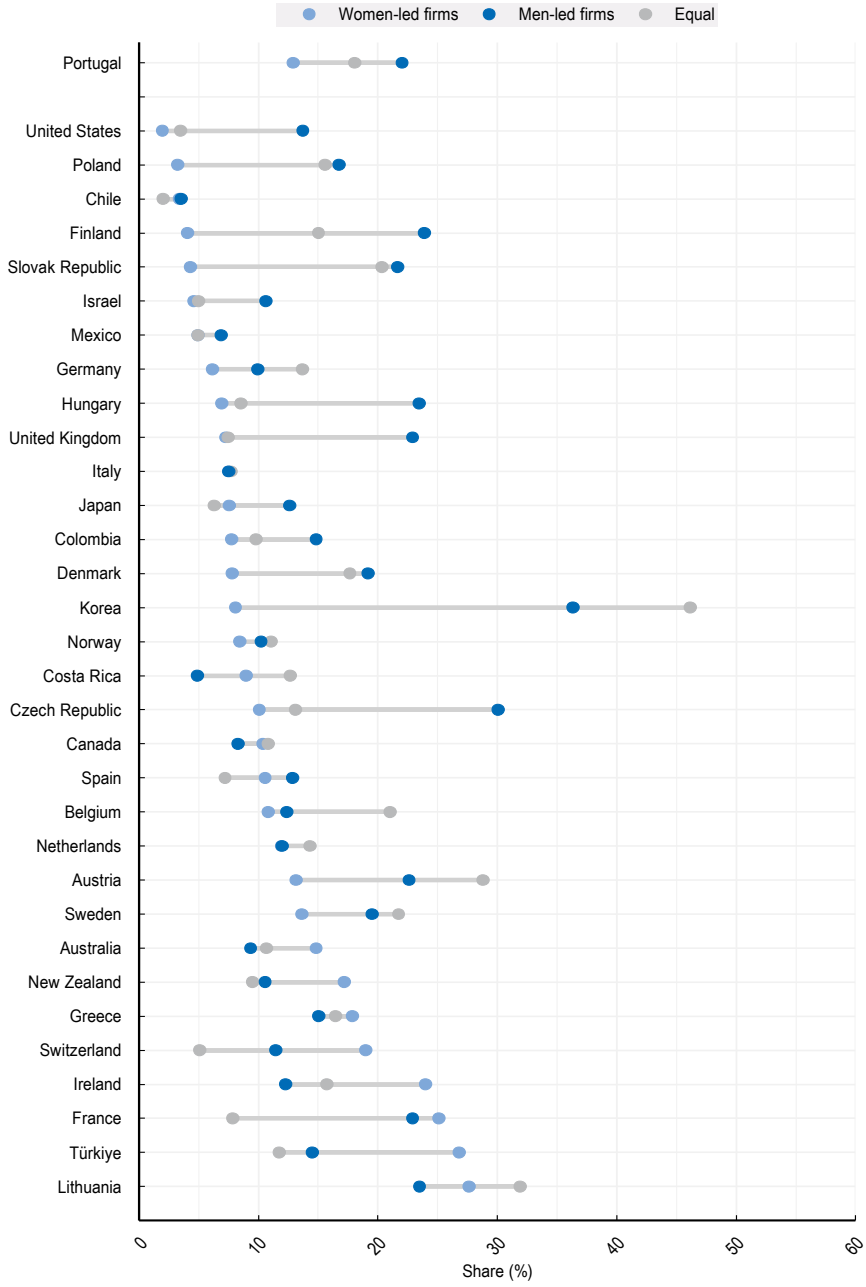
Figure 8.187. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

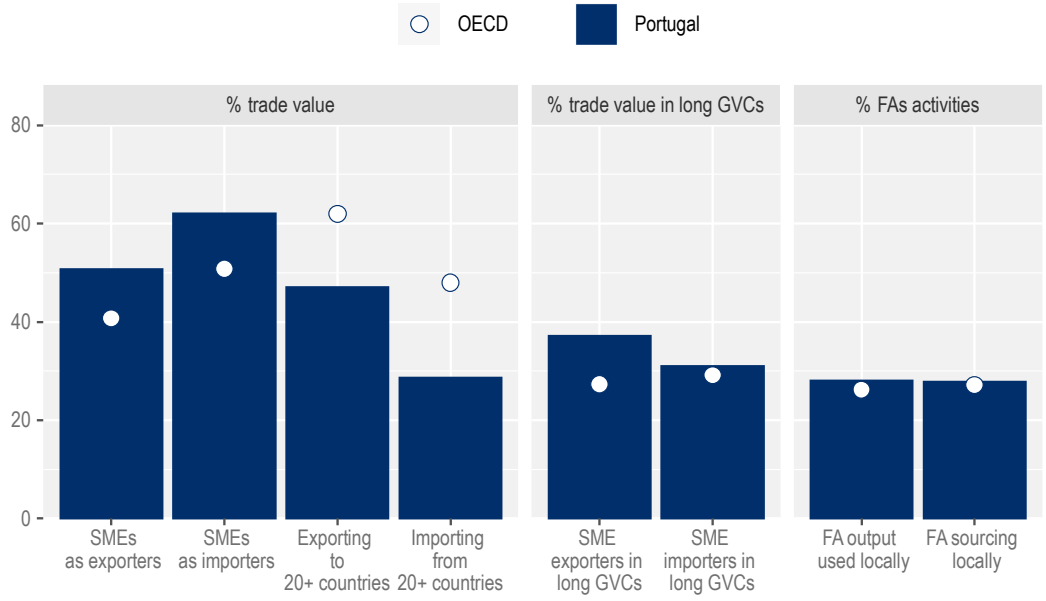
Women in trade and gender export gap

Figure 8.188. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

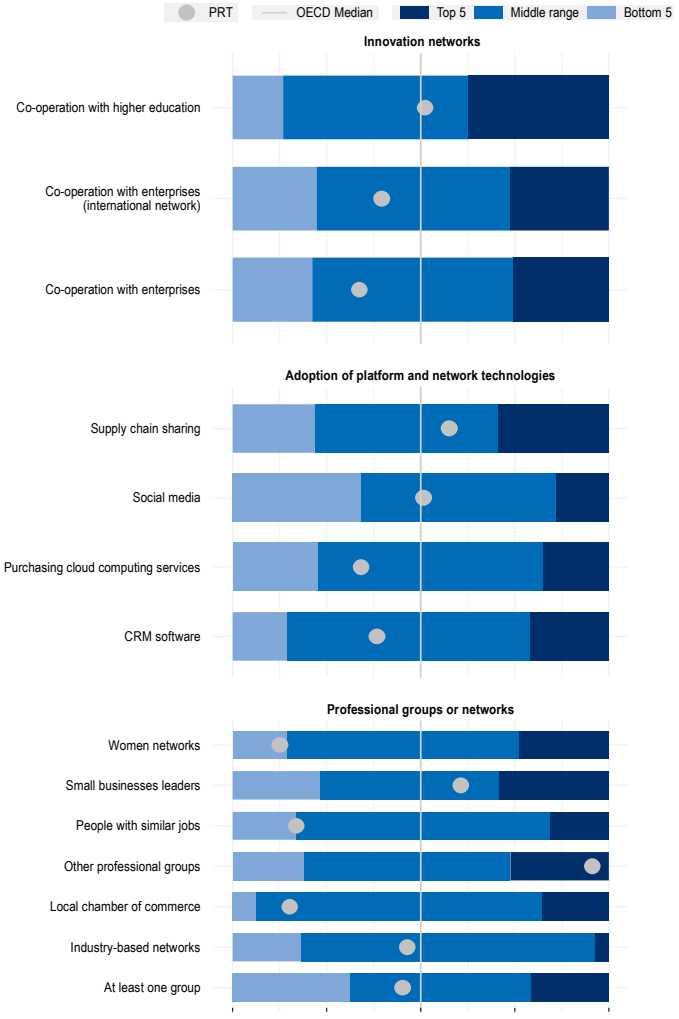
Figure 8.189. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

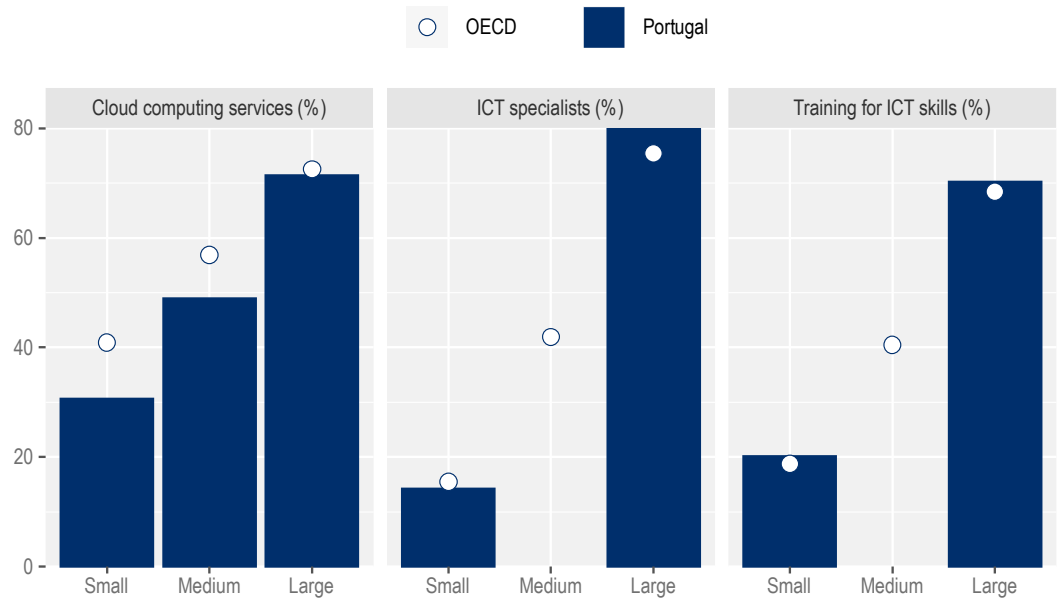
Knowledge and innovation networks

Figure 8.190. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.191. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

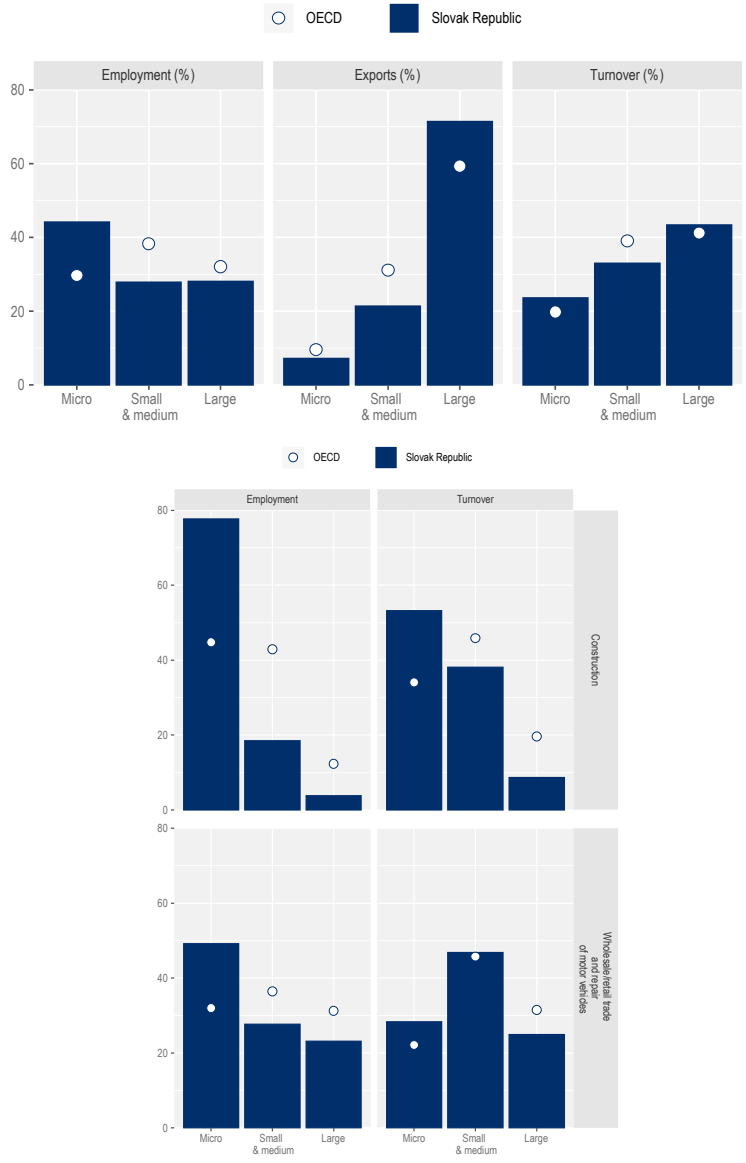


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Slovak Republic

SME sector structure and performance

Figure 8.192. SME share of employment, exports, and turnover

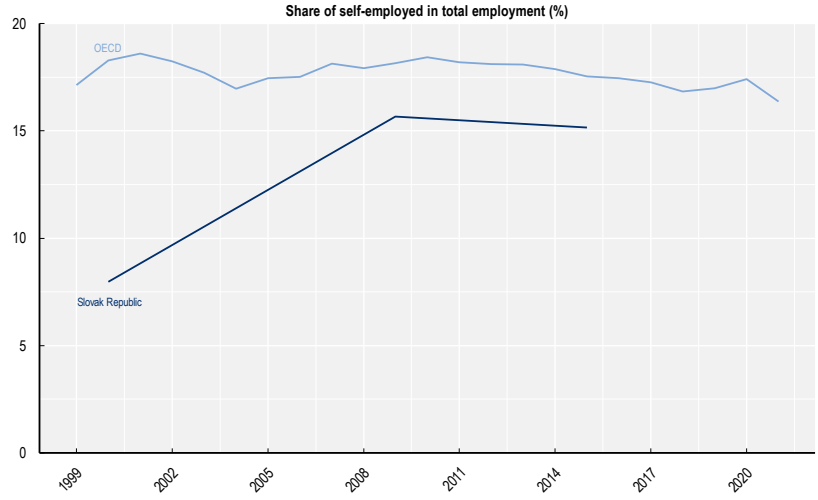


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

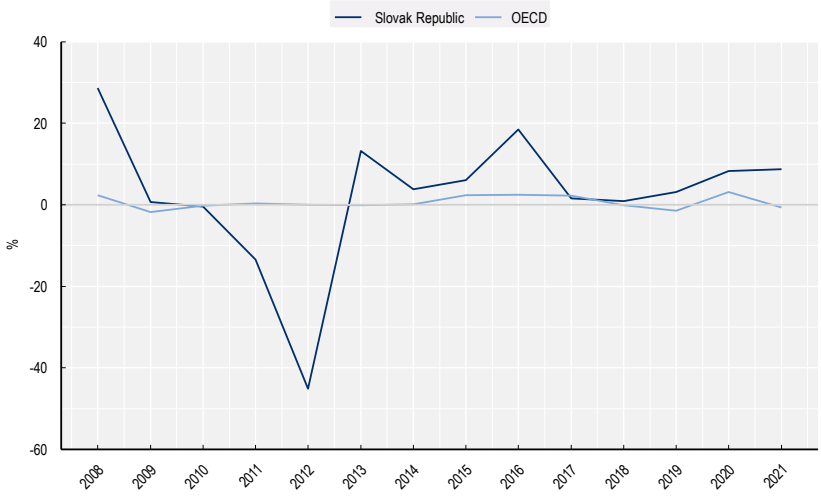
Figure 8.193. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

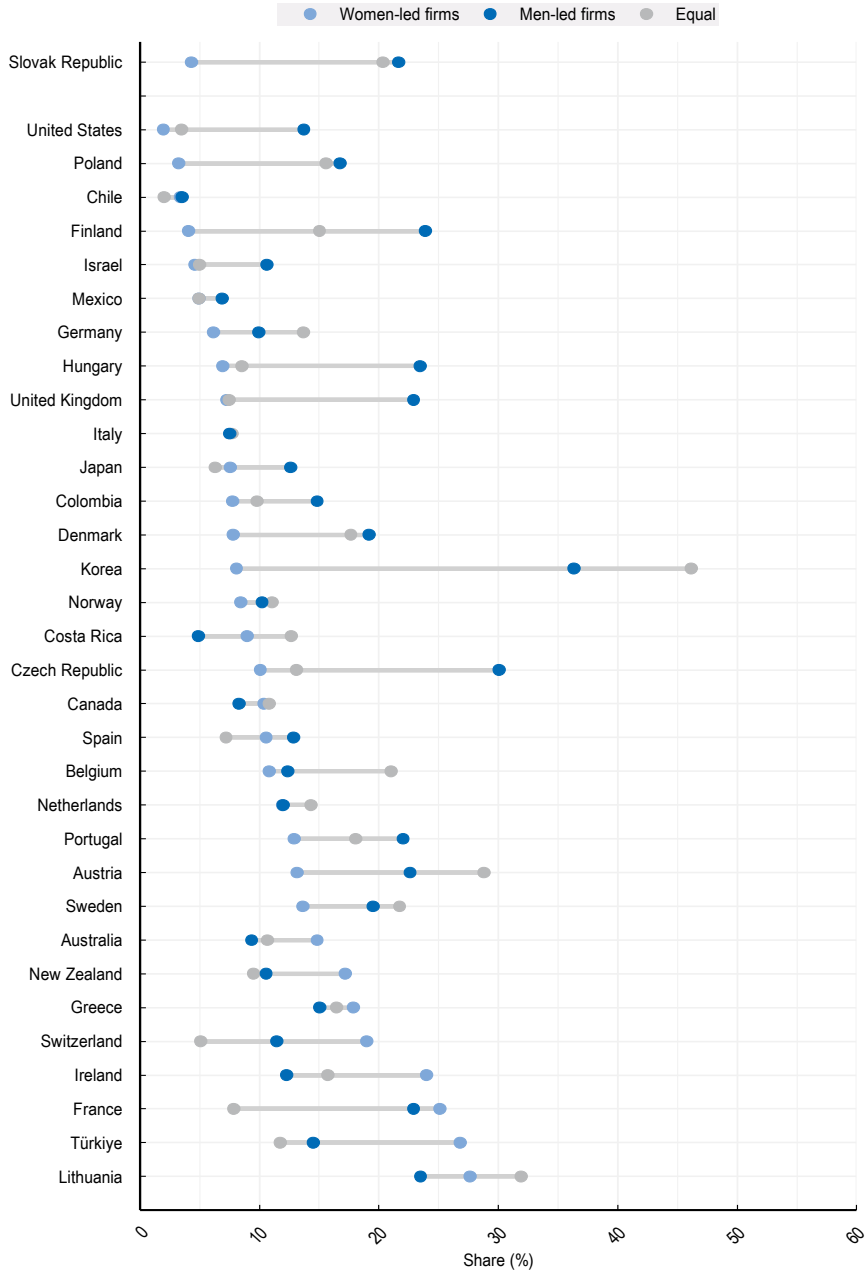
Figure 8.194. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

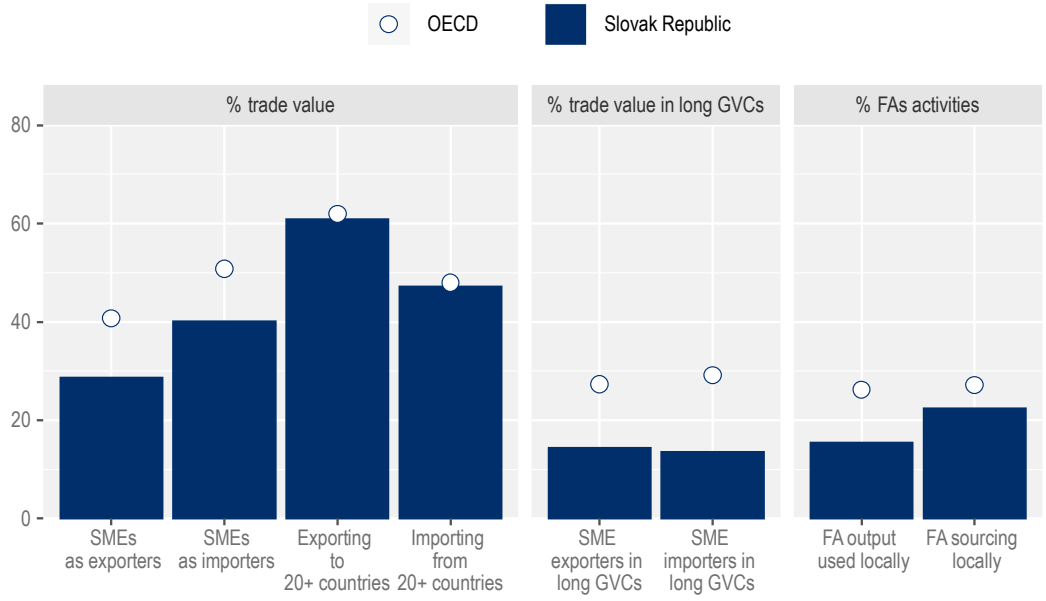
Women in trade and gender export gap

Figure 8.195. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

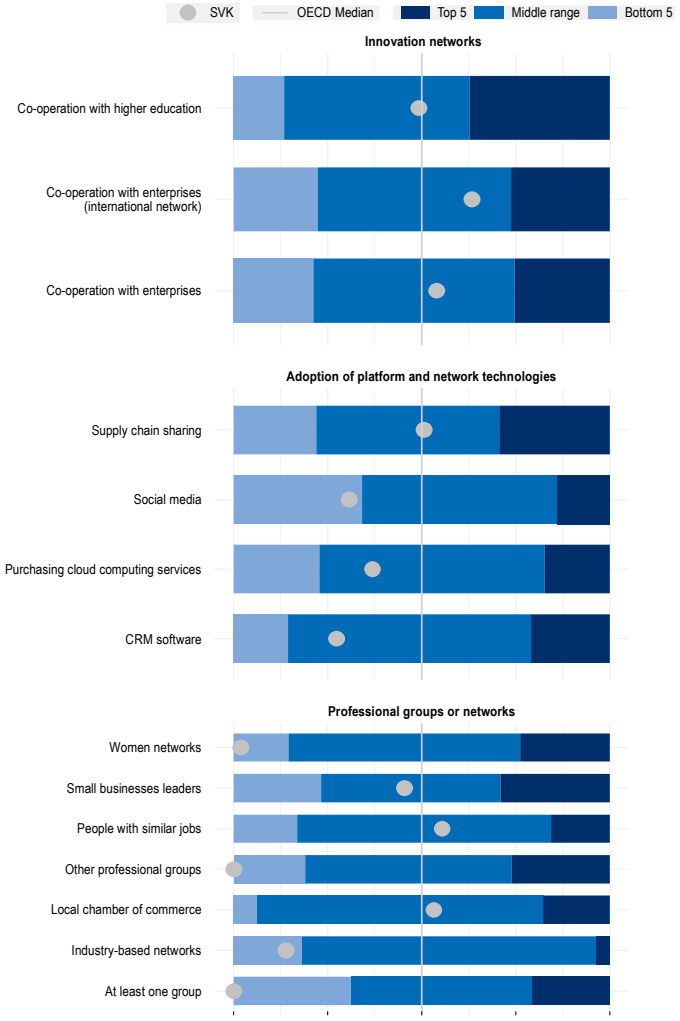
Figure 8.196. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Knowledge and innovation networks

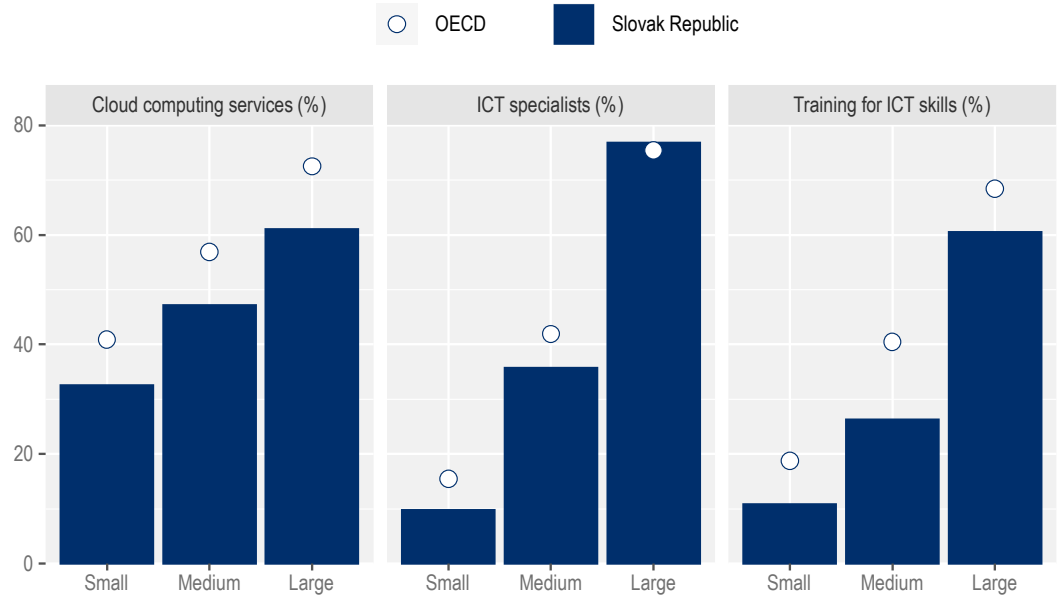
Figure 8.197. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.198. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

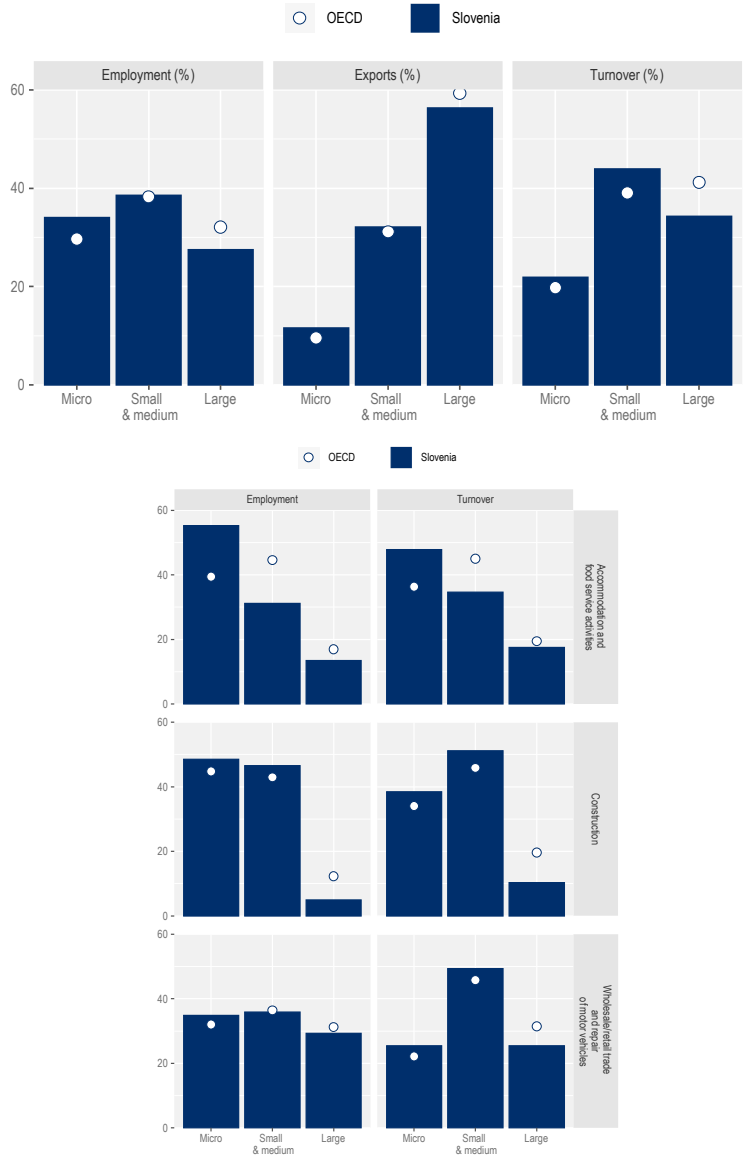


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Slovenia

SME sector structure and performance

Figure 8.199. SME share of employment, exports, and turnover

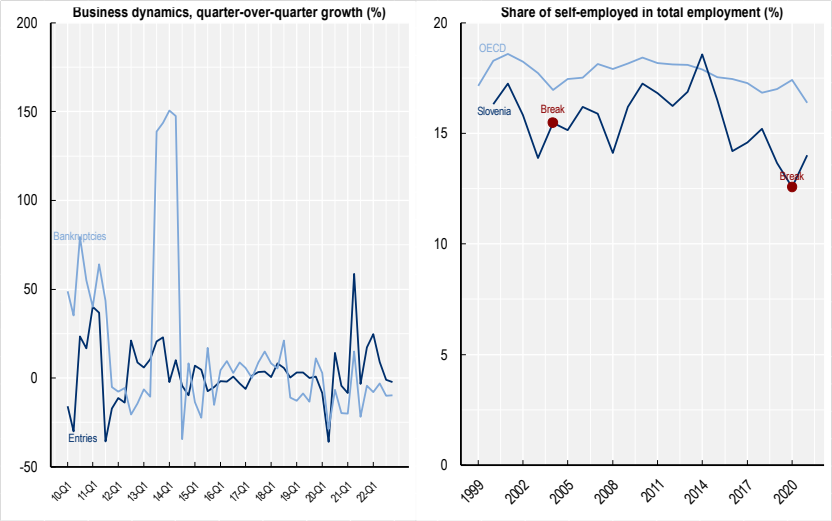


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

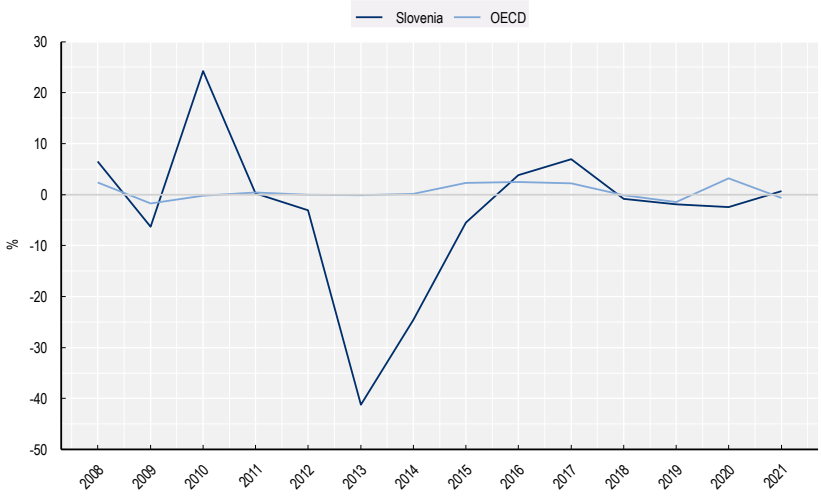
Figure 8.200. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

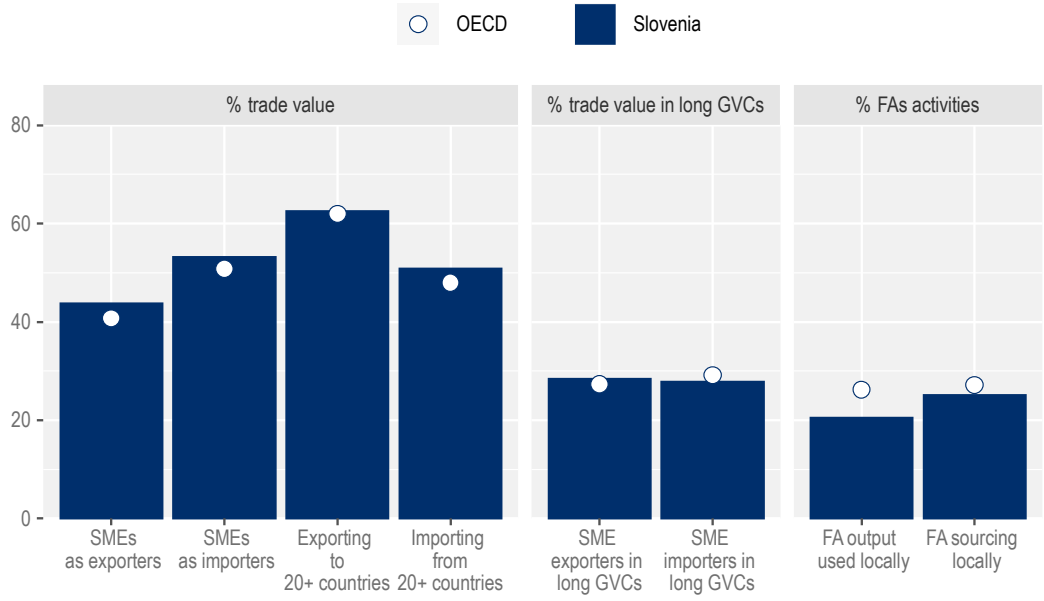
SME indebtedness

Figure 8.201. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



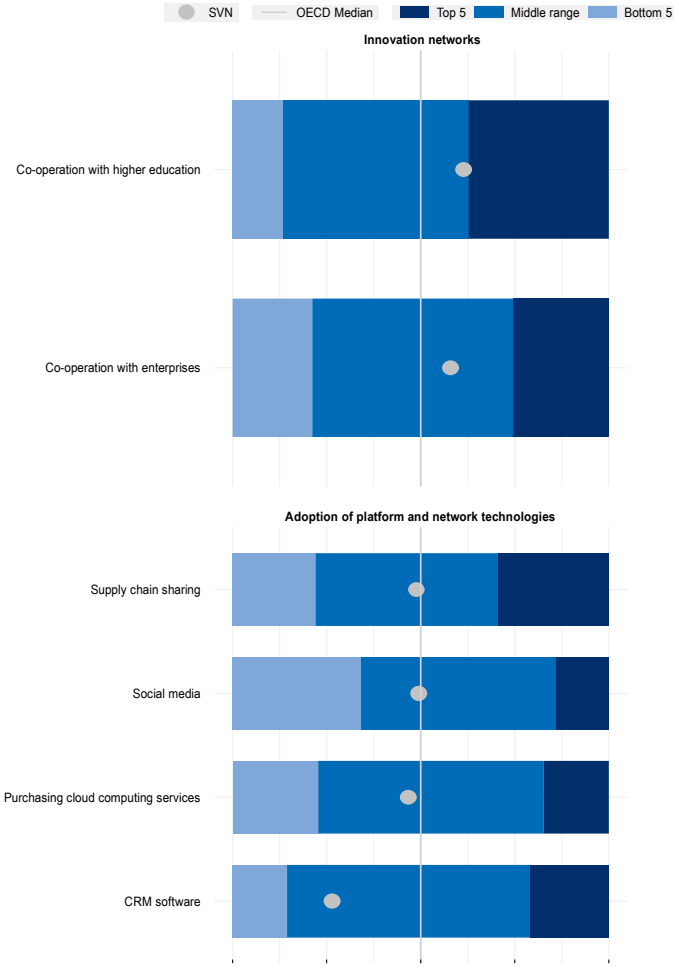
Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

Figure 8.202. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

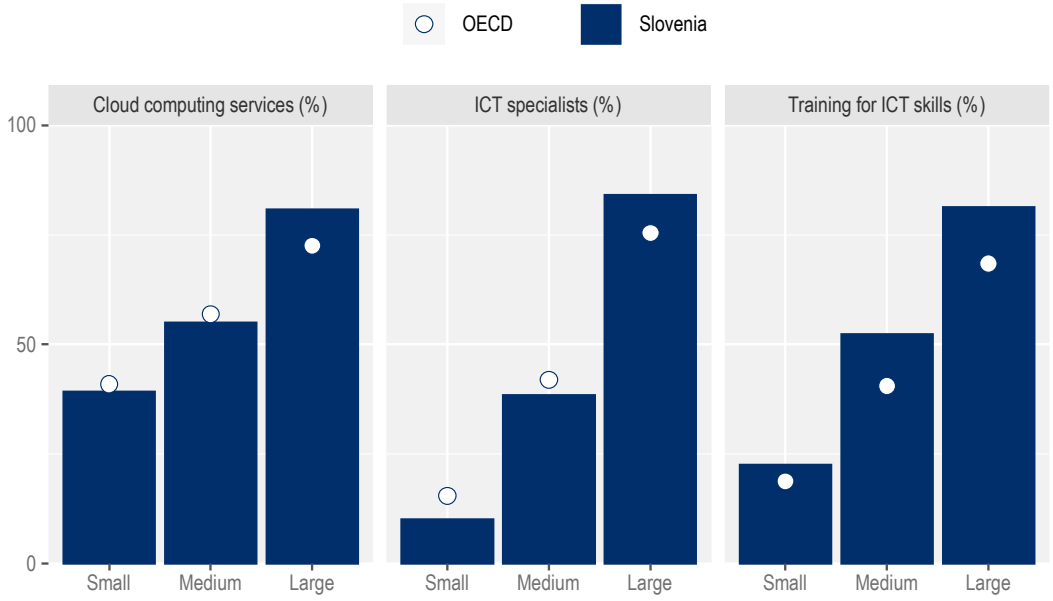
Figure 8.203. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.204. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

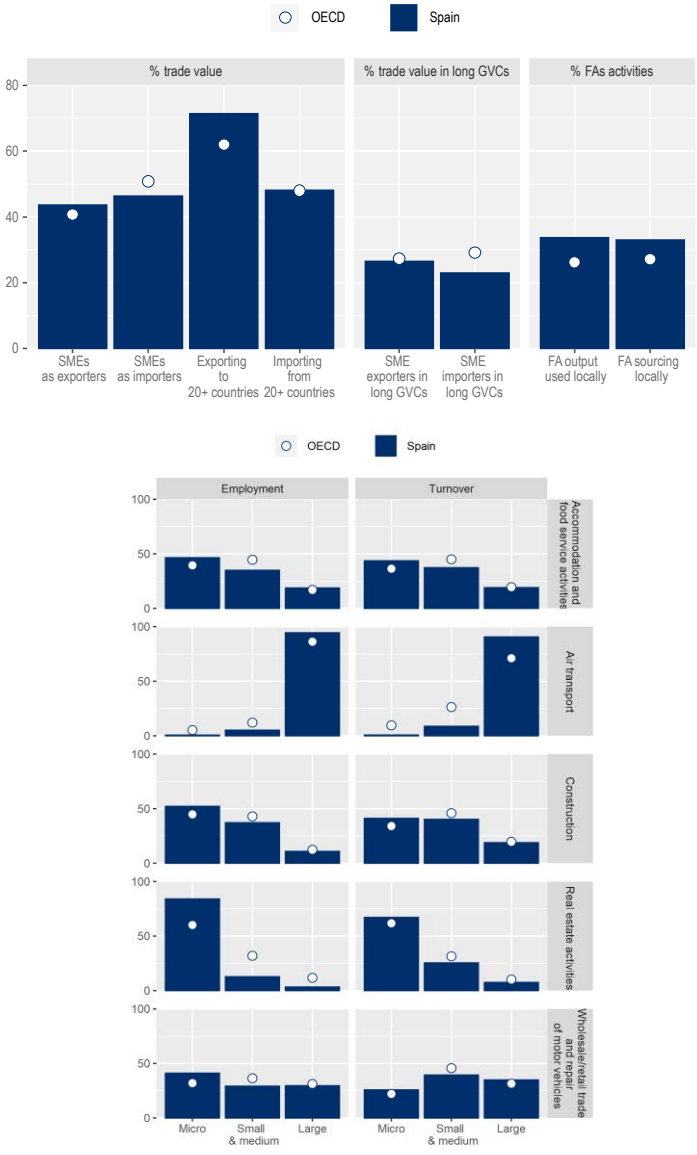


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Spain

SME sector structure and performance

Figure 8.205. SME share of employment, exports, and turnover

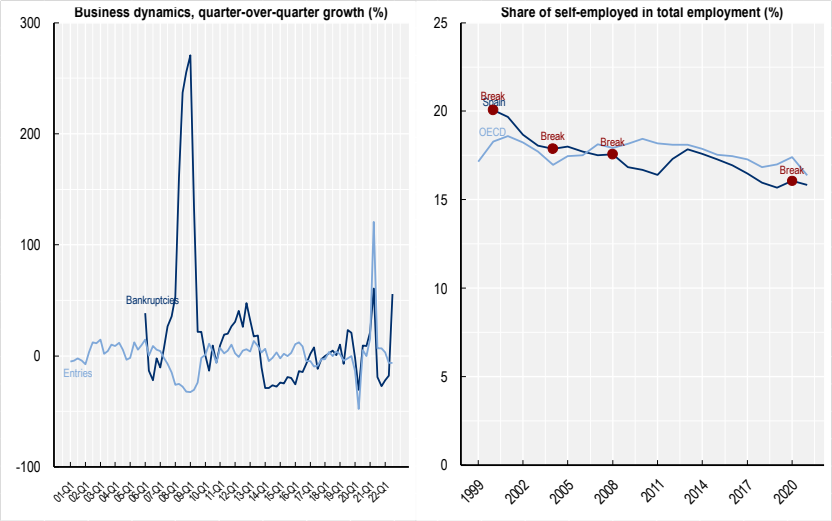


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

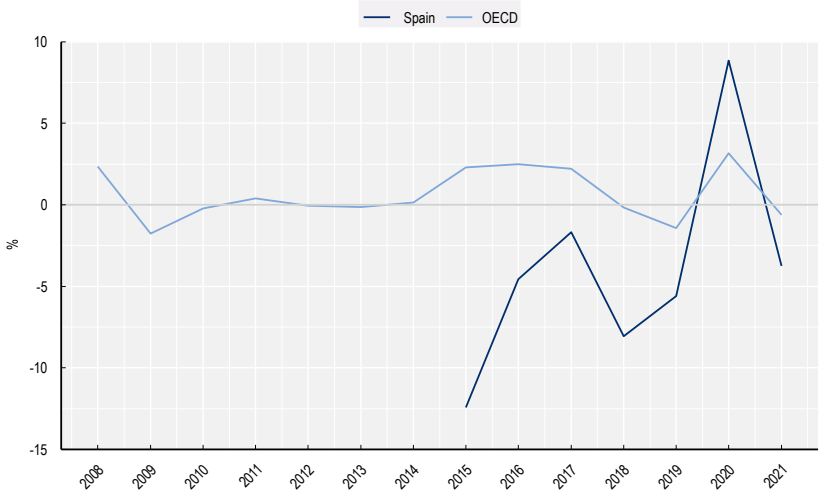
Figure 8.206. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

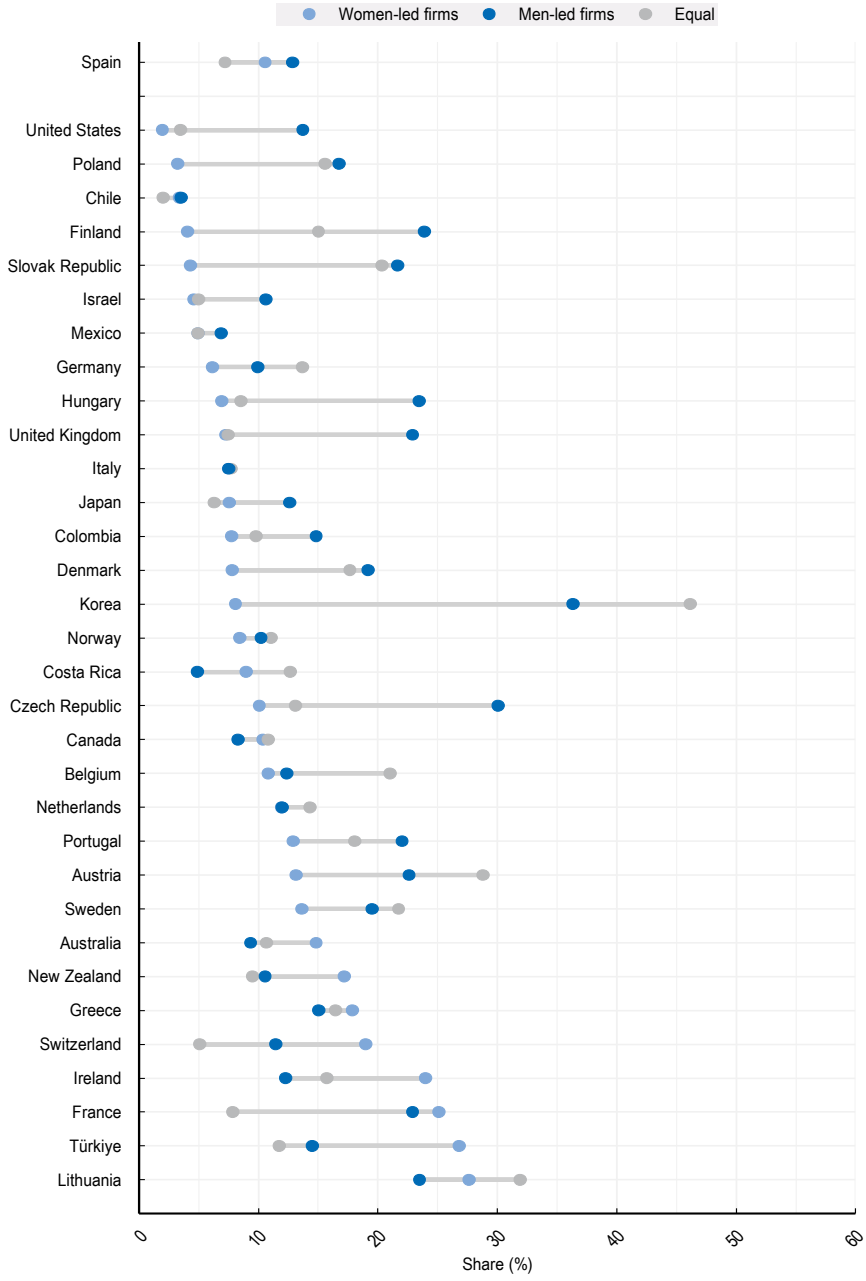
Figure 8.207. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

Women in trade and gender export gap

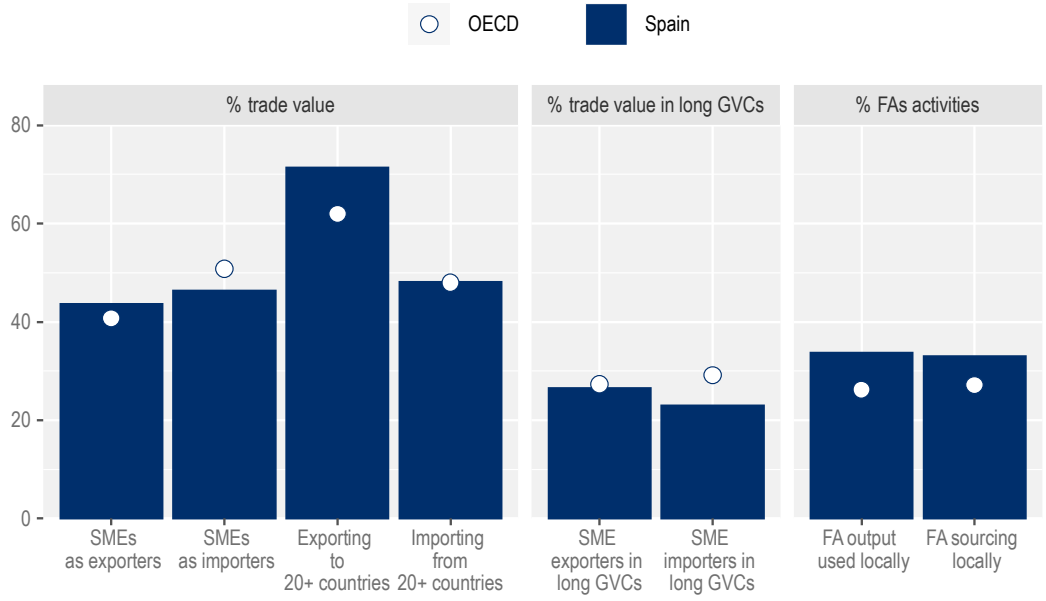
Figure 8.208. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.

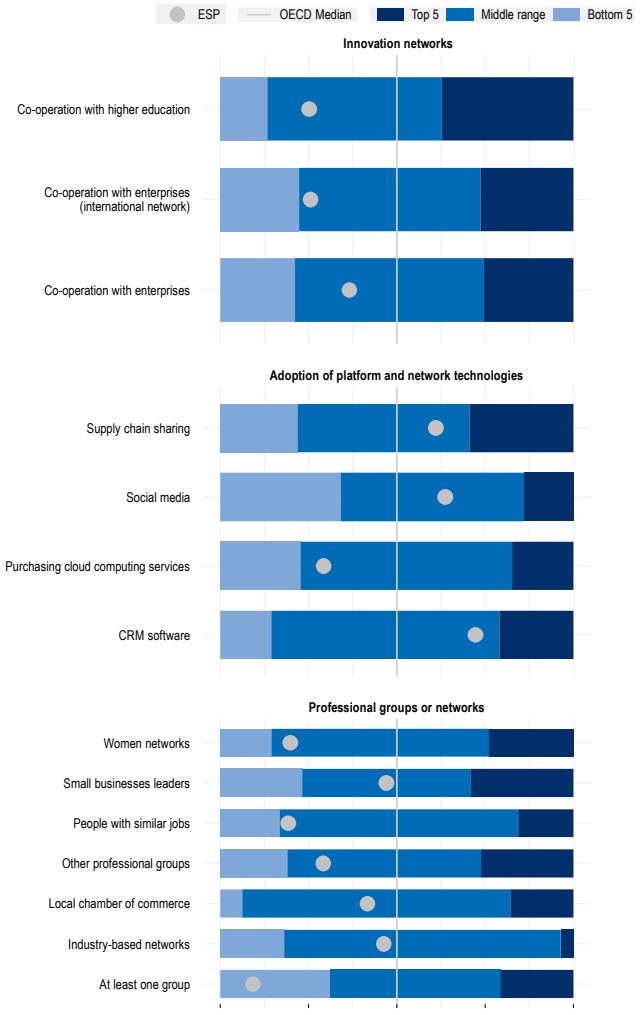
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.209. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

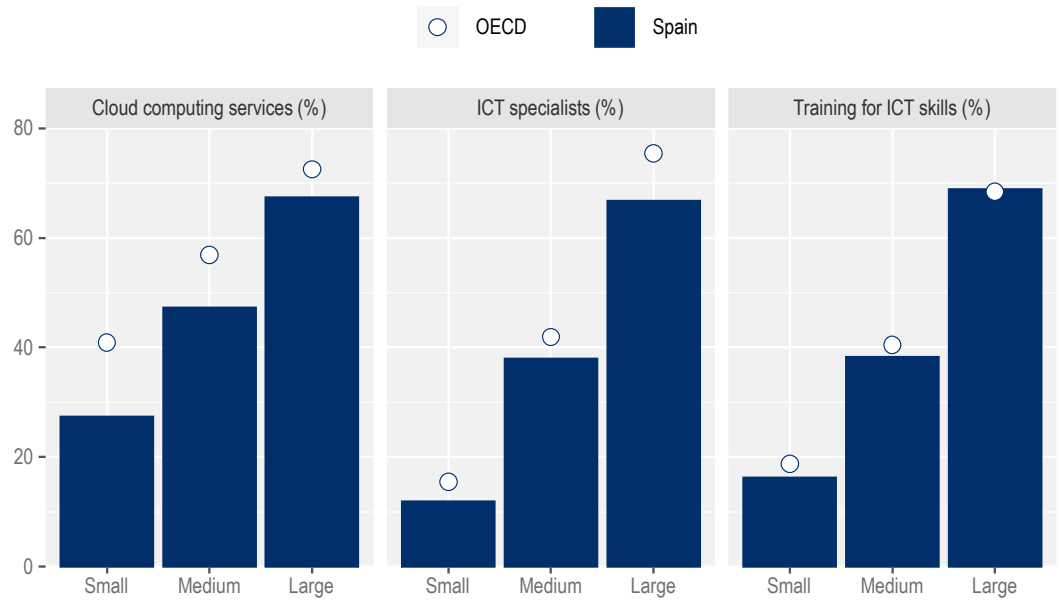
Figure 8.210. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.211. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

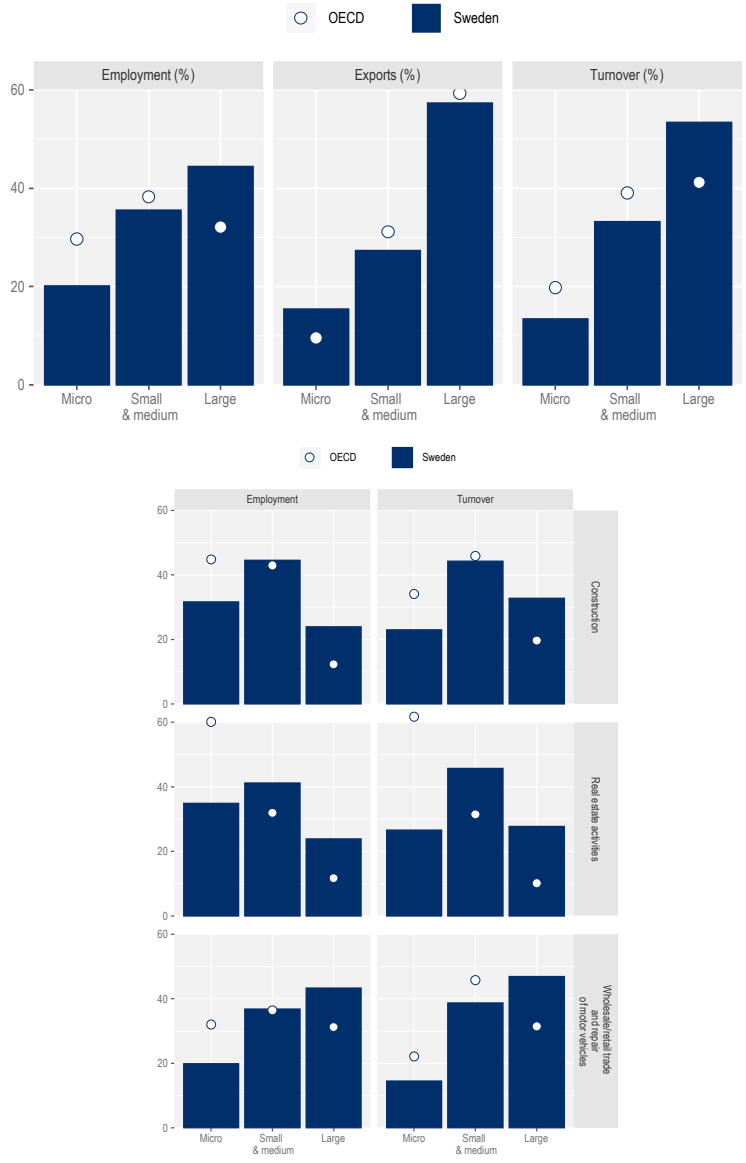


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Sweden

SME sector structure and performance

Figure 8.212. SME share of employment, exports, and turnover

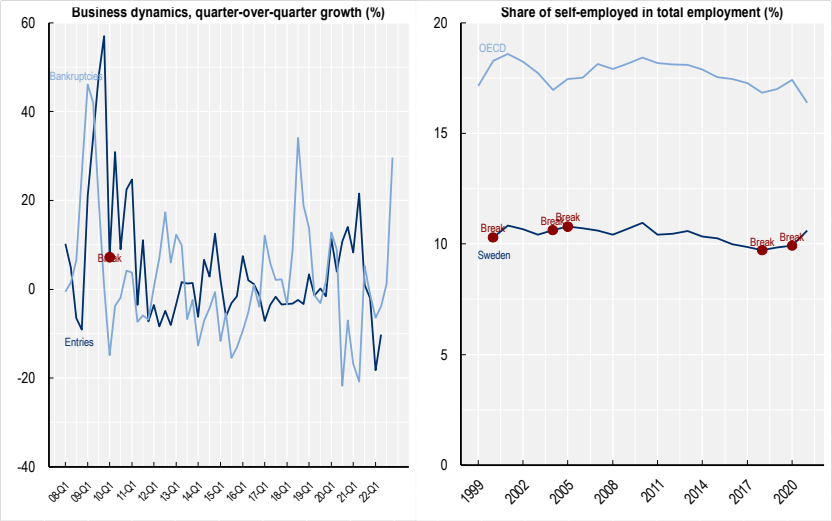


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

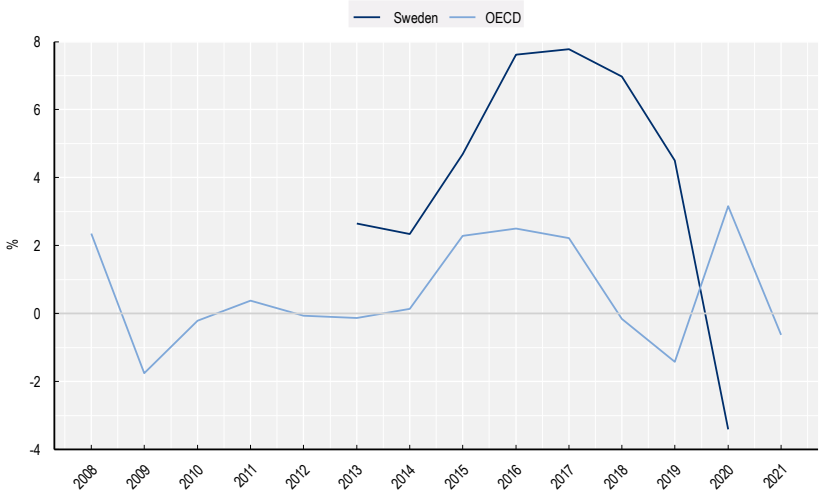
Figure 8.213. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

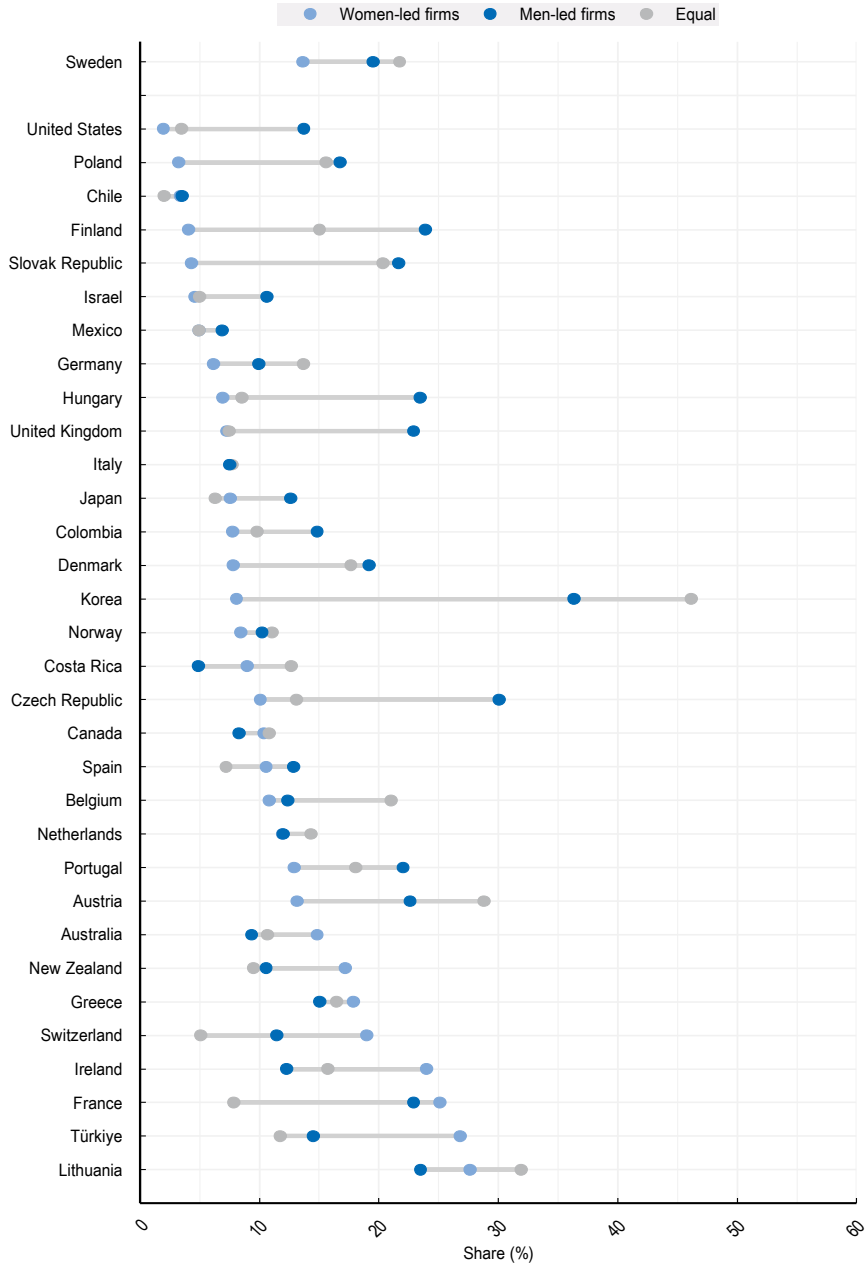
Figure 8.214. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

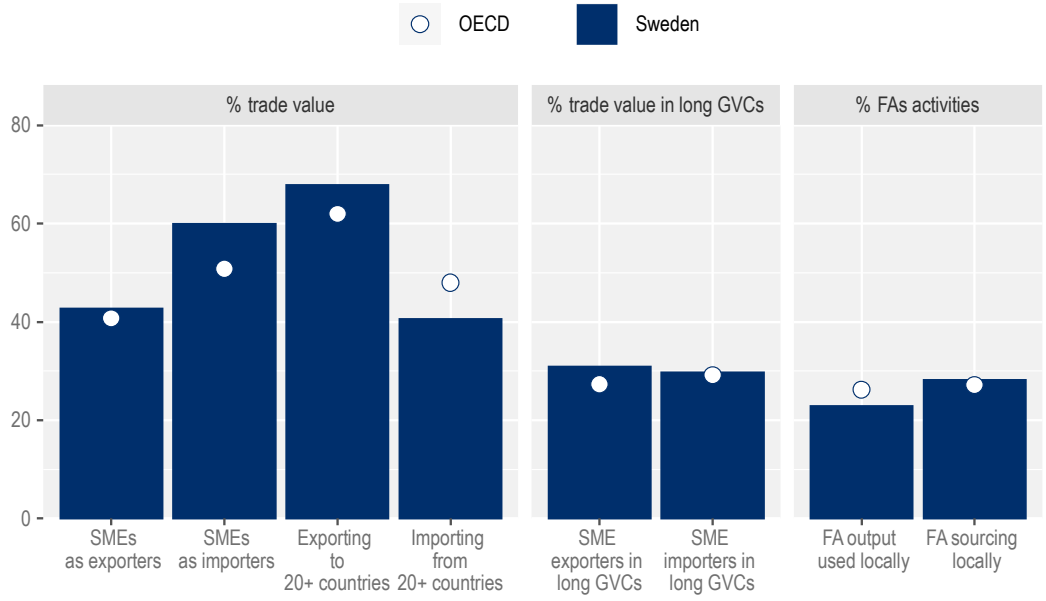
Women in trade and gender export gap

Figure 8.215. Share (%) of firms trading globally by gender of leadership



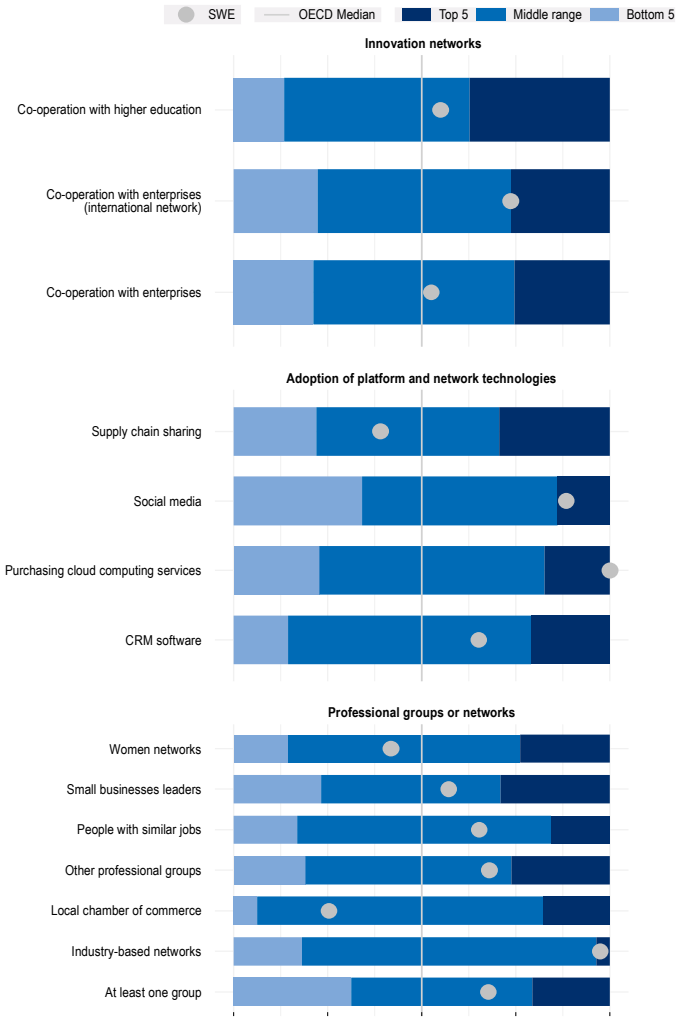
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.216. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

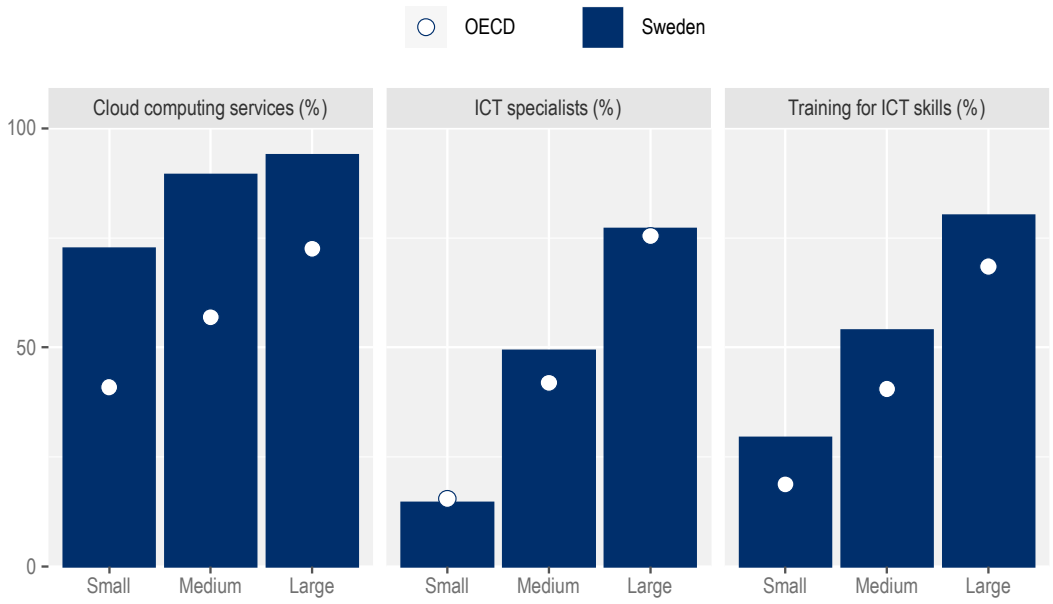
Figure 8.217. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.218. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

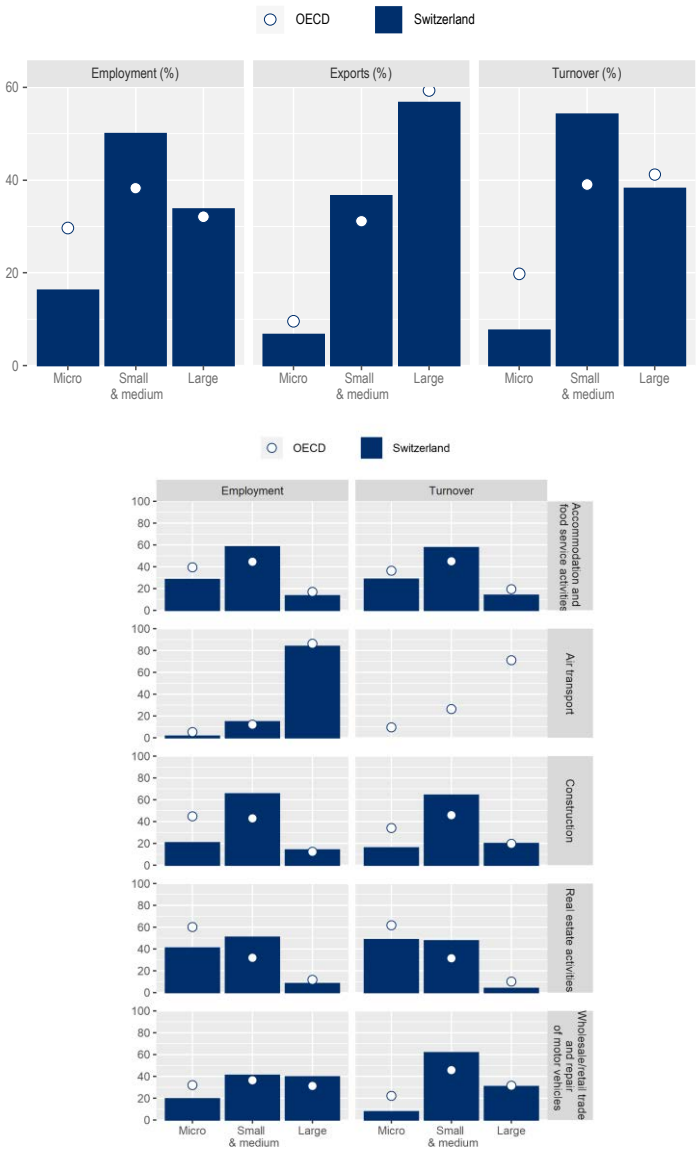


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Switzerland

SME sector structure and performance

Figure 8.219. SME share of employment, exports, and turnover

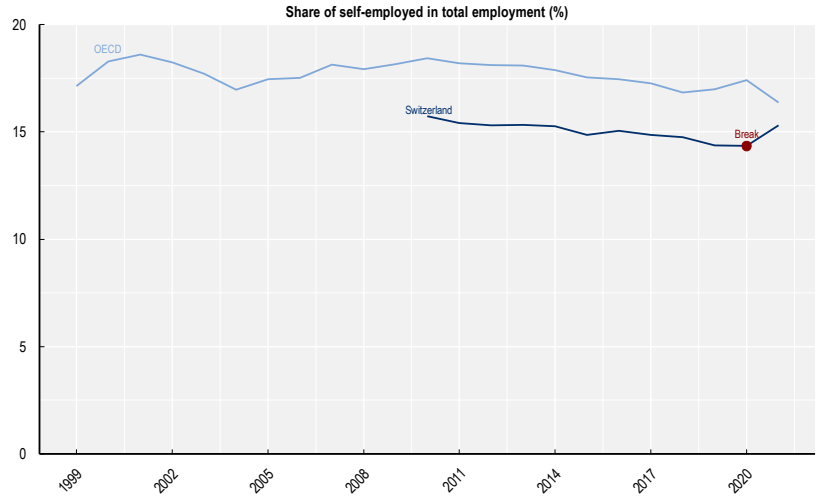


Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship

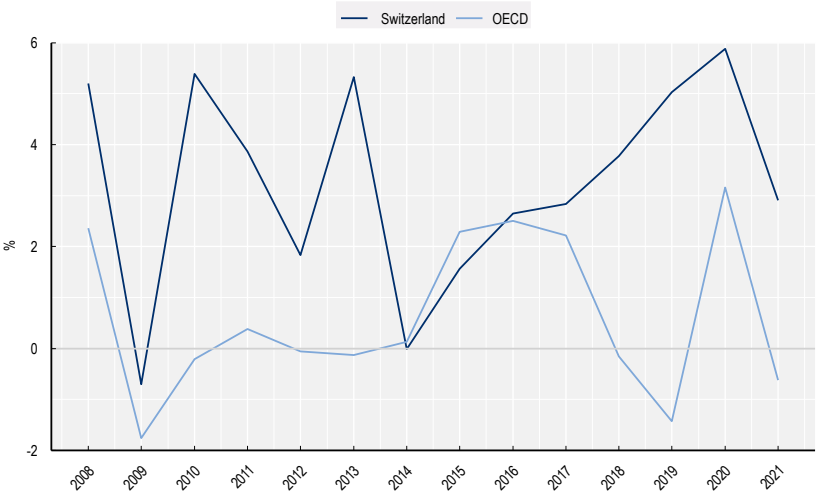
Figure 8.220. Self-employment



Note: Share (%) of self-employment in total employment. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

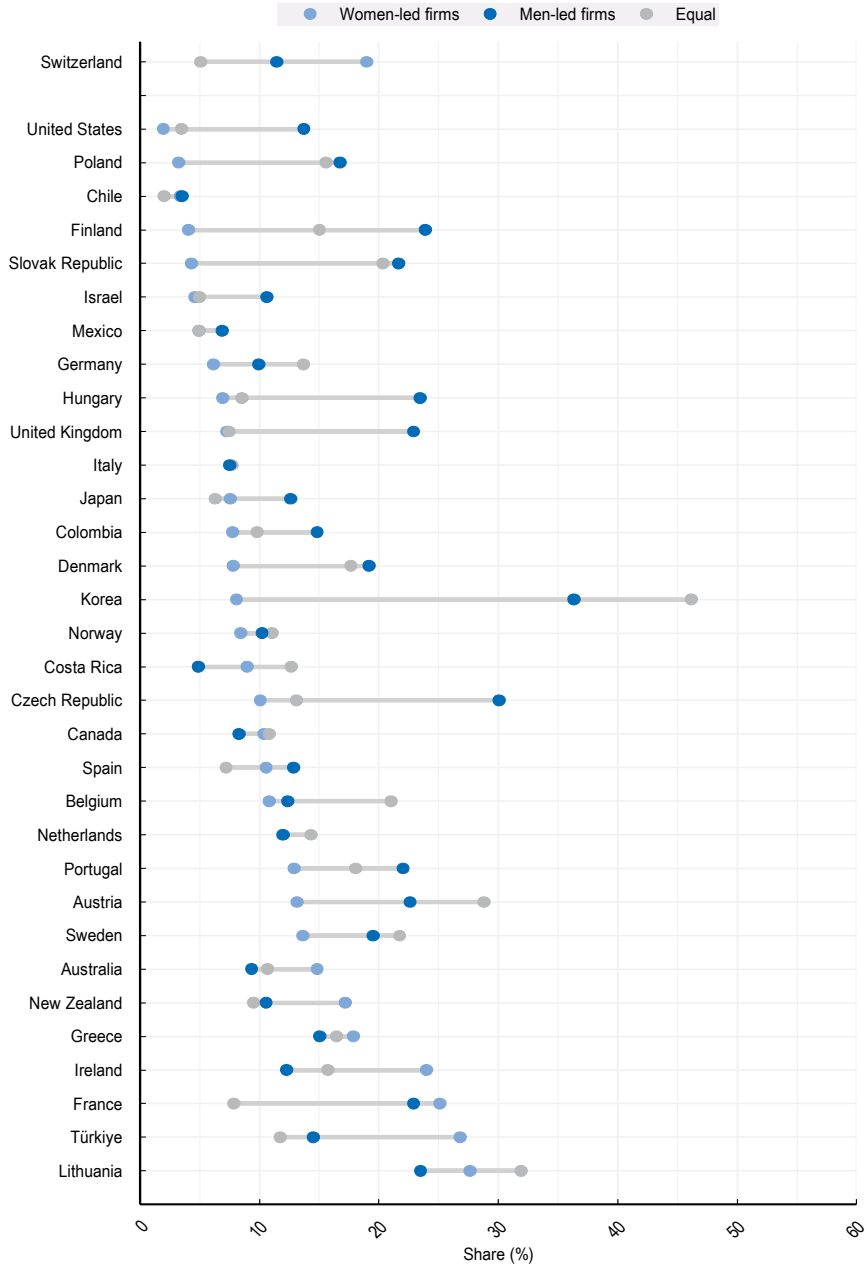
Figure 8.221. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

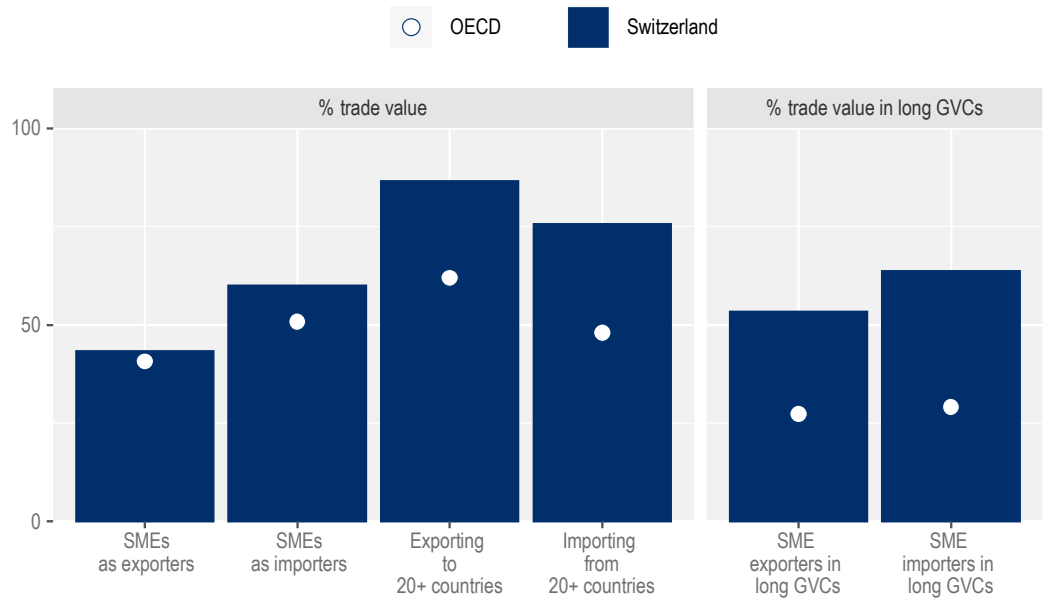
Women in trade and gender export gap

Figure 8.222. Share (%) of firms trading globally by gender of leadership



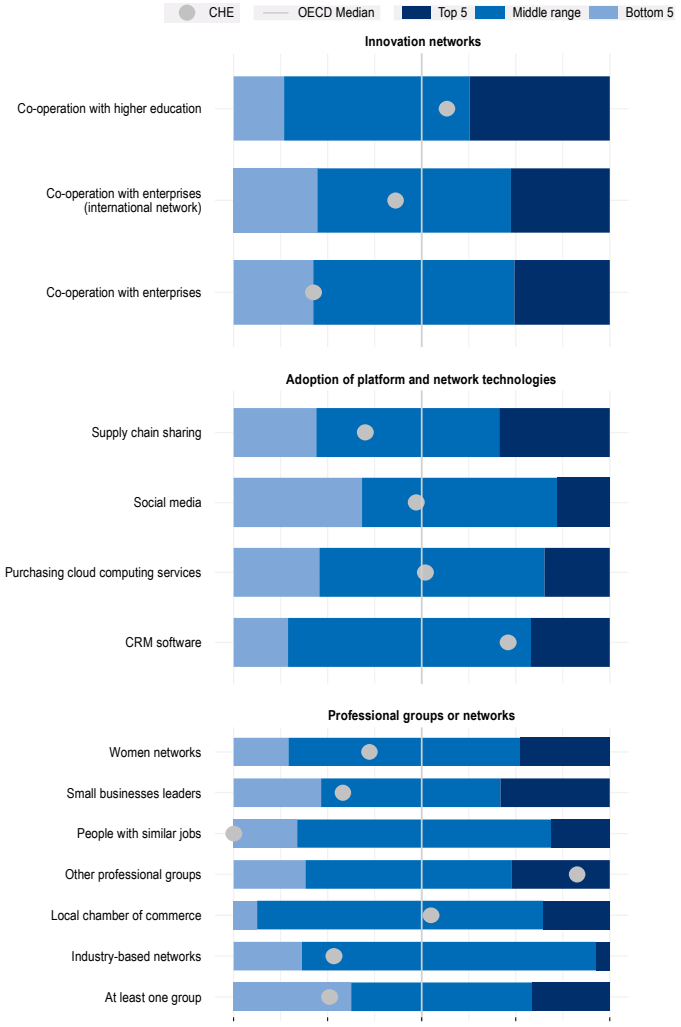
Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

Figure 8.223. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

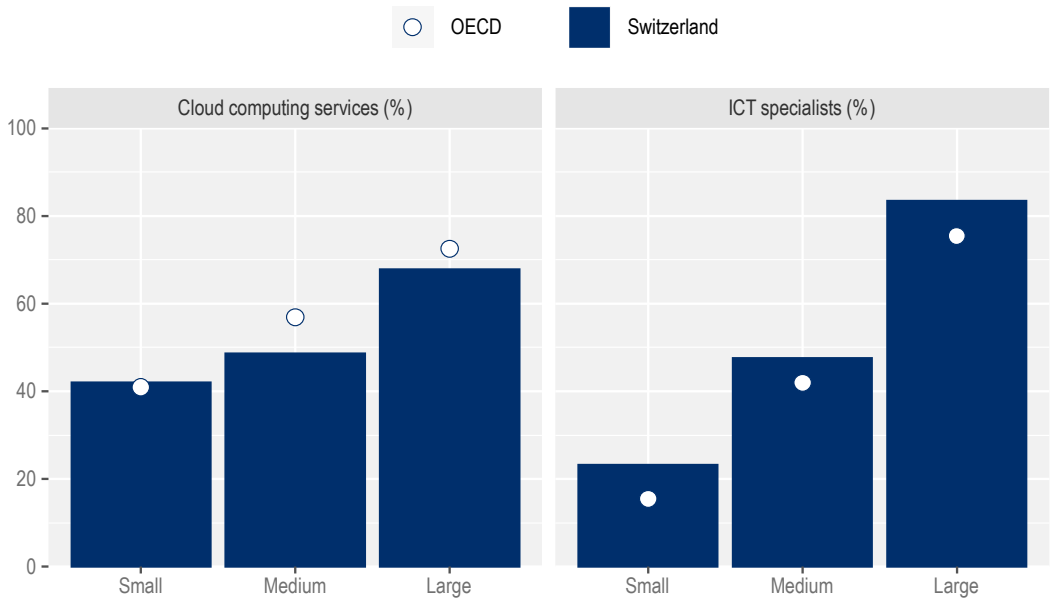
Figure 8.224. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.

Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.225. Share of firms accessing digital skills (%) by outsourcing or hiring, by firm size class

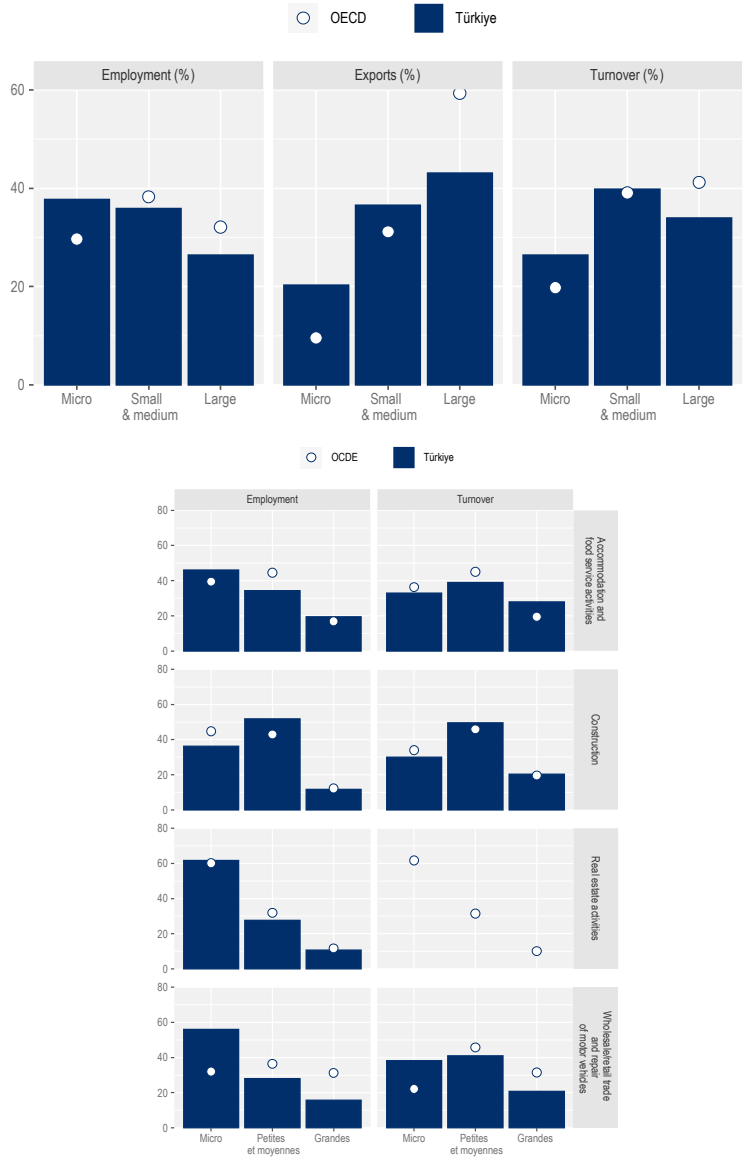


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

Türkiye

SME sector structure and performance

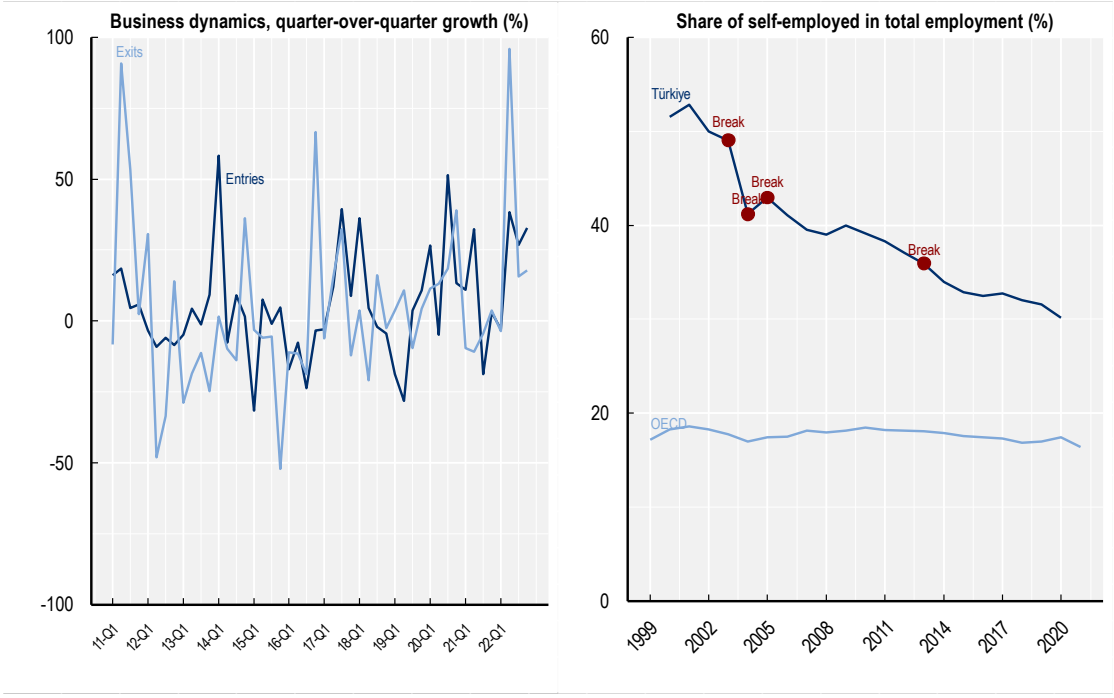
Figure 8.226. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. The most vulnerable industries to disruptions during COVID-19 crisis are manufacturing of motor vehicles and other transport equipment (C29_30), construction (F), wholesale/retail trade and repair of motor vehicles (G), air transport (H51), accommodation and food service activities (I), real estate activities (L), professional, scientific and technical activities (M),arts, entertainment and recreation (R), other service activities (S). In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.

Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Figure 8.227. Firm dynamics and self-employment

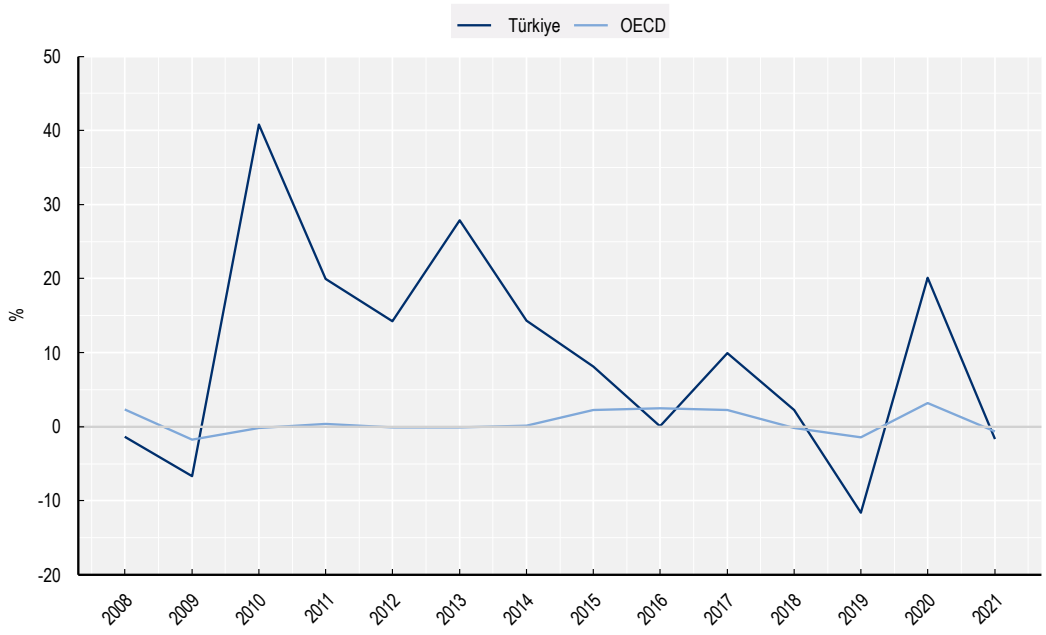


Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Exit refers to firms present last year that are not present this year. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.

Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

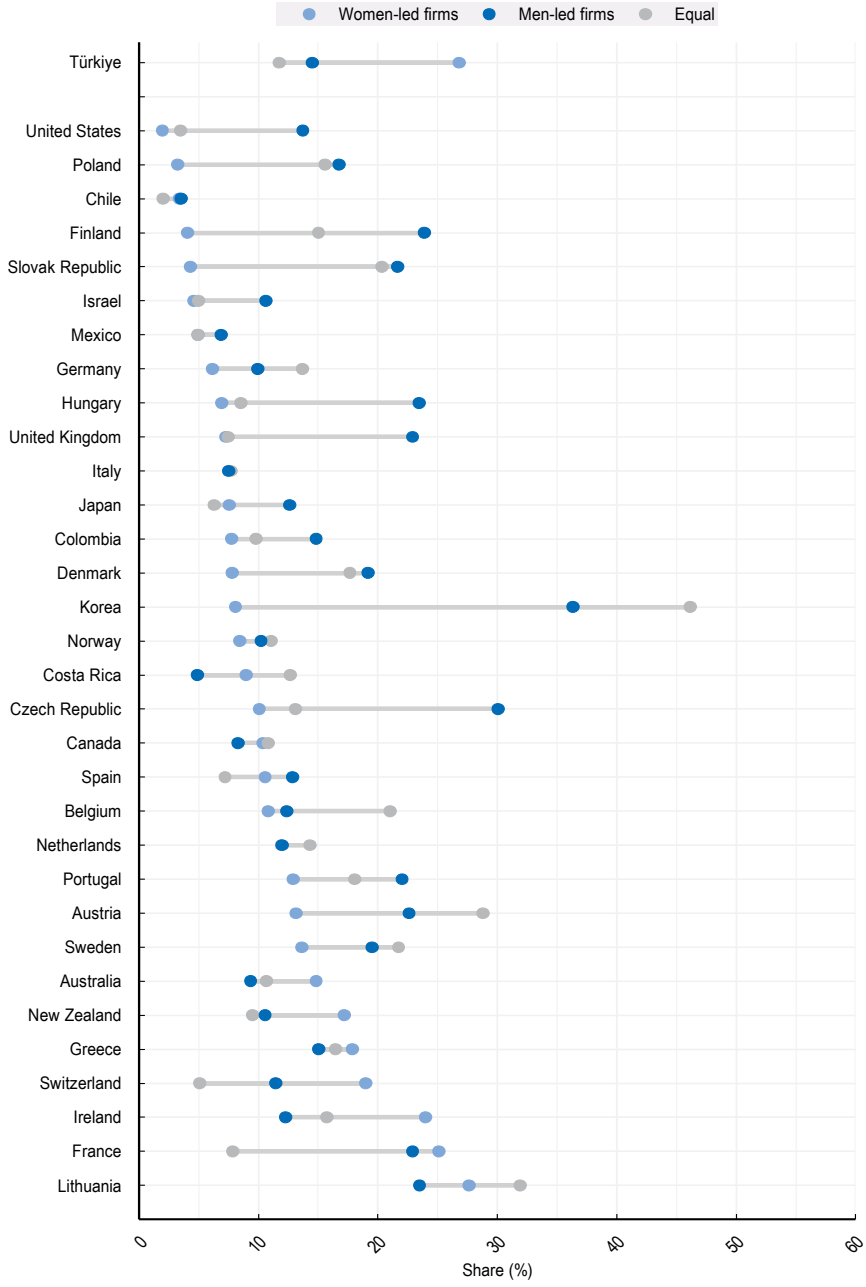
Figure 8.228. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

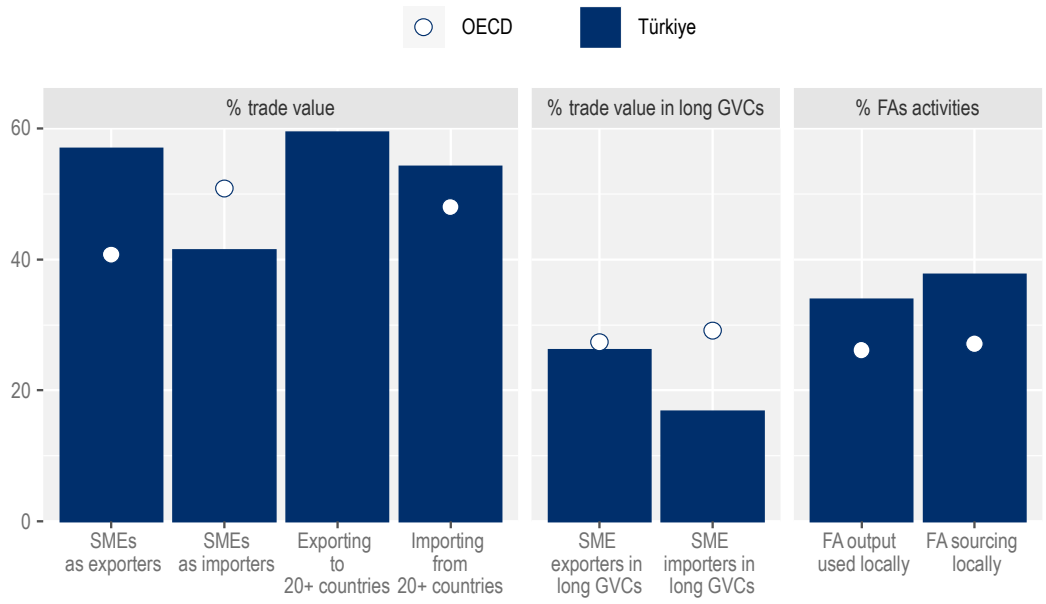
Women in trade and gender export gap

Figure 8.229. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

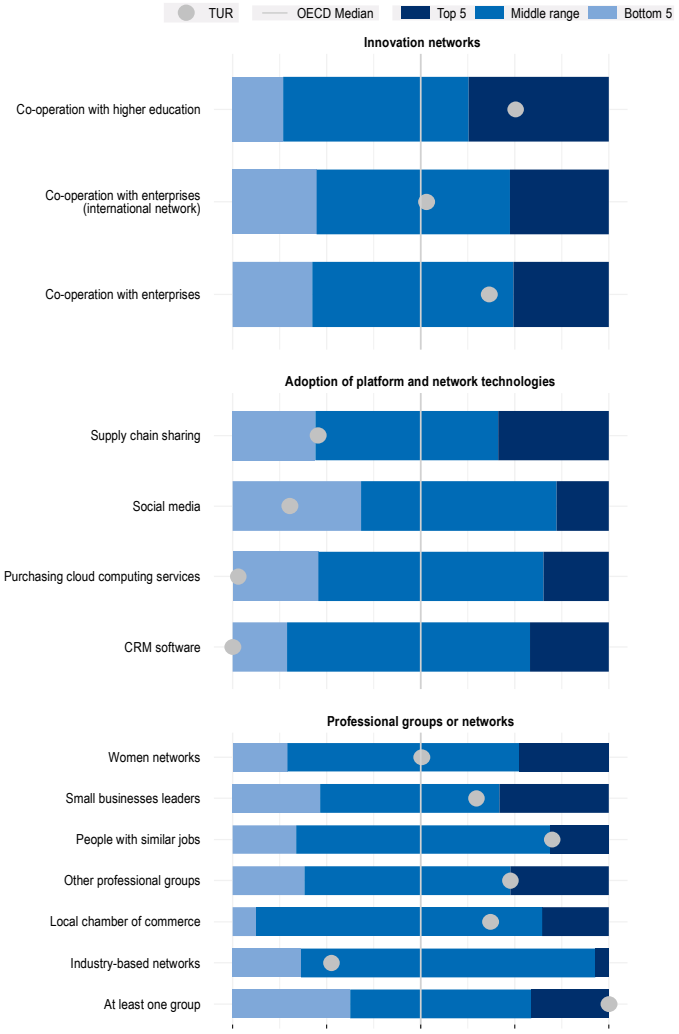
Figure 8.230. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

Knowledge and innovation networks

Figure 8.231. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.232. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

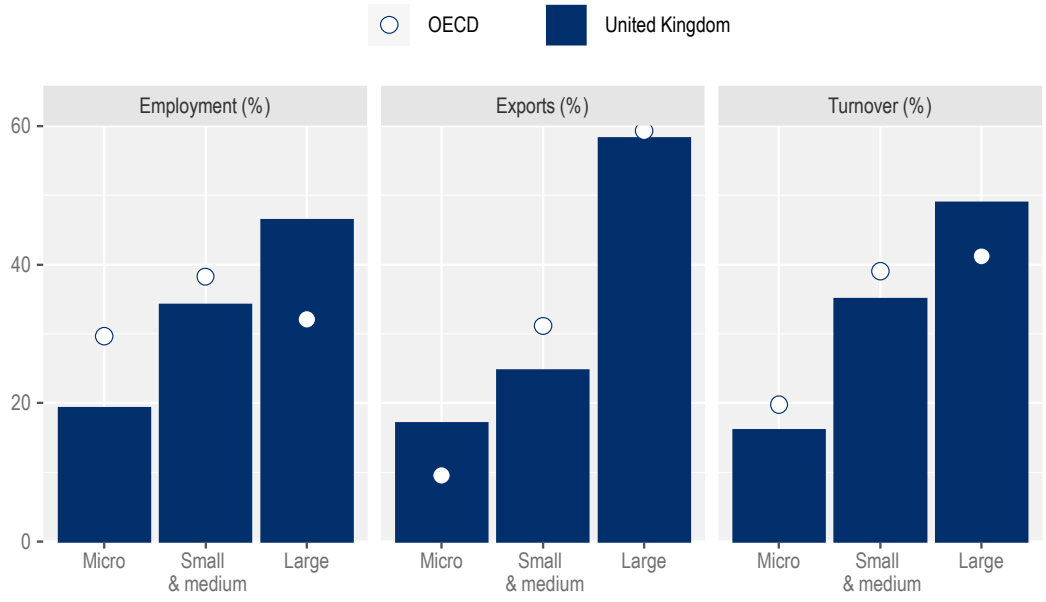


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

United Kingdom

SME sector structure and performance

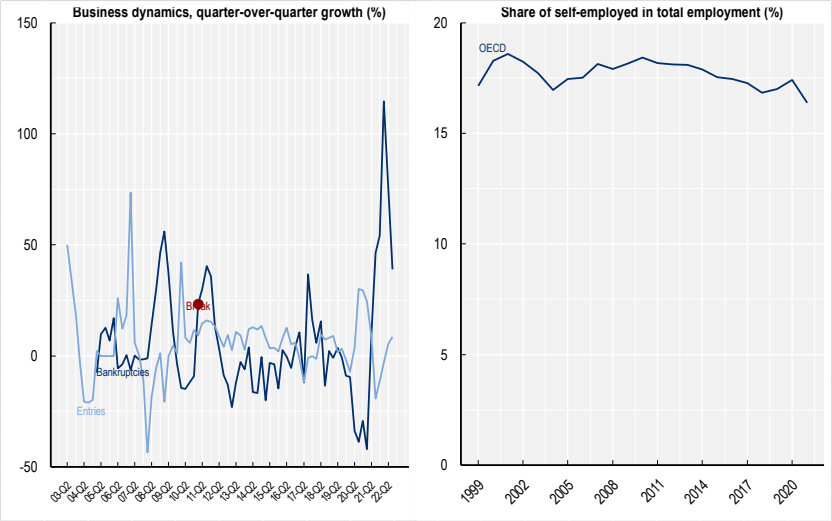
Figure 8.233. SME share of employment, exports, and turnover



Note: Employment is the total number of persons who worked in or for the concerned unit during the reference year. Year of reference, 2020 or latest. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Turnover is the total value of invoices corresponding to market sales of goods or services. Year of reference, 2020 or latest. In cases when data is not available, no information is presented. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.
Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

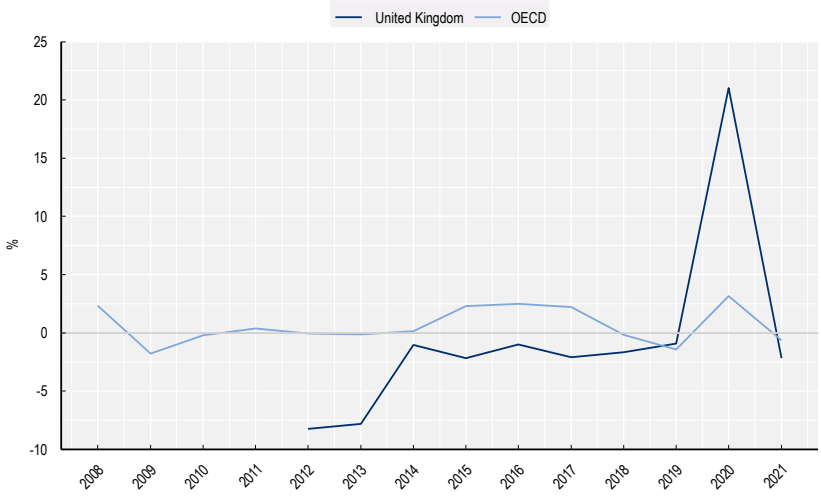
Figure 8.234. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

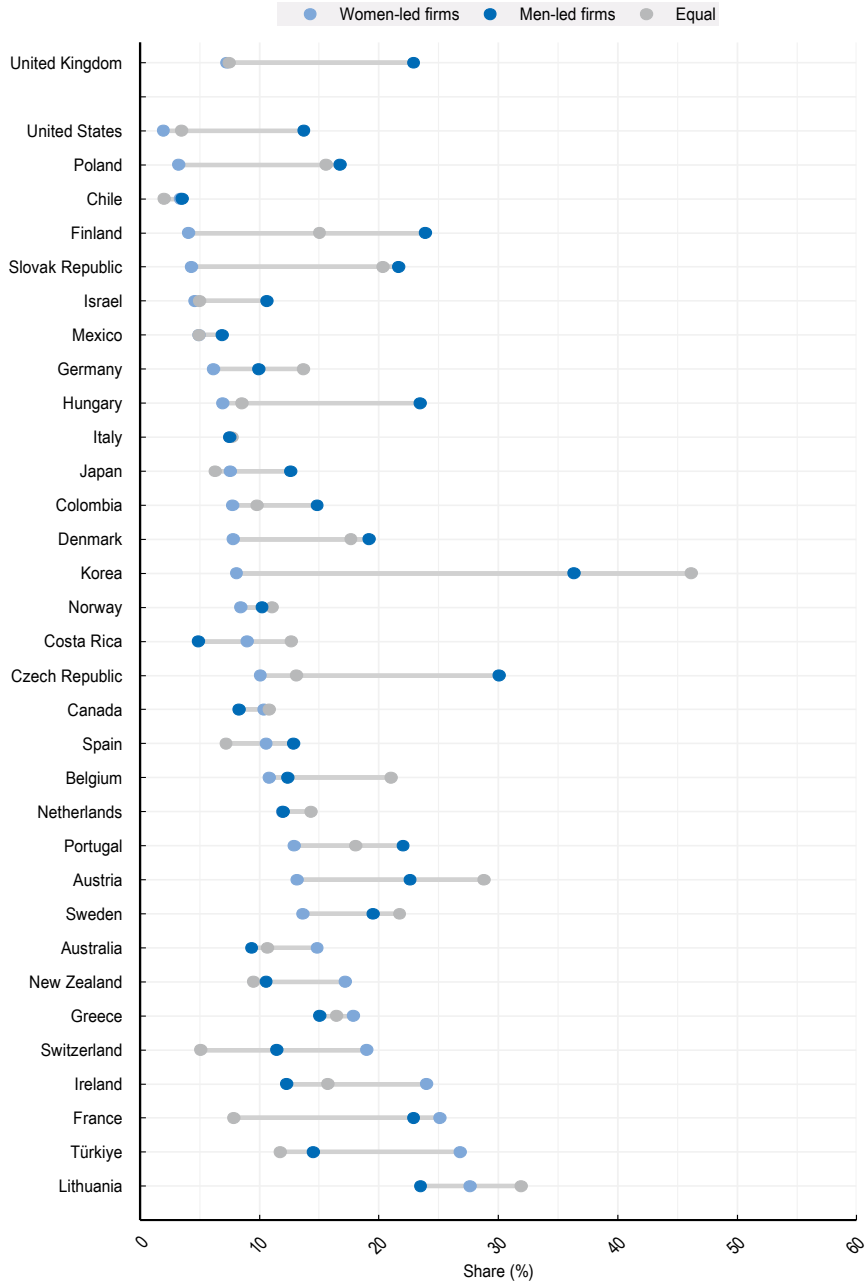
Figure 8.235. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

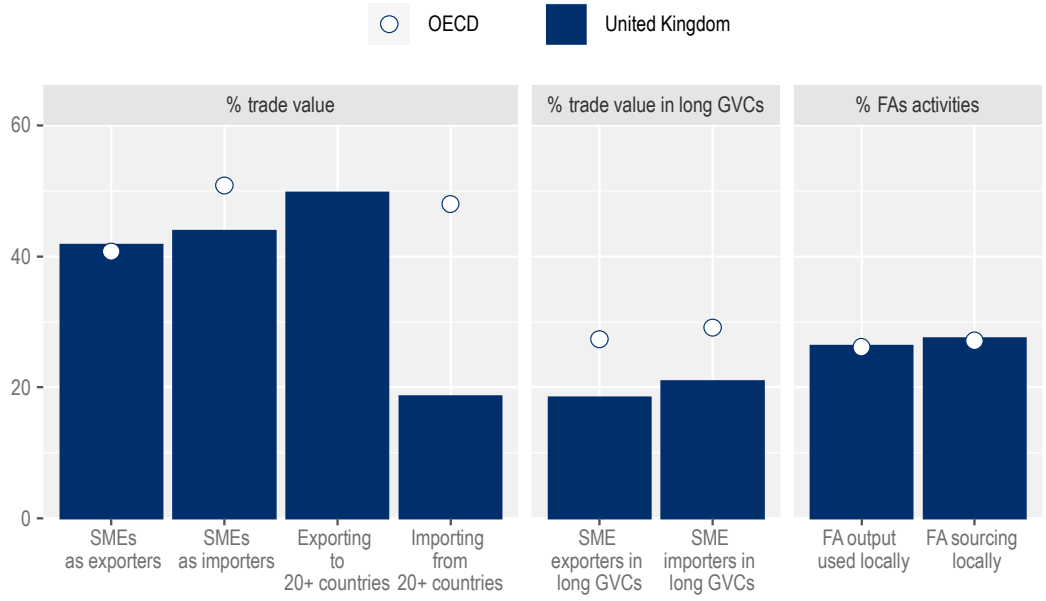
Women in trade and gender export gap

Figure 8.236. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

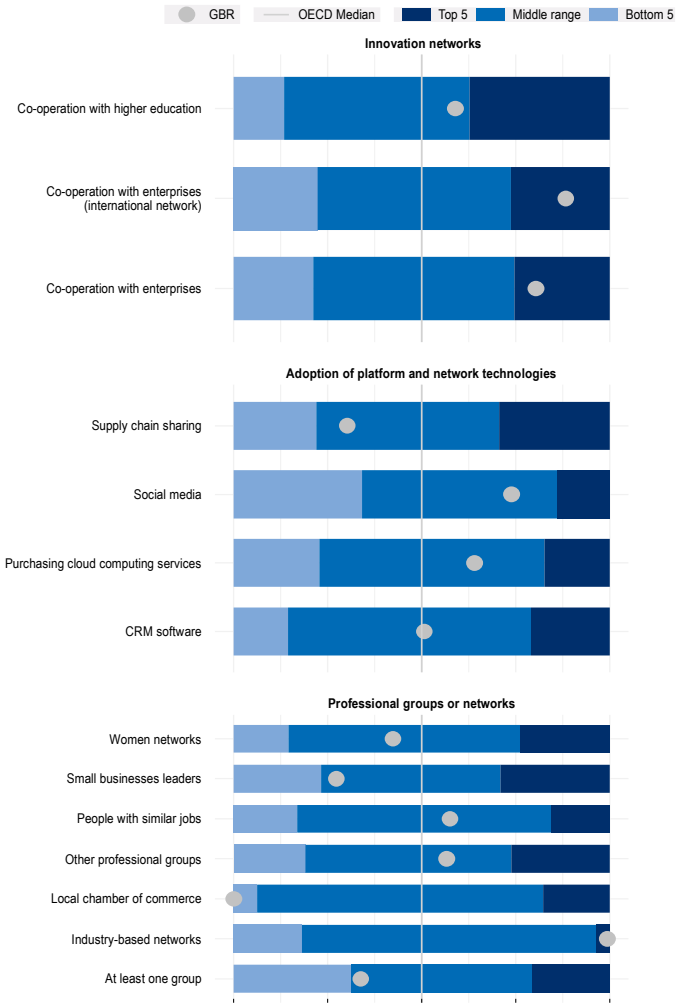
Figure 8.237. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

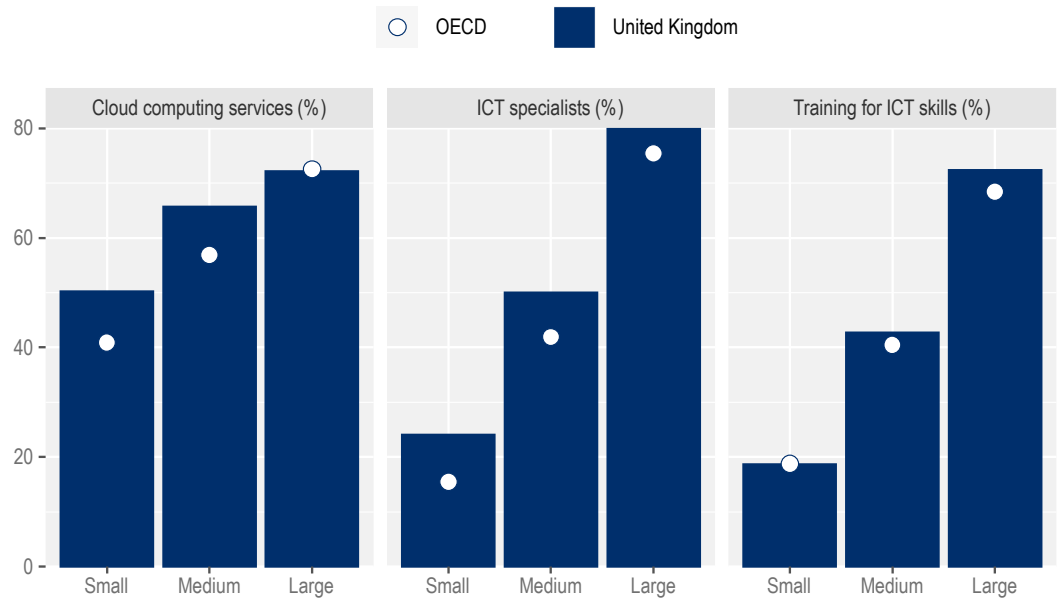
Knowledge and innovation networks

Figure 8.238. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.239. Share of firms accessing digital skills (%) by outsourcing, hiring or training, by firm size class

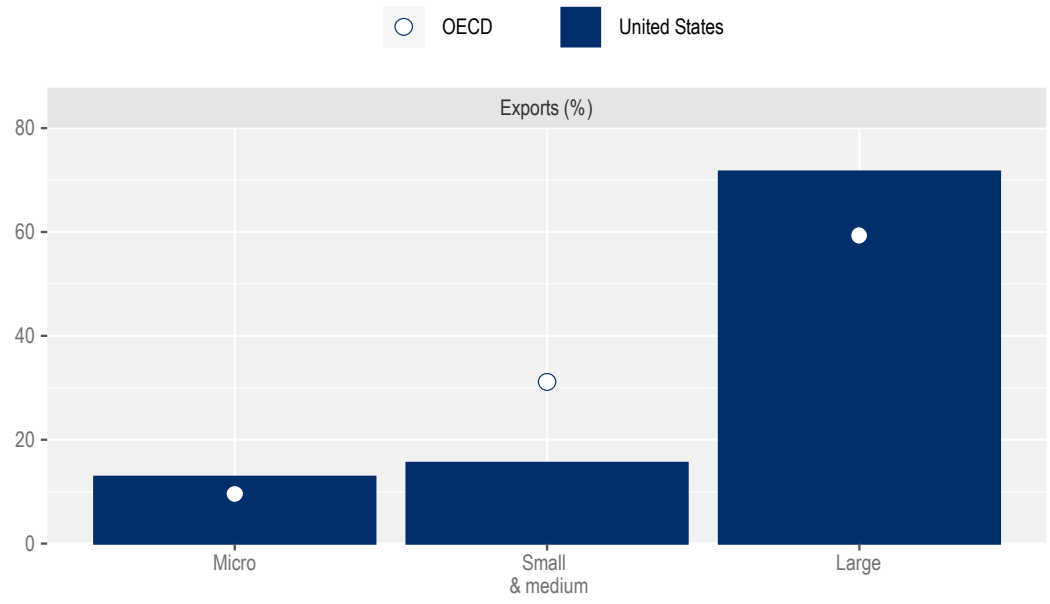


Note: Share (%) of businesses that purchased cloud computing services, that employed ICT specialists in the last 12 months, and that provided any form of training to develop ICT related skills to the persons employed, latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

United States

SME sector structure and performance

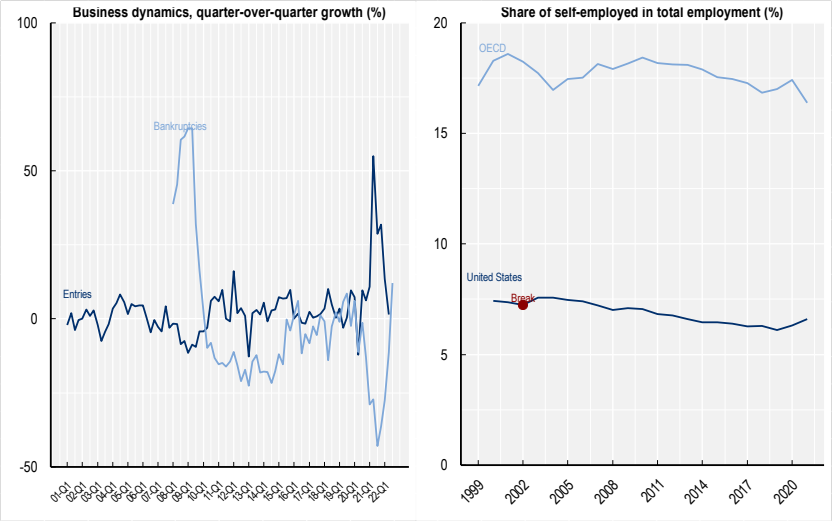
Figure 8.240. SME share of exports



.Note: Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Year of reference, 2020 or latest. Micro firms are firms having between 1 and 9 employees, small firms having between 10-49 employees, medium-sized between 50 and 249 and large firms 250 or more employees. Data are presented by ascending firm size class.
Source: OECD Structural Demographics and Business Statistics (SDBS) and Trade by Enterprise Characteristics (TEC) databases, 2023.

Entrepreneurship and business dynamics

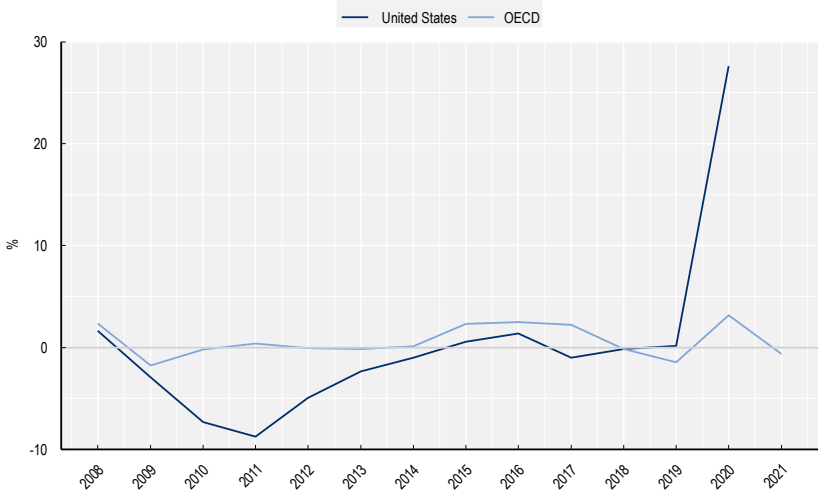
Figure 8.241. Firm dynamics and self-employment



Note: The left panel shows quarter-over-quarter growth of entries and bankruptcies, by quarter. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. The right panel shows the share (%) of self-employment in total employment. Entry refers to the number of firms entering the market in a given year. Bankruptcy is a legal process through which people or other entities who cannot repay debts to creditors may seek relief from some or all of their debts. Self-employment is defined as the employment of employers, workers who work for themselves, members of producers co-operatives, and unpaid family workers. OECD denotes the unweighted mean values for countries with available information. Break denotes a statistical break in the series, suggesting that data are not directly comparable with previous periods.
Source: OECD Timely Indicators of Entrepreneurship database (TIE). OECD Labour Force Statistics (LFS) database.

SME indebtedness

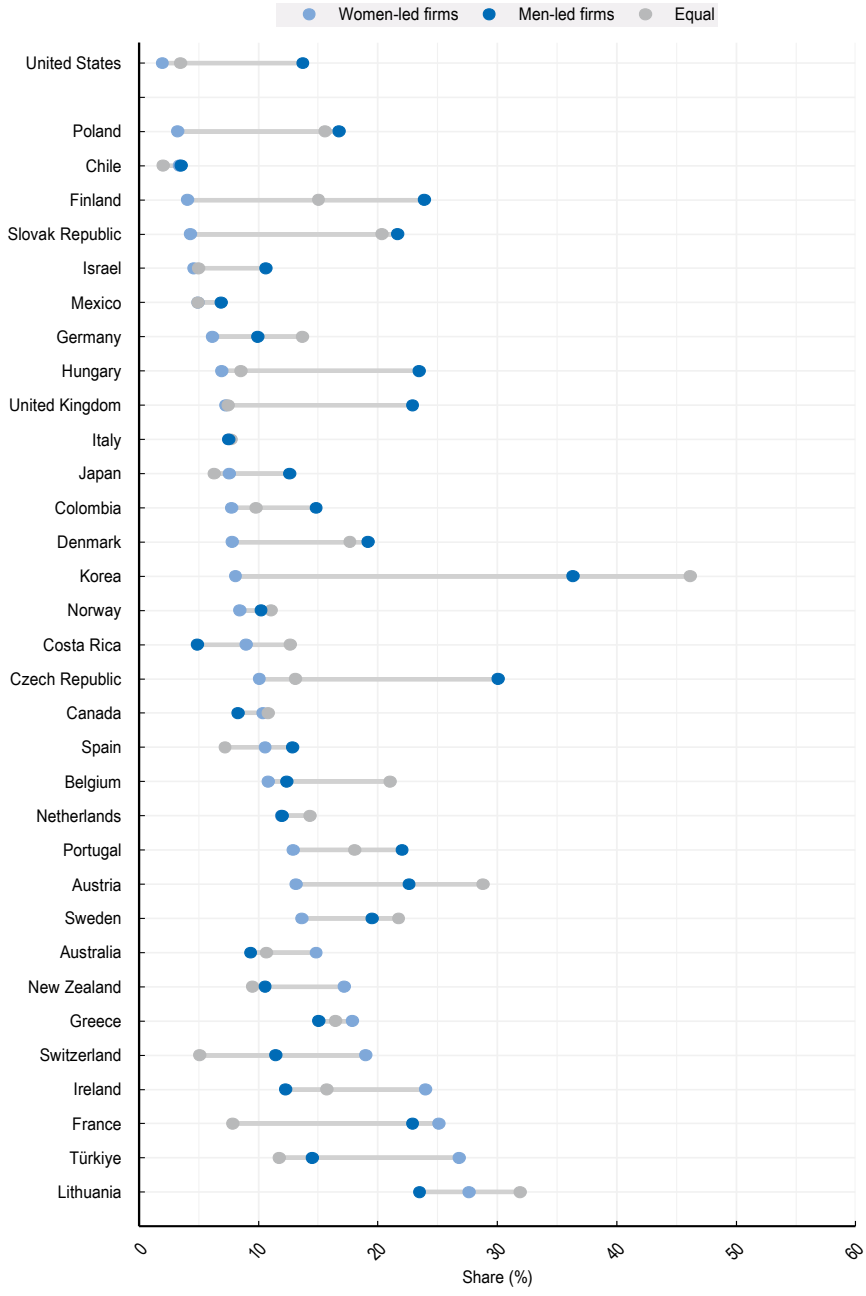
Figure 8.242. SME outstanding loans (constant 2007 prices), year-over-year growth (%)



Note: Year-over-year growth (%) of SME outstanding loans. SME outstanding loans refer to the amount (in constant 2007 prices) of outstanding loans (stocks) granted by bank and financial institutions to SMEs at the end of period. SMEs are identified along national definition(s) or, if necessary, in cases when loan amounts are less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis. Values for the OECD denote the median value using all data available for the year.
Source: OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights

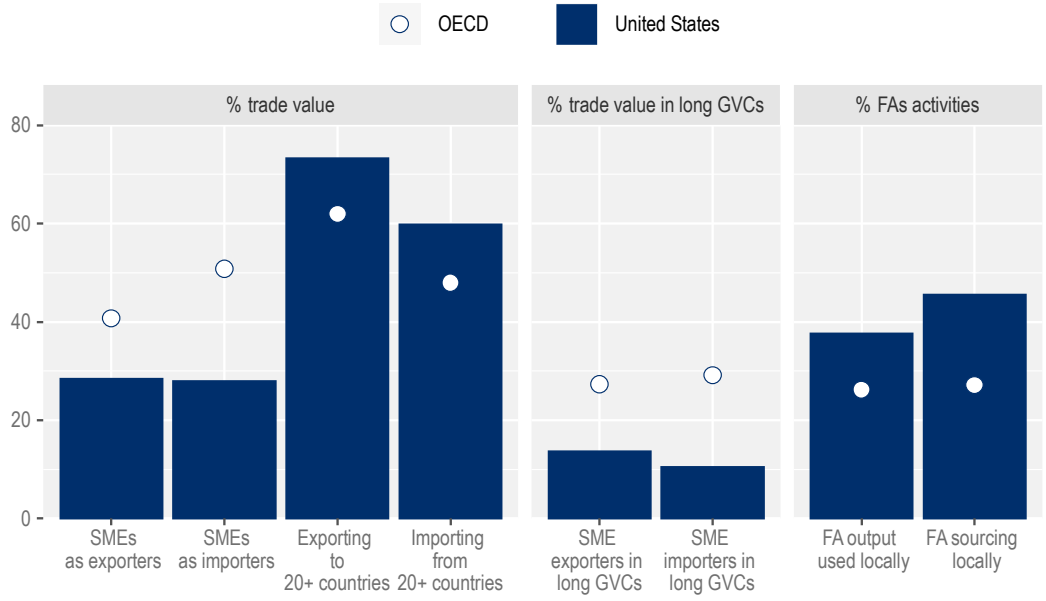
Women in trade and gender export gap

Figure 8.243. Share (%) of firms trading globally by gender of leadership



Note: Firms that indicate they engage in trade, as a share of total women-led businesses, men-led businesses or businesses led equally by women and men (%). The share of firms is obtained from the question: Is your business engaged in international trade? Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Women-led firms are firms where more than 50% of managers and/or owners are women, and men-led firms are firms with more than 50% of managers and owners are men. Businesses equally led by women and men refer to equal number of men and women managing and/or owning the company. Data are ranked by ascending order of shares in women-led businesses.
Source: Calculations based on the OECD-World Bank-Meta Future of Business Survey, Data for Good, (March 2022).

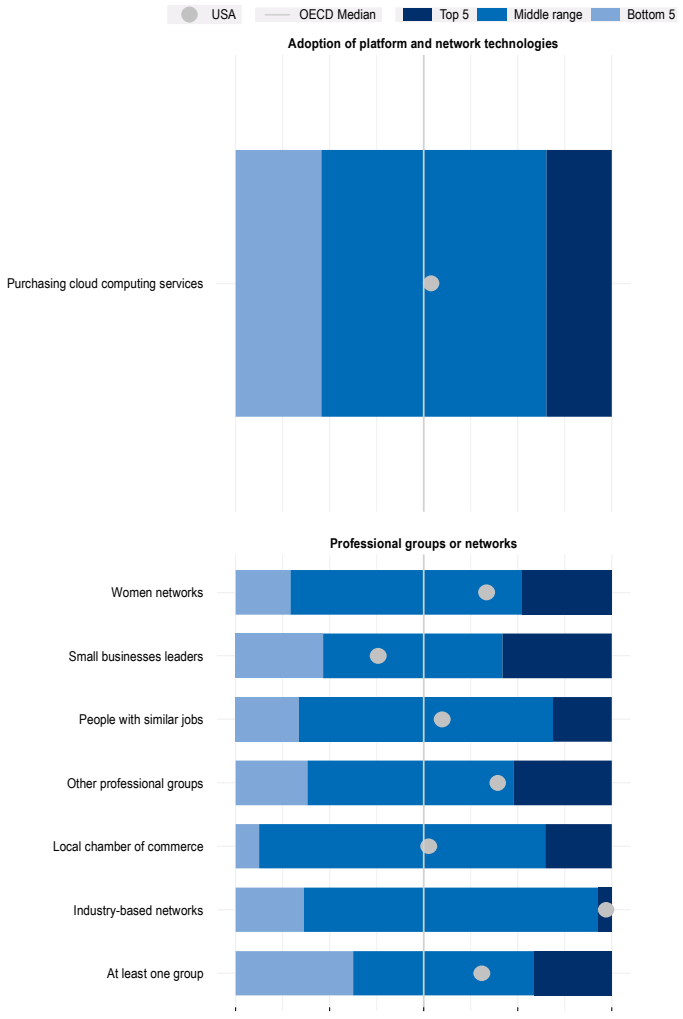
Figure 8.244. SME integration in trade and embeddedness of foreign affiliates' activities (%)



Note: SMEs imports and exports as a percentage (%) of total country imports and exports of goods and services respectively, measured in trade value. SMEs include firms with 1-249 persons employed. Exports consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Imports consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. The diversification of trade networks is measured by the share of all businesses exporting/importing to/from 20 or more countries. SME integration in long GVCs is calculated as the share of SMEs in all imports and exports of the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO). These are manufacturing of: textiles (13), wearing appeal (14), leather and related products (15), rubber and plastics products (22), basic metals (24), computers, electronics, and optical equipment (26), electrical equipment (27), other machinery and equipment (28), motor vehicles, trailers and semi-trailers (29), and other transport equipment (30). Foreign affiliates' (FA) output used locally refers to the percentage of the output of foreign affiliates that is used by domestic firms for intermediary consumption, total economy. FA sourcing locally refers to the percentage of FA's sourcing that comes from domestic firms, total economy. Reference year: % FA activities: 2016; % trade value in long GVCs and % trade value: 2020, or latest available. OECD denotes the unweighted mean values for countries with available information.
Source: OECD TEC database and Analytical AMNE database.

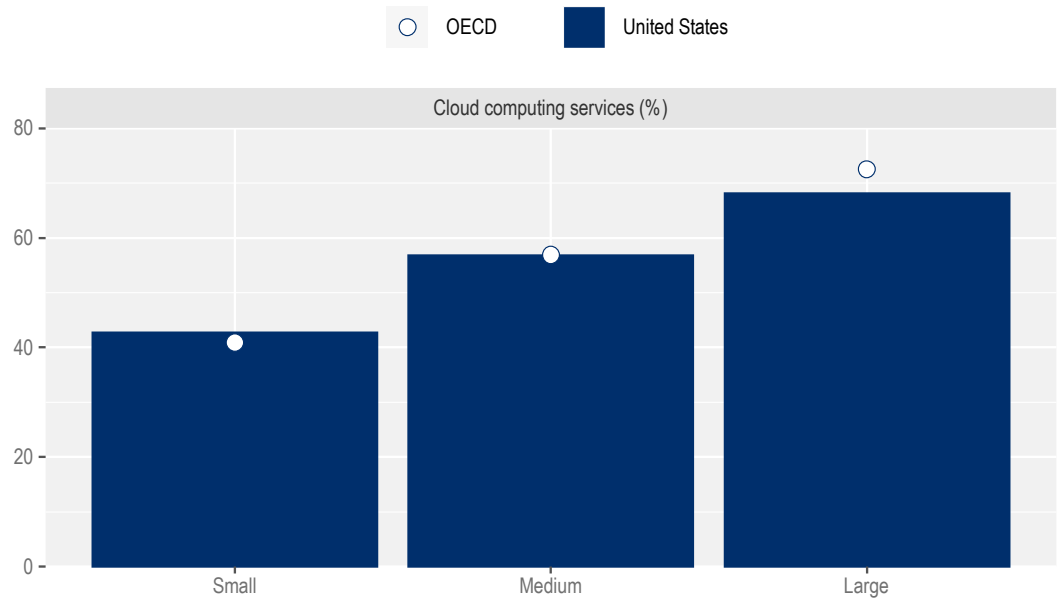
Knowledge and innovation networks

Figure 8.245. SME integration to networks or use of network technologies, benchmarking indices (OECD = 100)



Note: Indicators are presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). Innovation networks include: firms co-operating on innovation activities with universities or other higher education institutions; firms co-operating on innovation activities with enterprises engaged in international collaboration; firms cooperating on innovation activities with private business enterprises outside the enterprise group. Adoption of platform and network technologies include: Businesses sharing supply chain management (SCM) information, businesses using social media, businesses using customer relationship management software (CRM) and businesses purchasing cloud computing services. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Data covers firms with 10-249 employees. Firms belonging to professional groups or networks are obtained from the question: "Which of these kinds of professional groups, if any, are you a part of ?" based on business responses to the 2022 OECD-World Bank-Meta Future of Business Survey. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses from owners and managers of the business are used in the analysis.
Source: Innovation networks: 2021 OECD survey of national Innovation Statistics and Eurostat Community Innovation Survey (OECD, 2021; Eurostat, 2022); Adoption of platform and network technologies: OECD ICT Access and Usage by Businesses; Professional groups: 2022 OECD-World Bank-Meta Future of Business Survey.

Figure 8.246. Share of firms accessing digital skills (%) by outsourcing, by firm size class



Note: Share (%) of businesses that purchased cloud computing services (%), latest year available. Small firms are defined as having between 10-49 employees, medium-sized between 50 and 249 and large firms as 250 or more.
Source: OECD database on ICT Access and Usage by Businesses.

References

De Backer, K. and S. Miroudot (2013), "Mapping Global Value Chains", *OECD Trade Policy Papers*, No. 159, OECD Publishing, Paris, https://doi.org/10.1787/5k3v1trgnbr4-en. [2]

Eurostat (2022), *Community innovation survey 2020 (CIS2020)*, https://ec.europa.eu/eurostat/web/science-technology-innovation/data/database (accessed 06 February 2023). [12]

Eurostat and OECD (2007), *Eurostat-OECD manual on business demography statistics*, https://www.oecd.org/sdd/business-stats/eurostat-oecdmanualonbusinessdemographystatistics.htm. [1]

OECD (2023), "ICT Access and Use by Businesses", *OECD Telecommunications and Internet Statistics* (database), https://doi.org/10.1787/9d2cb97b-en (accessed on 10 March 2023). [13]

OECD (2023), "Timely indicators of entrepreneurship", *Structural and Demographic Business Statistics* (database), https://doi.org/10.1787/b1bfd8c5-en (accessed on 10 March 2023). [5]

OECD (2022), *Financing SMEs and Entrepreneurs 2022: An OECD Scoreboard*, OECD Publishing, Paris, https://doi.org/10.1787/e9073a0f-en. [7]

OECD (2022), *OECD Data Lake on SMEs and Entrepreneurship: A New Knowledge Infrastructure on SMEs and Entrepreneurship*, https://www.oecd.org/cfe/datalake.htm (accessed 3 March 2023). [17]

OECD (2022), *OECD Economic Outlook, Interim Report March 2022: Economic and Social Impacts and Policy Implications of the War in Ukraine*, OECD Publishing, Paris, https://doi.org/10.1787/4181d61b-en. [8]

OECD (2022), *Structural and Demographic Business Statistics Database*. [3]

OECD (2022), *Trade by Enterprise Characteristics (TEC) Database*. [4]

OECD (2021), *OECD SME and Entrepreneurship Outlook 2021*, OECD Publishing, Paris, https://doi.org/10.1787/97a5bbfe-en. [15]

OECD (2021), *Survey of Business Innovation Statistics*. [11]

OECD (2020), *Evaluating the initial impact of COVID-19 containment measures on economic activity*. [16]

OECD (2020), *Labour Force Statistics 2010-2019*. [6]

OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, https://doi.org/10.1787/34907e9c-en. [14]

OECD (2018), "OECD Inter-Country Input-Output (ICIO) Tables". [9]

OECD (2017), "Activity of Multinational Enterprises (AMNE) Database". [10]

OECD-World Bank-Meta (March 2022), *Future of Business Survey, Data for Good*, https://dataforgood.fb.com/global-state-of-smb. [18]

Annexe A. Sources and definitions

Table A.1. Sources and definitions

SME sector structure and performance			
Topic	**Code Variable**	**Description**	**Source**
Size of the SME&E sector	Share of SMEs in total employment (%)	Employment by enterprise size as a percentage of all persons employed in the business economy. The total number of persons engaged is defined as the total number of persons who worked in or for the concerned unit during the reference year. Total employment excludes: directors of incorporated enterprises and members of shareholders' committees who are paid solely for their attendance at meetings; labour made available to the concerned unit by other units and charged for; persons carrying out repair and maintenance work in the unit on the behalf of other units; home-workers; and persons on indefinite leave, military leave or in retirement. Micro firms include firms with 1-9 persons employed; small firms: 10-49 persons employed; medium-sized firms: 50-249 persons employed; and large firms: more than 250 persons employed.	OECD Structural and Demographic Business Statistics database (SDBS) **Variable:** EMPN **Dimension:** Size Class: SME: SME firms NSC1: Micro firms Total: All firms
	Share of SMEs in turnover (%)	Total turnover by enterprise size as a percentage of total amount invoiced in business economy. Turnover equals the total value of invoices by the observation unit during the reference period corresponding to market sales of goods or services supplied to third parties. Turnover includes all duties and taxes on the goods or services invoiced by the unit with the exception of the VAT invoiced by the unit vis-à-vis its customer and other similar deductible taxes directly linked to turnover. It also includes all other charges (transport, packaging, etc.) passed on to the customer, even if these charges are listed separately in the invoice. Reduction in prices, rebates and discounts as well as the value of returned packing must be deducted. Income classified as other operating income, financial income and extra-ordinary income in company accounts is excluded. Operating subsidies received from public authorities, or supranational authorities are also excluded. Micro firms include firms with 1-9 persons employed; small firms: 10-49 persons employed; medium-sized firms: 50-249 persons employed; and large firms: more than 250 persons employed.	OECD Structural and Demographic Business Statistics database (SDBS) Variable: TUTT **Dimension:** Size Class: SME: SME firms NSC1 : Micro firms Total : All firms
Trade Value	SMEs as exporters (%)	Share of SMEs in trade value, exports. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. Micro firms include firms with 1-9 persons employed; small firms: 10-49 persons employed; medium-sized firms: 50-249 persons employed; and large firms: more than 250 persons employed.	OECD Trade by Enterprise Characteristics database Variable: TSEC1.2 **Dimension:** Size Class: 3B: SME firms 1: Micro firms 2: 10-49 employees 3: 50-240 employees Total: All firms
Entrepreneurship and business dynamics			
Topic	**Variable**	**Description**	**Source**
Business dynamics	Firm entry (quarter-on-quarter growth (%))	Firm entry refers to the number of new enterprises created during the reference quarter. Quarterly data is presented from the year 2000 (or earliest available) until the second quarter of 2022 (or latest available). Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year. Firm entry corresponds, whenever possible, to enterprise births. Firm entry	OECD Timely Indicators of Entrepreneurship (TIE) database Variable: ENTRIES

		excludes reorganisations of existing businesses (merger, spin-off, buy-out, change of legal form, etc.). Please see the Eurostat-OECD Manual on Business Demography Statistics for further information on the concept of enterprise birth. Note that available statistics may deviate from this target for some countries (Eurostat and OECD, 2007[1]).	
	Bankruptcy (quarter-on-quarter difference (%))	Bankruptcies, expressed as an index with 2015 as reference year. Reference year may differ based on data availability. Bankruptcy refers to the initiation of insolvency procedures. Note that such procedures do not always end up in the dissolution of the enterprise. Growth is obtained by dividing the value in a quarter by the value the same quarter of the previous year.	OECD Timely Indicators of Entrepreneurship (TIE) database Variable: BANKRUPTCIES
Self-Employment	Share of self-employed in total employment (%)	Self-employment is defined as the employment of employers, workers who work for themselves, members of producers' co-operatives, and unpaid family workers. It is expressed as a percentage of total employment.	OECD Annual Labour Force Statistics database Variable: YGTT22P1_ST
SME indebtedness			
SME outstanding loans	SME outstanding loans	Bank and financial institution loans to SMEs, amount outstanding (stocks) at the end of period. It is shown by firm size using the national definition of SME or, if necessary, loan amounts less than EUR 1 million or an equivalent threshold that is deemed appropriate on a case-by-case basis.	OECD Financing SMEs and Entrepreneurs Scoreboard: 2023 Highlights
Women in trade and gender gap			
Women in trade and gender gap	Gender export gap	Share of firms that indicate they engage in trade, by gender of leadership. The share of firms is obtained from the question: *Is your business engaged in international trade?* Firms labelled that engage in trade are those that report "Yes, as an exporter and importer" or "Yes, as an exporter". The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only answers from owners and managers of the business are included. Equal refers to equal number of men and women managing and owning the company, women-led indicate that more than 50% of managers and/or owners are women and men-led indicate that more than 50% of managers and owners of the company are men.	Facebook/OECD/World Bank (2022), Future of Business Survey
SME integration in global value chains, linkages with foreign markets and multinationals			
Trade Value	SMEs as exporters (%)	Share of SMEs in trade value, exports. Exports of goods and services consist of sales, barter, or gifts or grants, of goods and services from residents to non-residents. SMEs include firms with 1-249 persons employed.	OECD Trade by Enterprise Characteristics database
	SMEs as importers (%)	Share of SMEs in trade value, imports. Imports of goods and services consist of purchases, barter, or receipts of gifts or grants, of goods and services by residents from non- residents. SMEs include firms with 1-249 persons employed	OECD Trade by Enterprise Characteristics database
	Imports from 20+ countries (%)	The import share of firms trading with more than 20 countries expressed as a percentage of all imports. To calculate the import share of firms that import from 20+ countries, first it is necessary to aggregate all the import value of firms that trade with more than 20 countries. This number is then divided by the total value of imports for the year of reference.	OECD Trade by Enterprise Characteristics database
Trade value	Export from 20+ countries (%)	The export share of firms trading with 20+ countries expressed as a percentage of all exports. To calculate the export share of firms that export to 20+ countries, first it is necessary to aggregate all the export value of firms that export to 20+ countries and divide that by the total value of exports for the year of reference.	OECD Trade by Enterprise Characteristics database
Trade value in long GVCs	SME exporters in long GVCs (%)	Share of SMEs in trade value, exports, long GVCs. Long GVCs are defined as the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO) model (De Backer and Miroudot, 2013[2]), and using the International Standard Industrial Classification of All Economic Activities Revision 4 (ISIC Rev.4) at	Calculations based on OECD Trade by Enterprise Characteristics database

		two digits: i.e. manufacturing of textiles (13), manufacturing of wearing appeal (14), manufacturing of leather and related products (15), manufacturing of rubber and plastics products (22), manufacturing of basic metals (24), manufacturing of computers, electronics, and optical equipment (26), manufacturing of electrical equipment (27), manufacturing of other machinery and equipment (28), manufacturing of motor vehicles, trailers and semi-trailers (29), and manufacturing of other transport equipment (30).	
	SME importers in long GVCs (%)	Share of SMEs in trade value, imports, long GVCs. Long GVCs are defined as the top 10 longest value chains based on the OECD Inter-Country Input-Output (ICIO) model (De Backer and Miroudot, 2013[2]), and using the International Standard Industrial Classification of All Economic Activities Revision 4 (ISIC Rev.4) at two digits: i.e. manufacturing of textiles (13), manufacturing of wearing appeal (14), manufacturing of leather and related products (15), manufacturing of rubber and plastics products (22), manufacturing of basic metals (24), manufacturing of computers, electronics, and optical equipment (26), manufacturing of electrical equipment (27), manufacturing of other machinery and equipment (28), manufacturing of motor vehicles, trailers and semi-trailers (29), and manufacturing of other transport equipment (30).	Calculations based on OECD Trade by Enterprise Characteristics database
Foreign affiliate's activities	Foreign affiliates (FAs) sourcing locally (%)	Sourcing structure of foreign affiliates, percentage of foreign affiliates' sourcing that comes from domestic multinationals (MNEs) and non-MNEs, total economy. Foreign affiliates are firms with at least 50% foreign ownership; domestic MNEs are domestic firms with foreign affiliates; domestic firms are those not involved in international investment.	OECD Analytical AMNE database
	FAs output used locally (%)	Output use of foreign affiliates, percentage of the output of foreign affiliates that is used by domestic MNEs and non-MNEs for intermediary consumption, total economy. Foreign affiliates are firms with at least 50% foreign ownership; domestic MNEs are domestic firms with foreign affiliates; domestic firms are those not involved in international investment.	OECD Analytical AMNE database
SME networks for innovation, growth and resilience			
Professional groups or networks	Professional networks (%)	Share of firms belonging to professional groups. The share of firms is obtained from the question: *Which of these kinds of professional groups, if any, are you a part of?*. The answers are weighted such that the weight of each firm is 1 in order to account for multiple responses. The sample included in the analysis are firms in OECD countries that have between 1-249 employees. Only the responses obtained from owners and managers of the business (obtained from the question *Which of these best describes your main employment situation?*) are used in the analysis. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	Facebook/OECD/World Bank (2022), Future of Business Survey Variable: prf_grp_numeric
Innovation networks	Cooperation with higher education institutions (benchmark index)	Firms co-operating on innovation activities with universities or other higher education institutions, as a percentage of innovation active firms. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD Innovation Indicators 2021 Variable: UNIV_XINN
	International Cooperation with enterprises	Firms co-operating on innovation activities with enterprises engaged in international collaboration, as a percentage of innovation active firms. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD Innovation Indicators 2021 Variable:COOP_FOR_XINN
	Cooperation with private businesses	Firms co-operating on innovation activities with private business enterprises outside the enterprise group, as a percentage of innovation active firms. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD Innovation Indicators 2021 Variable: PRV_OUT_XINN
	Customer	Firms using CRM (Customer Relationship Management) software	OECD ICT Access and

Adoption of platform and network technologies	relationship management software	(%). Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	Usage by Businesses Variable: C3B
	Supply chain sharing	Firms sharing electronically Supply Chain Management (SCM) information with suppliers and customers. Sharing information electronically on SCM refers to exchanging information with suppliers and/or customers about the availability, production, development or distribution of goods or services. This information may be exchanged via websites, networks or other means of electronic data transfer, but it excludes manually typed e-mail messages. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest). See readers guide for more information.	OECD ICT Access and Usage by Businesses Variable: C4
	Cloud computing services	Firms purchasing Cloud computing services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD ICT Access and Usage by Businesses Variable: G3
	Social media	Firms using social media. Use of social media refers to the enterprise's use of applications based on Internet technology or communication platforms for connecting, creating and exchanging content online, with customers, suppliers, or partners, or within the enterprise. Enterprises using social media are considered those that have a user profile, an account or a user license depending on the requirements and the type of the social media. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD ICT Access and Usage by Businesses Variable: K1
SME access to digital skills: hiring, training and outsourcing			
ICT training	Training for ICT (%)	Businesses that provided any form of training to develop ICT related skills to the persons employed, as percentage of businesses with 10 persons employed or more, by size. Small firms include firm with 10-49 persons employed; medium-sized firms: 50-249 persons employed; and large firms: more than 250 persons employed. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD ICT Access and Usage by Businesses and OECD (2021), The Digital Transformation of SMEs Variable: H1
ICT hiring	ICT employment (%)	Firms that who employ ICT specialists in the last 12 months, as percentage of businesses with 10 persons employed or more. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD ICT Access and Usage by Businesses and OECD (2021), The Digital Transformation of SMEs Variable: H4
ICT outsourcing	Purchase cloud computing services (%)	Firms purchasing Cloud computing services. Cloud computing services include: e-mail, office software, finance or accounting software, customer relationship management (CRM) software, hosting of databases, storage of files, and computing power to run own software. Presented in the form of benchmarking indices and reported on a common scale from 0 to 200 (0 being the lowest OECD value, 100 the median value, and 200 the highest).	OECD ICT Access and Usage by Businesses Variable: G3

References

De Backer, K. and S. Miroudot (2013), "Mapping Global Value Chains", *OECD Trade Policy Papers*, No. 159, OECD Publishing, Paris, https://doi.org/10.1787/5k3v1trgnbr4-en. [2]

Eurostat and OECD (2007), *Eurostat-OECD manual on business demography statistics*, https://www.oecd.org/sdd/business-stats/eurostat-oecdmanualonbusinessdemographystatistics.htm. [1]

OECD SME and Entrepreneurship Outlook 2023

Over the past few years, the global economy has suffered profound shocks that have had a marked impact on small and medium-sized enterprises (SMEs) and entrepreneurs. While government support protected SMEs from the economic impact of the COVID-19 pandemic, new threats have emerged. Rising geopolitical tensions and global financial risks, high inflation, tightening monetary and fiscal policies, labour shortages, high trade barriers and slowing integration into global value chains all contribute to a more challenging business environment for SMEs. Meanwhile, there is an urgent need to accelerate the contribution of SMEs and entrepreneurship to the green and digital transitions and help them navigate a changing international trade and investment landscape. Against this background, the *OECD SME and Entrepreneurship Outlook 2023* provides new evidence on recent trends in SME performance, changing business conditions, and policy implications. It reflects on the broad underlying theme of SME integration into a series of networks, including global production and supply-chain networks and the role of women led-businesses in international trade, knowledge and innovation networks, and skill ecosystems, as well as the main policies in place to ensure SMEs can integrate these networks and benefit from the ongoing transformations they go through. The report also contains statistical country profiles that benchmark the 38 OECD across a set of indicators.

PRINT ISBN 978-92-64-85147-4
PDF ISBN 978-92-64-89576-8

9 789264 851474