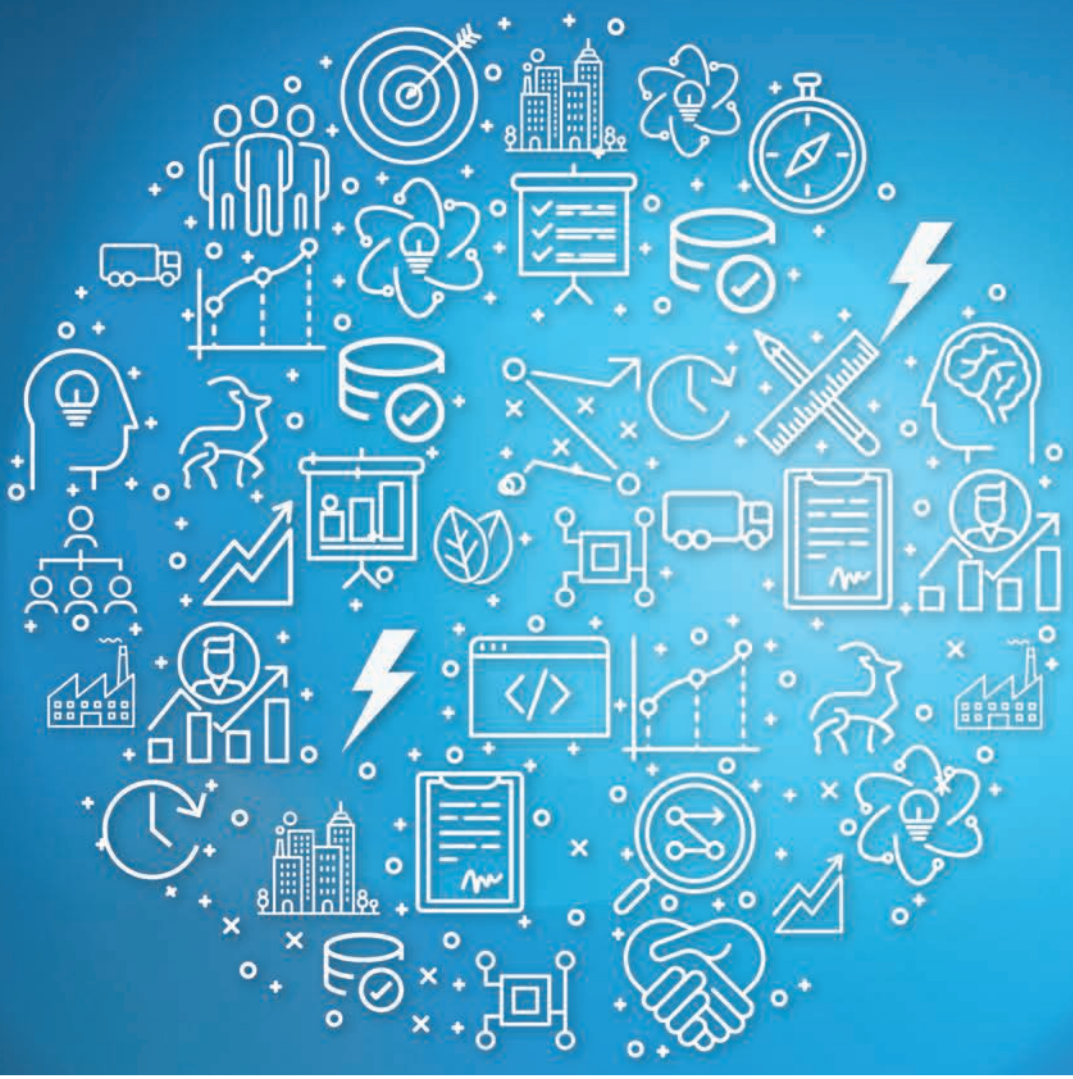
OECD SME and Entrepreneurship Outlook 2019



OECD

OECD SME and Entrepreneurship Outlook 2019

OECD

BETTER POLICIES FOR BETTER LIVES

This document, as well as any data and any 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.

Please cite this publication as:
OECD (2019), *OECD SME and Entrepreneurship Outlook 2019*, OECD Publishing, Paris, *https://doi.org/10.1787/34907e9c-en*.

ISBN 978-92-64-37480-5 (print)
ISBN 978-92-64-35882-9 (pdf)

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.

Photo credits: Cover © Babubhai Patel/Getty images

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

© OECD 2019

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgement of OECD as source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to *rights@oecd.org*. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at *info@copyright.com* or the Centre français d'exploitation du droit de copie (CFC) at *contact@cfcopies.com*.

Foreword

Small and medium-sized enterprises (SMEs) and entrepreneurship are essential drivers of economic and social well-being. Representing 99% of all businesses, generating about 60% of employment and totalling between 50% and 60% of value added in the OECD area, SMEs are key for delivering sustainable and inclusive economic growth. They are instrumental to ensure that our economies and societies adapt to major transformations, such as digitalisation, globalisation, ageing and environmental pressures.

In this context, it is more critical than ever to have a better understanding of the conditions that enable countries, regions and cities to capitalise on their many small businesses. However, while SMEs and entrepreneurship are high on the policy agenda in many countries, the lack of robust and comparable evidence has often limited a more effective policy design and implementation.

Bringing together unique evidence, this first edition of the *OECD SME and Entrepreneurship Outlook* offers policymakers new benchmarking tools and insights on good policy practices to help frame national SME and entrepreneurship policies. Complementing the statistical publication *OECD Entrepreneurship at a Glance* and building on the 2017 report *Small, Medium, and Strong*, this new flagship publication presents recent and emerging trends in entrepreneurship and SME performance and provides a comprehensive overview of business conditions and policies that impact SMEs and entrepreneurs.

The *Outlook* reveals that the SME engine has begun to pick up again, with firm creation – an important driver of productivity growth and innovation – back to pre-crisis levels in many countries. SMEs have also been important drivers of creation during the last decade. However, there are also signs that the journey ahead may not be an easy one: significant productivity and wage gaps with larger firms persist, weighing on inclusiveness. Even in relatively large SMEs, wage levels are typically around 20% lower than in large firms, reflecting lower productivity levels. And while there has been significant job growth, most has been in activities with relatively low productivity and wage levels. Between 2010 and 2016, for example, close to 90% of the net new jobs in France, 75% in the United States, and 66% in Germany and the United Kingdom, were in low-wage sectors, which contributed to the observed stagnation in average wages and to widening inequalities.

Not all SMEs are the same, however, and this *Outlook* provides new insights on the heterogeneity of SME performance. Among the millions of SMEs around the world, there are many major innovation and productivity champions, especially in specialised services such as professional, scientific and technical activities, where size does not play such a key role. Indeed, SMEs, including micro-firms, can be as productive as, or even more than, large firms in these areas. For instance, between 2010 and 2016, SMEs operating in the information and communication technologies (ICT) sector increased their shares of employment and value added across nearly all OECD economies, despite concerns about market concentration and winner take-most dynamics.

Digital technologies are opening up new opportunities for young firms and SMEs to innovate and grow, including through digital business platforms, big data and Fintech.

Between 2016 and 2017, for example, online alternative financing saw double and triple digit growth in many countries, marking a turning point in the diversification of SME financing sources and instruments.

Yet, as the *Outlook* illustrates, to contribute to growth and job creation, and capitalise on the digital transition, SMEs are much more dependent on the business ecosystem and the policy environment than large companies. Many SMEs continue to face size-related barriers in accessing strategic resources, such as skills, finance and knowledge. In 2017, a quarter of SMEs in the EU reported a lack of skilled staff or experienced managers as their most important problem. The proportion of small firms providing ICT training to employees has not increased substantially in recent years, and remains low across OECD countries, ranging from 49% in New Zealand to 7% in Latvia in 2018. While there are clear benefits for SMEs in protecting data and mitigating cybersecurity threats, the associated costs are relatively higher for smaller enterprises.

These barriers are a symptom of imperfections in product, credit and labour markets. They also reflect the disproportionate impacts of regulatory complexities, administrative burdens and policy inefficiencies on small firms. Smart regulation, reforms in taxation and the strengthening of e-government functions have contributed to reduce the burden on SMEs and level the playing field. However, the pace of structural reforms has slowed in recent years, and progress is uneven in areas that are essential for business dynamism and a thriving SME population, such as insolvency regimes, enforcement of competition laws and civil justice systems.

In addition to a lower adoption of new technologies, SMEs are typically less engaged in internationalisation compared to large firms. This channel for productivity enhancement remains a challenge for small firms, notably in the context of recent trade tensions, which are likely to further hamper their opportunities to engage in trade networks and Global Value Chains.

The scale of these challenges calls for innovative and multi-level policy solutions. The 2018 *OECD Declaration on Strengthening SMEs and Entrepreneurship for Productivity and Inclusive Growth* recognised the importance of getting SME policies right, for the benefits of globalisation, open markets and technological progress to be enhanced and shared more broadly across our economies and societies.

As this report shows, governments have been proactive in their efforts to level the playing field for SMEs and capitalise on emerging opportunities, making them a major target of public policy attention and support. The 36 country profiles of the *OECD SME and Entrepreneurship Outlook*, which complement the analysis of SME trends and business environment conditions, show that while governments often have common overarching strategies to accelerate SME development and innovation, a large variety of policy approaches is being implemented.

It is our hope that, by bringing together and comparing national experiences and outcomes, this publication will provide an instrument that can help governments identify policy levers to unleash the potential of SMEs and entrepreneurs and to build more resilient, sustainable and inclusive societies.

Angel Gurría

OECD Secretary-General

Acknowledgements

The SME and Entrepreneurship Outlook is a joint report produced 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 Martine Durand. The report was prepared under the aegis of the OECD Working Party on SMEs and Entrepreneurship (WPSMEE). Useful comments and guidance were also provided by delegates to the OECD Committee on Industry, Innovation and Entrepreneurship (CIIE). The report was approved and declassified by the WPSMEE and the CIIE.

Sandrine Kergroach (CFE) and Mariarosa Lunati (SDD) coordinated the production of the first 2019 edition of this report. Lucia Cusmano and Miriam Koreen (CFE) and Nadim Ahmad (SDD) supervised the project. Special thanks go to Joaquim Oliveira Martins (CFE) for his suggestions on the report.

Chapter 1, "*Trends in SME sector and performance*", was prepared by Nadim Ahmad and Mariarosa Lunati from SDD, with input and statistical assistance from Gueram Sargsyan, Liliana Suchodolska and Belen Zinni.

Part I on "*SME business conditions and access to strategic resources*", and the conceptual framework, was designed and produced by Sandrine Kergroach from CFE. Lead authors also include Lucia Cusmano, Kris Boschmans and David Halabisky, with contributions from Giulia Ajmone Marsan, Dorothee Allain-Dupre, Sara Ballero, Marco Bianchini, Isabelle Chatry, Andrea Hofer, Alexander Lembcke, Marco Marchese, Hubert Massoni, Lora Pissareva, Jonathan Potter, Stephan Raes, Oriana Romano, Raffaele Trapasso and Lenka Wildnerova.

Part II which provides detailed country profiles was jointly designed and produced by Sandrine Kergroach from CFE and Mariarosa Lunati from SDD. It benefited from contributions from Giulia Ajmone-Marsan, Sara Ballero, Marco Bianchini, Kris Boschmans, Pierre Coster, Eric Gonnard, David Halabisky, Sandra Hannig, Cynthia Lavison, Marco Marchese, Hubert Massoni, Lora Pissareva, Pierre Popineau, Jonathan Potter, Stephan Raes, Laetitia Reille, Mikko-Waltteri Sihvola and Raffaele Trapasso (from CFE) and Samuel Pinto-Ribeiro, Gueram Sargsyan, Liliana Suchodolska and Waleed Adebayo-Renaud (from SDD).

Colleagues from other OECD Directorates provided valuable input and feedback. Thanks go to Silvia Appelt, Michela Bello, Frédéric Bourassa, Hélène Dernis, Guillaume Kpodar, Pierre Montagnier and Fabien Verger from the OECD Directorate for Science, Technology and Innovation (STI); Cristiana Vitale from the OECD Economics Department (ECO); and Frederic Gonzales from the OECD Trade and Agriculture Directorate (TAD).

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

Table of contents

Foreword **3**

Acknowledgements **5**

Editorial **17**

Reader's guide **19**

Background 19
Contents and structure 20
Sources and resources 23

Acronyms and abbreviations **25**

Acronyms 25
Abbreviations 27

Executive Summary **29**

Enterprise creations have picked up, especially in services, but newly created jobs are concentrated in low-productive and low-wage sectors 29
Innovation is key to boost productivity, and digitalisation offers SMEs new opportunities to take part in the next production revolution 30
Digitalisation can also help SMEs integrate global markets and global value chains (GVCs) 30
SME market conditions have improved overall, but there are risks on the horizon 30
SMEs must be better prepared for the digital transition 31
Government approaches to SME&E policy are increasingly varied 31
Digitalisation is also a game changer for high quality public services to SMEs. 32
These developments call for innovative policy action and a whole-of-government approach 32

Chapter 1. SME structure and business dynamism: Trends and performance in productivity and wages **33**

Introduction 35
The structure of the SME population 36
Business dynamics and SMEs 42
SMEs and productivity 46
SME participation in global markets 57
Conclusions and looking ahead 69
Notes 71
Data sources 72
References 72
Annex 1.A. Developing new data 74
Annex 1.B. Sectoral specialisation 76
Annex 1.C. Enterprise creation rates 79
Annex 1.D. Labour productivity of SMEs by sector 85

Part I. Business conditions for SMEs and entrepreneurship and policy responses 91

Chapter 2. Institutional and regulatory framework 93

Why is it important 94
Regulation, institutions and recent trends 96
Recent policy developments 104
References 110

Chapter 3. Market conditions 113

Why is it important? 114
Global and domestic market conditions: Recent trends 119
Market conditions for SMEs and entrepreneurship: recent national policy trends 129
Notes 139
References 140
Annex 3.A. Market conditions, efficient firm size and market structure 147
Notes 150
Annex 3.B. SME scale-up dynamics 151

Chapter 4. Infrastructure 153

Why is it important? 155
Infrastructure capacity and performance: Recent trends 159
Notes 173
References 174
Annex 4.A. Fixed and mobile broadband: Substitution and complementarity 178

Chapter 5. Access to finance 181

Why is it important? 182
The funding mix for SMEs: recent and emerging trends 183
Main policy approaches and recent policy developments 192
Notes 195
References 195

Chapter 6. Access to skills 199

Why is it important? 200
Skills, labour markets and emerging trends 202
Main policy approaches and recent policy developments 210
Notes 215
References 215

Chapter 7. Access to innovation assets 219

Whys is it important? 221
Innovation and knowledge diffusion in SMEs: Recent trends 224
Main policy approaches and recent national policy development 234
Notes 242
References 243
Web references (accessed 29 July 2018) 247
Annex 7.A. The diffusion of digital technology packages 251

Part II. Country Profiles 253

Chapter 8. Methodology of the country profiles 255

Purpose and structure ... 256
SME structure and business dynamics ... 257
Benchmarking SME business conditions: general approach and methodology ... 258
SME access to strategic resources ... 259
SME business environment ... 261
Caveats and caution in interpretation ... 263
Annex 8.A. Data sources and definitions ... 264
Annex 8.B. Policy sources and general references ... 274

Chapter 9. Australia ... 275

SME business conditions and access to strategic resources ... 276
References ... 277

Chapter 10. Austria ... 278

SME business conditions and access to strategic resources ... 279
References ... 280

Chapter 11. Belgium ... 281

SME business conditions and access to strategic resources ... 282

Chapter 12. Canada ... 284

SME business conditions and access to strategic resources ... 285
References ... 286

Chapter 13. Chile ... 287

SME business conditions and access to strategic resources ... 288
References ... 289

Chapter 14. Czech Republic ... 291

SME business conditions and access to strategic resources ... 292
References ... 293

Chapter 15. Denmark ... 294

SME business conditions and access to strategic resources ... 295
References ... 296

Chapter 16. Estonia ... 297

SME business conditions and access to strategic resources ... 298
References ... 299

Chapter 17. Finland ... 300

SME business conditions and access to strategic resources ... 301
References ... 302

Chapter 18. France ... 303

SME business conditions and access to strategic resources ... 304
References ... 305

Chapter 19. Germany ... 306

SME business conditions and access to strategic resources ... 307
References ... 308

Chapter 20. Greece **309**
SME business conditions and access to strategic resources 310
References 311
Chapter 21. Hungary **312**
SME business conditions and access to strategic resources 313
References 314
Chapter 22. Iceland **315**
SME business conditions and access to strategic resources 316
References 317
Chapter 23. Ireland **319**
SME business conditions and access to strategic resources 320
References 321
Chapter 24. Israel **322**
SME business conditions and access to strategic resources 323
References 324
Note for Israel 324
Chapter 25. Italy **325**
SME business conditions and access to strategic resources 326
References 327
Chapter 26. Japan **329**
SME business conditions and access to strategic resources 330
References 331
Chapter 27. Korea **333**
SME business conditions and access to strategic resources 334
References 335
Chapter 28. Latvia **336**
SME business conditions and access to strategic resources 337
References 338
Chapter 29. Lithuania **339**
SME business conditions and access to strategic resources 340
References 341
Chapter 30. Luxembourg **342**
SME business conditions and access to strategic resources 343
References 344
Chapter 31. Mexico **345**
SME business conditions and access to strategic resources 346
References 347
Chapter 32. The Netherlands **348**

SME business conditions and access to strategic resources 349
References 350

Chapter 33. New Zealand 352

SME business conditions and access to strategic resources 353
References 354

Chapter 34. Norway 355

SME business conditions and access to strategic resources 356
References 357

Chapter 35. Poland 358

SME business conditions and access to strategic resources 359

Chapter 36. Portugal 361

SME business conditions and access to strategic resources 362
References 363

Chapter 37. Slovak Republic 365

SME business conditions and access to strategic resources 366
References 367

Chapter 38. Slovenia 369

SME business conditions and access to strategic resources 370
References 371

Chapter 39. Spain 372

SME business conditions and access to strategic resources 373
References 374

Chapter 40. Sweden 375

SME business conditions and access to strategic resources 376
References 377

Chapter 41. Switzerland 378

SME business conditions and access to strategic resources 379
References 380

Chapter 42. Turkey 382

SME business conditions and access to strategic resources 383
References 384

Chapter 43. United Kingdom 385

SME business conditions and access to strategic resources 386
References 387

Chapter 44. United States 388

SME business conditions and access to strategic resources 389
References 390

Tables

Table 1. Country abbreviations and national currency (ISO codes) ... 27
Table 1.1. Net employment creation and destruction between 2010 and 2016 (or latest available year) ... 47
Table 1.2. Change in employment over the period 2010-2016, or latest available year ... 49
Table 2.1. Designing "smart regulation" for SMEs: Selected country examples ... 105
Table 2.2. Strengthening public sector integrity and efficiency: Selected country examples ... 107
Table 2.3. The digital transformation of public administration: Selected country examples ... 109
Table 3.1. Helping SMEs go global: Selected examples of mainstreamed approaches ... 130
Table 3.2. Helping SMEs go global: Selected examples of governance improvement ... 131
Table 3.3. Helping SMEs go global: Selected examples of targeted approaches ... 131
Table 3.4. Levelling the playing field in product markets: Selected country examples ... 133
Table 3.5. Levelling the playing field in public procurement: Selected country examples ... 135
Table 3.6. Levelling the playing field in lead markets: Selected initiatives for a circular economy ... 138
Table 4.1. A whole-government and multi-level approach to infrastructure: Selected country examples ... 167
Table 4.2. Investing in network and knowledge infrastructure: Selected country examples ... 171
Table 5.1. Fostering equity investment in new and high growth firms: Selected policy examples ... 193
Table 5.2. Sustaining and regulating alternative financing instruments: Selected policy examples ... 194
Table 6.1. Engaging SMEs in training their workers: Selected country examples ... 211
Table 6.2. Increasing SME absorptive capacity: Selected country examples ... 212
Table 6.3. Building transversal and entrepreneurial skills: Selected country examples ... 213
Table 7.1. Accelerating the SME digital transition: Selected country examples ... 235
Table 7.2. Innovation policies for SMEs: Selected country examples ... 238
Table 7.3. Strengthening SME access to innovation networks: Selected country examples ... 239

Annex Table 1.C.1. Number of enterprises, employment and enterprise births ... 82
Annex Table 8.A.1. SME structure and performance ... 264
Annex Table 8.A.2. Access to finance ... 265
Annex Table 8.A.3. Access to Skills ... 266
Annex Table 8.A.4. Access to Innovation ... 268
Annex Table 8.A.5. Institutional and regulatory framework ... 270
Annex Table 8.A.6. Market conditions ... 272

Figures

Figure 1. SME&E Outlook: Conceptual framework ... 20
Figure 2. SME&E Outlook: detailed conceptual framework ... 21
Figure 1.1. SMEs and their contribution to the business economy ... 37
Figure 1.2. Broad specialisation of SMEs has changed little in recent years ... 39
Figure 1.3. Share of SMEs in value added ... 40
Figure 1.4. Digitalisation provides scope for SME growth but the pace of adoption varies across countries and sectors ... 41
Figure 1.5. In most countries SMEs have been the primary drivers of employment growth in the service sector ... 43
Figure 1.6. Enterprise creations are back to pre-crisis levels ... 44
Figure 1.7. Enterprise birth rates have risen in many countries but job creation rate remains low in some ... 45

Figure 1.8. Newly created jobs are mainly in lower productivity sectors 48
Figure 1.9. Real wages have lagged productivity growth in many countries..... 50
Figure 1.10. Labour productivity and compensation per employee by enterprise size, manufacturing 52
Figure 1.11. SME labour productivity and compensation per employee, by industry sector..... 53
Figure 1.12. Labour productivity of SMEs 56
Figure 1.13. Manufacturing wage gaps and SME trade, 2014 57
Figure 1.14. SME export activity, value added and employment shares 58
Figure 1.15. Industrial firms engaged in exports, 2016 or earliest available year..... 58
Figure 1.16. Direct and indirect exporting activity of SMEs in OECD countries..... 59
Figure 1.17. Direct and indirect exporting activity of SMEs in Nordic countries..... 60
Figure 1.18. Foreign value added share of exports in Nordic economies 61
Figure 1.19. International competitiveness in wages 62
Figure 1.20. International competitiveness through productivity..... 63
Figure 1.21. Labour income shares in manufacturing..... 64
Figure 1.22. SMEs in the manufacturing textiles sector..... 65
Figure 1.23 High-digital intensity SMEs have higher growth..... 66
Figure 1.24. SMEs lag in the adoption of more sophisticated digital technologies 67
Figure 1.25. Firms planning to increase employment in the next six months 68
Figure 1.26. Firms trading internationally, by the use of online tools..... 68
Figure 2.1. Small business impacts are among the most systematically assessed through RIA 97
Figure 2.2. *Ex-post* evaluation systems remain underdeveloped..... 99
Figure 2.3. Taxation increasingly aims to stimulate an investment climate for business..... 100
Figure 2.4. Insolvency regimes have improved unevenly across countries, if at all 102
Figure 2.5. Countries are making uneven progress at opening government data..... 103
Figure 3.1. Market structure, firm conduct and performance..... 115
Figure 3.2. After recent improvements, market conditions have tightened again..... 120
Figure 3.3. Market conditions are the most pressing challenges for SMEs 121
Figure 3.4. Global investments are slowing, reaching their lowest levels since 2013 122
Figure 3.5. Non-digital firms are increasingly adopting knowledge-seeking FDI strategies..... 124
Figure 3.6. Cyclical trends, megatrends and efficient firm size 126
Figure 4.1. Cloud computing allows firms reducing investment on ICT equipment 158
Figure 4.2. SMEs lag in connecting to high-speed broadband can jeopardize their digital transformation 159
Figure 4.3. ICT are the primary area of infrastructure investment in most countries 160
Figure 4.4. Firms are moving towards high-speed broadband but digital divides are widening..... 162
Figure 4.5. Global business R&D investment rebounded in 2017 165
Figure 4.6. R&D capital investment grows at a slower pace than research salaries 166
Figure 4.7. Infrastructure investment of subnational governments keeps receding 169
Figure 5.1. Bank credit remains the primary source of finance for SMEs 184
Figure 5.2. SMEs have restored their profit margins, which appear to have peaked 185
Figure 5.3. The banking sector has regained robustness since the financial crisis..... 186
Figure 5.4. Alternative-to-bank debt financing instruments by firm profile and stage of development 187
Figure 5.5. Volume of leasing and hire purchases continue to increase..... 188
Figure 5.6. Online markets for SME finance are expanding rapidly..... 190
Figure 5.7. Global ICO issuance between 2016 and mid-2018..... 191
Figure 6.1. Smaller firms lack soft skills for innovation 203
Figure 6.2. A larger share of small firms are offering training, narrowing the gap to larger firms..... 205
Figure 6.3. A large share of apprenticeships work in small companies 206
Figure 6.4. Business supply of ICT training has progressed little in recent years 207

Figure 6.5. Smaller firms provide less ICT training for their staff at the risk of delaying their digital transition 208
Figure 6.6. There is a pervasive gender gap in adult perception of their entrepreneurship skills 209
Figure 6.7. Females report less access to entrepreneurship training 210
Figure 7.1. SMEs are primary sources of innovation 222
Figure 7.2. SMEs struggle to combine innovation modes that require larger knowledge endowment 223
Figure 7.3. Digital diffusion tends to slowdown as firms get smaller 227
Figure 7.4. SME lag in adopting cloud computing could hold back their digital transformation 228
Figure 7.5. Few SMEs participate in R&D with little progress made in recent years outside Europe 232
Figure 7.6. SMEs receive more public support to business R&D than what they spend on R&D..... 237
Figure 8.1. SME&E Outlook: conceptual framework 257
Figure 8.2. SME&E Outlook: detailed conceptual framework 258
Figure 9.1. Structure and performance of the SME sector in Australia 275
Figure 10.1. Structure and performance of the SME sector in Austria 278
Figure 11.1. Structure and performance of the SME sector in Belgium 281
Figure 12.1. Structure and performance of the SME sector in Canada 284
Figure 13.1. Structure and performance of the SME sector in Chile 287
Figure 14.1. Structure and performance of the SME sector in the Czech Republic 291
Figure 15.1. Structure and performance of the SME sector in Denmark 294
Figure 16.1. Structure and performance of the SME sector in Estonia 297
Figure 17.1. Structure and performance of the SME sector in Finland 300
Figure 18.1. Structure and performance of the SME sector in France 303
Figure 19.1. Structure and performance of the SME sector in Germany 306
Figure 20.1. Structure and performance of the SME sector in Greece 309
Figure 21.1. Structure and performance of the SME sector in Hungary 312
Figure 22.1. Structure and performance of the SME sector in Iceland 315
Figure 23.1. Structure and performance of the SME sector in Ireland 319
Figure 24.1. Structure and performance of the SME sector in Israel 322
Figure 25.1. Structure and performance of the SME sector in Italy 325
Figure 26.1. Structure and performance of the SME sector in Japan 329
Figure 27.1. Structure and performance of the SME sector in Korea 333
Figure 28.1. Structure and performance of the SME sector in Latvia 336
Figure 29.1. Structure and performance of the SME sector in Lithuania 339
Figure 30.1. Structure and performance of the SME sector in Luxembourg 342
Figure 31.1. Structure and performance of the SME sector in Mexico 345
Figure 32.1. Structure and performance of the SME sector in The Netherlands 348
Figure 33.1. Structure and performance of the SME sector in New Zealand 352
Figure 34.1. Structure and performance of the SME sector in Norway 355
Figure 35.1. Structure and performance of the SME sector in Poland 358
Figure 36.1. Structure and performance of the SME sector in Portugal 361
Figure 37.1. Structure and performance of the SME sector in Slovak Republic 365
Figure 38.1. Structure and performance of the SME sector in Slovenia 369
Figure 39.1. Structure and performance of the SME sector in Spain 372
Figure 40.1. Structure and performance of the SME sector in Sweden 375
Figure 41.1. Structure and performance of the SME sector in Switzerland 378
Figure 42.1. Structure and performance of the SME sector in Turkey 382
Figure 43.1. Structure and performance of the SME sector in the United Kingdom 385
Figure 44.1. Structure and performance of the SME sector in the United States 388

Annex Figure 1.B.1. SME employment by economic activity, selected countries, 2015 76

Annex Figure 1.B.2. SME share of employment within sectors 78
Annex Figure 1.C.1. Number of establishments in the United States 80
Annex Figure 1.C.2. Number of employer establishments with 500+ employees in the United States 80
Annex Figure 1.C.3. Number of enterprise births, number of enterprises and birth rate, selected countries 81
Annex Figure 1.C.4. Birth rates, job creation and productivity 83
Annex Figure 1.D.1. Labour productivity of SMEs 85
Annex Figure 1.D.2. Labour productivity in 2010 and employment growth over 2010-2016 (or latest available year) 89
Annex Figure 3.B.1. What are the drivers behind SME scale-up? A profit-based approach 151
Annex Figure 3.B.2. How are market structure and scale-up dynamics interrelated? The example of product differentiation 152
Annex Figure 4.A.1. Fixed and mobile broadband are complementary 178
Annex Figure 4.A.2. The infrastructural backbone of the global economy 180
Annex Figure 7.A.1. Diffusion rate by firm size class, 2018 or latest year available 251

Boxes

Box 1.1. Definition of SMEs 36
Box 1.2. The Future of Business Survey 69
Box 2.1. Regulatory framework across levels of government 98
Box 2.2. Applying behavioural sciences to enhance public services: The UK Behavioural Insights Team (BIT) 106
Box 3.1. How can small firms gain knowledge and capacity within GVCs? 118
Box 3.2. 3D printing, a game-changer for GVCs? 123
Box 3.3. New market conditions for SMEs: The business case of the circular economy 127
Box 3.4. Lead markets: Principles and key policy instruments 136
Box 3.5. Engaging SMEs in the transition towards a circular economy: The European approach 137
Box 4.1. Cloud computing: which opportunities for SMEs? 158
Box 4.2. The OECD Recommendation of the Council on Effective Public Investment across Levels of Government 169
Box 5.1. Initial Coin Offerings (ICOs) 191
Box 7.1. Disruptive innovation in business models and organisational practices: selected examples in three SME-dominated sectors 225
Box 7.2. Trade secrecy and IPRs: How SMEs protect and appropriate knowledge 230

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 *StatLinks* 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, starting with the *http://dx.doi.org* prefix, or click on the link from the e-book edition.

Editorial

Unleashing the Potential of SMEs and Entrepreneurs
A renewed policy and measurement agenda

As we experience a series of significant changes in our economies and societies, small and medium-sized enterprises (SMEs) are important actors in the transition: they provide the main source of employment, constitute the industrial fabric of many regions and cities, contribute to the identity of local communities in both urban and rural areas, and are essential elements in domestic and global value chains. With the right conditions in place, SMEs and entrepreneurs can play a role in fostering income equality and ensuring that the benefits from technological change and globalisation are more broadly shared.

Yet, despite increased policy awareness of the role of SMEs, and continued efforts to level the playing field, barriers remain which prevent SMEs and entrepreneurs from operating efficiently, seizing new market opportunities, pursuing growth aspirations and generating good quality jobs. Many SMEs and entrepreneurs struggle to adapt to new technologies, cope with regulatory and administrative burdens, and access strategic resources – including skills, knowledge and finance – needed to compete in a globalised economy.

As recognised in the 2018 *OECD Declaration on Strengthening SMEs and Entrepreneurship for Productivity and Inclusive Growth*, dismantling remaining barriers is essential to ensure that SMEs do not get trapped in low-innovation, low-productivity and ultimately low-growth and low-wage activities, with all the implications this has for inequality and well-being. This *OECD SME and Entrepreneurship Outlook* provides evidence of the urgency for policy makers to address these challenges, in order to raise overall labour productivity and living standards.

A different way forward is possible. Start-ups and SMEs can be a primary source of innovation, adapting supply to different contexts or user needs and responding to new or niche demand. 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. In professional, scientific and technical services, small firms often lead in productivity, ahead of larger enterprises. Innovative entrepreneurship and business models are emerging, which, by leveraging digital technologies, are contributing to change business practices and shape the future of work.

In light of these important transformations, a renewed policy agenda on SMEs and entrepreneurship by governments around the world has emerged. This new agenda recognises the complexity of the SME policy space, which often cuts across the boundaries of different ministries and government agencies, as well as across different levels of government.

Often these policies can unintentionally pull in different directions, which is why a cross-cutting strategic perspective on SMEs is needed. Such a holistic approach can help to develop a coherent policy platform that recognises the interplay between market structures, institutions and regulatory frameworks and enables potential synergies to be exploited while avoiding trade-offs. The combined effects of structural reforms and policies targeted to SMEs also need to be better understood in order to identify good policy mixes.

Furthermore, unleashing the potential of SMEs and entrepreneurs requires a better understanding of who they are, acknowledging their significant diversity in terms of firm size, age, ownership, location, business models, and also entrepreneurs' background and aspirations. A lack of data on firm heterogeneity can be a significant handicap towards developing evidence-based policies that can dismantle barriers and drive SME growth.

As part of the overall agenda on SMEs, it is clear that we need more and better data, in particular more robust and comparable evidence on SMEs' diverse characteristics. Based on official statistics, OECD indicators and policy analysis, this report brings together a wealth of detailed information on the structure of the SME population, SME performance, business conditions and policies according to a comprehensive conceptual framework. However, with changes in the economy, driven by globalisation and digitalisation, this information is no longer sufficient. New data that can capture heterogeneity, both in terms of outcomes (i.e. firm performance) and inputs (e.g. capacities), as well as data on barriers, are crucial for the policy agenda.

This first edition of the *OECD SME and Entrepreneurship Outlook* offers a starting point to deepen the OECD's work on SMEs. Responding to the call of governments for tools to monitor the business environment for SMEs and entrepreneurs, it adds momentum to meeting the goal of developing coherent policies on SMEs and entrepreneurship, grounded on better data. It builds on decades of research and international SME policy dialogue and leverages unique working methods that bring together extensive multi-stakeholder networks and a solid evidence base on OECD member and partner countries.

As we renew our policy and measurement agenda on SMEs and entrepreneurship, we believe this novel report can serve as a cornerstone for future work, and provide support to governments in countries, regions and cities in developing better SME and entrepreneurship policies.

Lamia Kamal Chaoui,

Director of the Centre for Entrepreneurship, SMEs, Regions and Cities, OECD

Martine Durand,

OECD Chief Statistician
Director of the OECD Statistics and Data Directorate

Reader's guide

Background

As the predominant form of business and employment, small and medium-sized enterprises (SMEs) are key actors for economic resilience, productivity and inclusiveness. Yet, smaller firms face particular size-related barriers in accessing finance, skills, technology and the knowledge-based capital that are required for innovating, driving competitiveness and growing, which, in the aftermath of the 2008-09 global financial crisis, may have compounded long-standing productivity and wage gaps with larger firms. These barriers are not only symptomatic of sub-optimal credit and labour markets; they also reflect disproportionate impacts of the regulatory environment, for example administrative burdens and inefficiencies in tax systems, inhibiting a level playing field for SMEs.

Against the backdrop of slowing productivity growth and widening –or persistent– inequalities, addressing these challenges is a high priority for governments. Major shifts in socio-economic systems, including growing digitalisation and the new industrial revolution, increased global integration of the economy, the changing nature of work, demographic changes and environmental pressures call for innovative policy solutions.

Better understanding the nature of these challenges and, indeed, having a clearer view of where they exist is critical, and, in this respect, it is no coincidence that governments the world over are looking more closely at ways in which they can capitalise on the potential of SMEs to drive inclusive growth in particular, including through the adoption of successful best-practice policies implemented in other countries.

These needs were echoed at the 2018 SME Ministerial, where Ministers and high-level representatives from 55 OECD Member and Non-Member countries adopted the *Declaration on Strengthening SMEs and Entrepreneurship for Productivity and Inclusive Growth* (OECD, 2017[1]).

This is why the OECD has intensified and scaled up work to better understand how the policy environment may impact SME performance and the potential effects of policy improvements over time, taking into account structural conditions and reforms, the heterogeneity of the SME population and the diverse contributions of small businesses to inclusive growth.

Earlier work in this area provides preliminary insights for governments to monitor their business environment and SME performance in an internationally comparable way, and to benchmark the effectiveness of policies promoting SME development and entrepreneurship (OECD, 2017[2]). This new biennial flagship publication strengthens the evidence base, and extends the scope of policies under review and the coverage to a greater number of OECD and G20 countries.

Contents and structure

Chapter 1. SME structure and business dynamics: Recent trends and performance

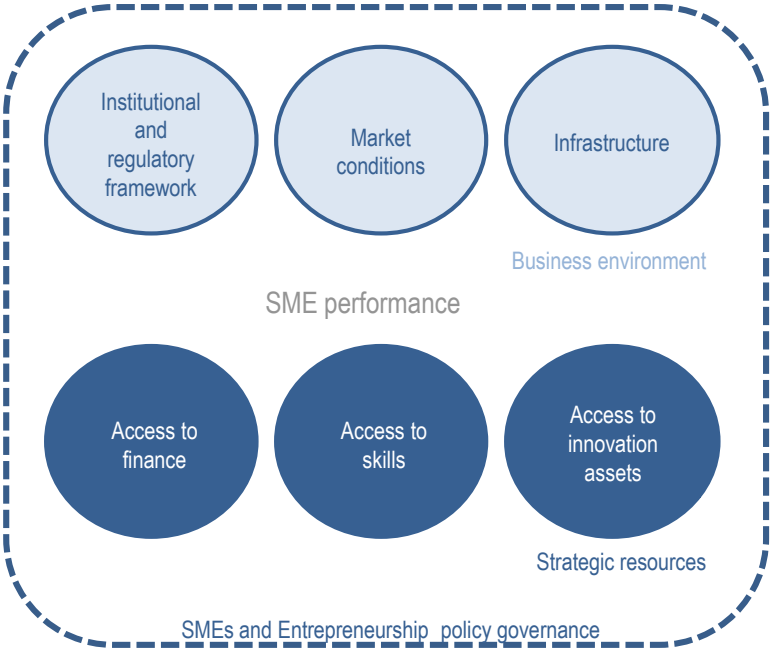
Chapter 1 of the SME and Entrepreneurship (SME&E) Outlook provides detailed empirical evidence on the composition and economic contributions of SMEs, and on the changes that have occurred in SME structure and performance over the last decade, focusing in particular on trends in SME productivity and wage performance. Where data allows, it also offers insights on cross-country and cross-sectoral differences in SME performance and business dynamics, and insights into how digitalisation and globalisation are impacting on SME performance.

Part I. SME business conditions and policy responses: A cross-country analysis

Part I of the Outlook aims to benchmark countries' business conditions and provide insights on recent national SME&E policy developments with a view to exploring national approaches for improving the business environment for SMEs and entrepreneurship. It presents a series of thematic sections, with each section structured in a standardised way, first introducing the reasons why the issues under discussion are important for SMEs and entrepreneurship, and then presenting major trends and main recent policy developments in the area.

Part I is therefore structured along a conceptual framework composed of six pillars, underpinned by a cross-cutting element on SME and entrepreneurship policy governance (Figure 1). The thematic sections discuss the state and evolution of framework conditions for entrepreneurship and SME development and the conditions under which SMEs can access and make use of strategic resources.

Figure 1. SME&E Outlook: Conceptual framework

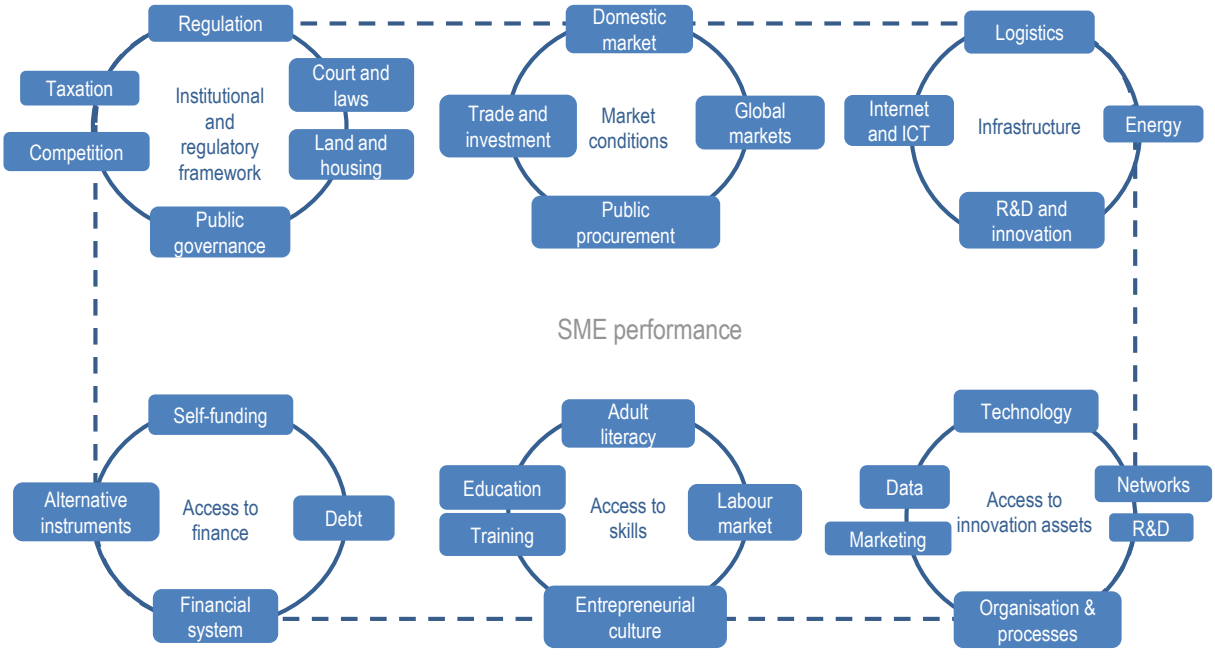


The first three pillars consider the business environment and framework conditions under which SMEs can do business and grow. SMEs are typically more dependent on their business ecosystem than larger firms. Smaller firms are more vulnerable to deficient framework conditions, market failures and economic shocks, while inefficient infrastructure hampers their access to markets and the strategic resources they need to operate.

The second three pillars of Part I consider the extent to which SMEs can access and make use of strategic resources. Smaller firms are typically at disadvantage as compared to larger firms in accessing funding, appropriate skills and innovation assets (i.e. technology, data, business models and organisational practices, networks etc., either in their tangible or intangible forms). Yet financial capital, human capital and knowledge-based capital are key production factors and the determinants of firms' competitiveness in knowledge-based economies.

Figure 2 provides a more detailed view.

Figure 2. SME&E Outlook: detailed conceptual framework



Institutional and regulatory framework conditions for SMEs

Although regulatory barriers to entrepreneurship have declined over time and efforts have aimed to cut the red tape for businesses and improve transparency and cost-efficiency of public administration, the complexity of regulatory procedures is still a major obstacle for SMEs and entrepreneurs. Costs of complying with administrative requirements remain comparatively higher for smaller businesses. Inefficient insolvency regimes limit the restructuring of viable firms and the second chance offered to entrepreneurs.

This section covers a broad range of issues such as product market regulation, employment regulation, firm creation regulation and insolvency regimes, taxation,

competition, court and legal framework, and public governance, including e-government. Some considerations on the quality of land administration for doing business are also introduced.

Market conditions

There is a large cross-country diversity in the opportunities and challenges for SMEs to access markets. Conditions for entering international and public markets have generally improved for SMEs in recent years, as explicit barriers to trade and investments have been reduced; increased public attention has been given to levelling the playing field; and improved infrastructure, especially information and communication technologies (ICT), has helped SMEs reach scale without mass and get involved in global activities.

This section places emphasis on the domestic market so as to account for the fact that SMEs are primarily local actors embedded in nearby markets and ecosystem. Issues such as internal market dynamics (e.g. concentration, specialisation, digitalisation etc.), positioning in global value chains (GVCs) and the presence of multinationals (MNEs), the size and practices of public procurement or the prevalence of the informal economy are explored.

Infrastructure

Physical, digital and network infrastructure is the foundation of a dynamic business ecosystem. The quality of infrastructure is especially relevant for SME entry into distant markets and engagement in GVCs. Likewise, well-functioning infrastructures ensure secure and cost-efficient access to strategic resources. Typically, market and system failures discourage large-scale investments and partnerships that would be needed for strengthening and maintaining quality infrastructure, making this issue a policy domain of predilection. Governments play a key role as facilitator in building public-private partnerships, implementing system-enabling instruments (e.g. interfaces, platforms) or setting standards, etc.

This section looks at infrastructure capacity and performance in various areas including logistics and transport, energy, internet and ICT (e.g. digital security and price) and domestic R&D and innovation. Particular efforts are made for examining the presence of world innovation hubs in countries and capturing the density of domestic and international knowledge networks.

Access to finance

Accessing appropriate sources of finance across all stages of their life cycle is critical for SMEs to start, innovate and grow. Bank lending as the most common source of external finance for SMEs has largely recovered after the financial crisis making it easier for SMEs to access credit. Alternative sources, including asset-based and equity funding, have also become more widespread, offering multiple and competing options to different profiles of firms and investors. Yet, SMEs remain undercapitalised and heavily reliant on straight debt. Barriers both on the supply side (i.e. information asymmetries, lack of collateral and higher transaction costs, etc.) and on the demand side (i.e. lack of awareness and financial skills, etc.) persist, and recent evidence suggests that financial institutions have become even more risk-averse, placing an extra burden on high-risk SMEs or on firms without collateral.

This section builds on the work carried out for the Financing SMEs and Entrepreneurs: an OECD Scoreboard as well as the G20/OECD High-Level Principles on SME Financing (OECD, 2018[3]). It intends to differentiate traditional sources of funding from alternative

forms, especially in the context of the digital transition (e.g. cryptocurrencies and initial coin offerings, peer-to-peer lending and crowdfunding, etc.). It also looks at firms' self-funding capacity and the state of the banking system as data allow.

Access to skills

SMEs face greater difficulties in identifying, attracting and developing skills than larger firms. Although efforts to build entrepreneurship competencies have increased significantly over time, recent survey results show that people are not more confident in their ability to start a business. Yet skills are key assets for technology and innovation absorption and for managing the organisational changes needed during the transition.

This section combines a focus on entrepreneurial culture with a focus on human capital and skills development. Issues such as student enrolment and performance in formal education, adult literacy, training access, entrepreneurial culture and education, and skills use at work are developed. In addition, this section examines labour market conditions, including job quality and the scope of skills mismatch (as reflected in employment and unemployment trends), non-standard employment and job strain.

Access to innovation assets

Innovation results from a process of accumulation through which firms increase their stock of knowledge-based capital.

This section gives a strong focus on the stock of tangible and intangible knowledge assets SMEs can access and manage by exploring the diffusion of key ICT tools in firms and looking at the extent to which SMEs have built enough internal capacity to participate in technology-intensive activities or integrating R&D and innovative networks. It covers various issues including technology equipment, intellectual property rights (patents, trademarks), new IT-enabled organisational and marketing practices, R&D and innovation performed by SMEs and SME integration into innovation networks.

Part II. Insights on national SME performance and policies: country profiles

Part II is composed of individual country profiles aiming to provide insights on SME performance and entrepreneurial trends in each country and to present recent policy initiatives implemented in countries to foster business dynamics and support SMEs in innovating and scaling-up.

The structure of the country profiles follows the conceptual framework of Part I (Figure 1 and Figure 2) and information is presented in three sections: i) national SME sector structure and performance, ii) SME access to strategic resources and iii) SME business environment. The content of the country profiles is standardised and harmonised in order to enable international comparison (see the methodological annex of the country profiles).

Part II covers 36 OECD countries. An abridged version of the profiles is available in the publication, while a full version with more statistical and benchmarking tools is available online. The online version also proposes profiles for several emerging economies for which data and policy information is available.

Sources and resources

The SME&E Outlook builds on SME-related work carried out across the OECD and beyond, including on measurement and indicators.

Chapter 1 primarily builds on i) the OECD databases of official business statistics, in particular the *Structural and Demographic Business Statistics (SDBS)* and *Trade by Enterprise Characteristics (TEC),* databases that are built by the OECD in cooperation with national statistical offices and Eurostat; ii) indicators developed from the macro-linking of data from these two databases with other official statistics; and iii) the OECD *Productivity Statistics* database containing productivity measures computed using the OECD *National Accounts* and *Employment and Labour Market Statistics* databases. The chapter also relies on the *OECD Timely Indicators of Entrepreneurship* database, covering official statistics and administrative data, and on enterprise statistics from new data sources, such as *Facebook-OECD-World Bank Future of Business Survey*, as relevant for the analysis.

Part I on SME and entrepreneurship business conditions and policies leverages various recent OECD exercises of policy information collection and major international reports across a range of policy areas, and mobilises a large set of standardised indicators in order to characterise countries' business environments and analyse trends in a forward-looking approach.

The benchmarking indicators used in Part II to monitor SME business environment and performance are drawn from a broad range of primary OECD and non-OECD data sources. The inventory of indicators was conducted taking into account criteria of SME policy relevance, international comparability, regularity in data collection, country coverage and fair comparability over time. Primary data sources are presented in more detail in the methodological annex of the country profiles. Policy information was drawn from recent OECD and non-OECD exercises of policy information collection and major international reports, in the same vein as for Part I.

Acronyms and abbreviations

Acronyms

5G	Fifth generation of mobile networks
AD	Alternative dispute mechanisms
AI	Artificial intelligence
B2B	Business-to-business
B2C	Business-to-consumer
BERD	Business enterprise expenditure on R&D
BI	Behavioural insights
CC	Cloud computing
CIT	Corporate income tax
CVET	Continuing vocational education and training
DoS	Denial of service
EC	European Commission
ERP	Enterprise resource planning
EU	European Union
FDI	Foreign direct investment
FTE	Full-time equivalent
GDP	Gross domestic product
GFCF	Gross fixed capital formation
GVC	Global value chain
HEI	Higher education institution
H2020	Horizon 2020
ICO	Initial coin offering
ICT	Information and communication technology
IoT	Internet of things
IP	Intellectual property
IPR	Intellectual property right
ISCED	International Standard Classification of Education

ISCO	International Standard Classification of Occupation
ISIC	International Standard Industrial Classification
ISO	International Standard for Country Codes
IT	Information technology
KBC	Knowledge-based capital
M&A	Mergers and acquisitions
MNE	Multinational enterprise
NGO	Non-governmental organisation
NSO	National Statistics Office
OGD	Open Government Data
OI	Open innovation
P2P	Peer-to-peer
PIAAC	OECD Programme on International Assessment of Adult Competences
PISA	OECD Programme on International Student Assessment
PPP	Purchasing power parity
PPP	Public-private partnership
R&D	Research and Development
RIA	Regulatory Impact Assessment
RFID	Radio frequency identification
SAFE	Survey on the access to finance of enterprises
SCM	Supply chain management
SDG	Sustainable Development Goal
SME	Small and medium-sized enterprise
SME&E	Small and medium-sized enterprises and entrepreneurship
SNG	Subnational government
STEM	Science, technology, engineering and mathematics
STI	Science, technology and innovation
USD	United States dollar
VAT	Value added tax
VC	Venture capital
VET	Vocational education and training

Abbreviations

Table 1. 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.

EU28 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, United Kingdom).

OECD Total OECD 36 (Australia, Austria, Belgium, Canada, Chile, 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).

Country notes

Cyprus

Note by Turkey:

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. Turkey recognises the Turkish Republic of Northern Cyprus (TRNC). Until a lasting and equitable solution is found within the context of the United Nations, Turkey shall preserve its position concerning the "Cyprus issue".

Note by all European 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 Turkey. The information in this document relates to the area under the effective control of the Government of the Republic of Cyprus.

Israel

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.

Executive Summary

As the predominant form of business and employment, small and medium-sized enterprises (SMEs) are key actors for building more inclusive and sustainable growth, increasing economic resilience and improving social cohesion. In fact, across the OECD, SMEs account for about 60% of employment and between 50% and 60% of value added and are the main drivers of productivity in many regions and cities. Yet, smaller firms face long-standing size-related barriers in dealing with stringent business conditions or accessing strategic resources. In practice, SMEs are a major target of public policy, and they are central to the policy agenda of many governments seeking responses to the challenges raised by globalisation and digitalisation.

SME structure is broadly comparable and stable across OECD countries overall, and SMEs generally concentrate in specific services with lower resource requirements. However, many dynamic changes are taking place, especially in areas highly exposed to the digital transformation. In fact, SMEs are a very heterogeneous population whose performance in terms of productivity, wages paid and international competitiveness, vary considerably across sectors, regions and firms.

Enterprise creations have picked up, especially in services, but newly created jobs are concentrated in low-productive and low-wage sectors

New enterprise creations are back to pre-crisis levels in many countries. SMEs drove employment growth in market services between 2010 and 2016, notably in wholesale and retail trade.

Most new entries and job creation took place in sectors with below average productivity levels, and new firms are often smaller (so likely less productive). In addition, productivity gaps between smaller and larger firms have increased at the aggregate business level, even if SMEs outperform large enterprises in the services sector in many countries.

More lower-productivity jobs has resulted in more lower-paid jobs. SMEs, even the larger ones, typically pay employees around 20% less than large firms. For example, between 2010 and 2016, close to 90% of all new jobs in France were created in activities with below average wages, while this figure stood at two-thirds in Germany and the United Kingdom, and over three-quarters in the United States.

These findings shed new light on the wage stagnation observed in OECD countries in a context of economic recovery and rise of employment. As current business dynamics weigh on income and material well-being, concerns may arise about the education and training prospects of the workforce, the sustainability of pension systems, the breadth of the tax base and public acceptance of technological change and globalisation.

Innovation is key to boost productivity, and digitalisation offers SMEs new opportunities to take part in the next production revolution

Innovation is key to boost productivity and drive an increase in wages. Emerging digital technologies, such as big data analytics, artificial intelligence and 3D printing, enable greater product differentiation and mass customisation, better integrated supply chain systems and, overall, new digital-enhanced business models that leverage shorter distance and time to markets. These developments are likely to benefit smaller and more responsive businesses.

Digitalisation also supports open sourcing and open innovation, with large firms contributing to the transformation of business ecosystems through business accelerators and innovation labs that provide start-ups and innovative SMEs with access to resources and markets.

Digitalisation creates a range of innovative financial services for SMEs, from peer-to-peer lending, to alternative risk assessment tools, to Initial Coin Offerings (ICOs). Blended models are on the rise, the Fintech becoming more central in the SME finance landscape.

Digitalisation also eases SME access to skills through better job recruitment sites, outsourcing and online task hiring, or by connecting them with knowledge partners.

SMEs operating in information and communication technologies (ICT) activities are particularly well placed to reap the benefits of digitalisation. In fact, they increased their shares of total activity across nearly all OECD economies between 2010 and 2016, despite concerns about market concentration and winner take-all dynamics. SMEs have increased their share of value added by over 10% in Finland in computer programming, in Ireland in telecommunications, and in Lithuania and Italy in publishing activities.

Digitalisation can also help SMEs integrate global markets and global value chains (GVCs)

Digitalisation has created effective mechanisms to reduce size disadvantages in international trade, such as by reducing the absolute costs associated with transport and border operations. In addition, the fragmentation of production worldwide has provided smaller businesses with significant scope for competing in specialised GVC segments and scaling up activities abroad, while capturing international knowledge spill-overs and capitalising on more robust growth in emerging markets.

As a matter of fact, wage gaps with large firms are smaller for exporting SMEs and for highly productive SMEs, particularly those at the frontier of the digital revolution.

SME market conditions have improved overall, but there are risks on the horizon

Market conditions for SMEs have improved since the great financial crisis. SME have restored their profit margins, credit conditions are accommodative and financing options are more numerous. There are however signs that growth has now peaked, and risks are emerging from fragile economic growth, inflationary pressures and trade tensions. GVCs have lost momentum, with global foreign direct investment (FDI) at its lowest level since 2013. In the event of a new economic slowdown, SMEs are likely to be hard hit.

Automation and 3D printing are placing in question the rationale for offshoring based on costs of labour. Multinationals (MNEs) seeking to improve supply chain resilience and flexibility may reorient their production back to the OECD area, with uncertain consequences for SMEs. Whereas domestic SMEs could benefit from reintegrated on-shored activities, SMEs already integrated in GVCs could see the scope for participating in value chains significantly reduced.

In addition, FDI is increasingly targeted towards the acquisition of digital assets, reinforcing the role of MNEs in building the global digital infrastructure and the importance of MNE-SME linkages for SME technology upgrading.

SMEs must be better prepared for the digital transition

SMEs lag in digitalisation, and the smaller the firm, the less likely they are to adopt digital-enhanced business practices. SMEs are also less proactive in protecting their data and not as prepared to face cybersecurity threats. This places them at risk of becoming weak nodes in complex and hyper-connected infrastructure systems.

SMEs are also less likely to have the skills for managing their digital transformation and still too few of them engage their employees in ICT training. In addition, SMEs continue to face skilled labour shortages, especially in management, communication and/or problem-solving skills, which are crucial for innovation.

Recent progress made in engaging in vocational education programmes and closing the training gap to large firms must be strengthened in order to bridge the skills divide. Furthermore, while the increase in non-standard jobs may create opportunities for outsourcing, it may also exacerbate SME difficulties in finding talents and trained workers in the long run.

Government approaches to SME&E policy are increasingly varied

While governments in the OECD area and beyond tend to converge in their broad strategic orientations for SME&E, approaches to policy design and implementation are quite different across countries.

There is a broad-based focus on accelerating innovation diffusion to SMEs and ensuring they keep pace with the digital transformation; engaging SMEs in upskilling; scaling up innovation networks and MNE-SME linkages; and levelling the playing field in product markets, public procurement and 'lead' innovative markets. OECD governments have also undertaken pro-growth reforms aiming to the lower administrative and tax burden and enforce smart regulation. On the other hand, the pace of structural reforms has slowed in recent years, particularly as regards insolvency regimes and offering entrepreneurs a second chance.

Nevertheless, there is a large mix of approaches and, in some areas, diverging viewpoints on how to unleash SME and entrepreneurs' potential. 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.

For instance, innovation support packages have been revamped to better target SMEs. Currently, SMEs across most OECD countries receive relatively more public support for R&D than they spend on R&D. Accelerators and incubators are sprouting worldwide,

turning cities into hubs for data-driven innovation and experimentation. Among those governments seeking to help SMEs go global, some frame SME support within their national export strategy or industrial policy, while others provide SMEs and MNEs with targeted incentives. Likewise, countries are taking radically different approaches to their regulatory and supervisory frameworks for ICOs.

Digitalisation is also a game changer for high quality public services to SMEs.

Digitalisation offers SMEs access to higher quality public services, as it enables more efficient interactions with public administration and a more user-centric approach to policy making. Applications are already spreading across a broad range of areas, from business development services, to license systems, to tax compliance, to courts.

E-government and dedicated online platforms are facilitating consultations and service delivery to SMEs. Greater data availability, combined with behavioural insights, is enabling governments to better adapt their services and operations to user preferences, and also creating room for policy experimentation (e.g. tax compliance by design).

Open Government Data initiatives give SMEs access to new data at reduced costs and support SMEs in building a portfolio of intellectual property rights (IPRs). Data protection frameworks are being legally reinforced, with efforts aiming to harmonise legislations across jurisdictions and make IPR use easier and more predictable.

These developments call for innovative policy action and a whole-of-government approach

The heterogeneity of the SME population, the diversity of their business ecosystems and the pressing challenges ahead call for a fundamental rethinking of SME&E policy. A whole-of-government approach will be a key factor of success, including efficient multi-level governance arrangements across national and subnational levels, regions and cities, international peer learning and enhanced monitoring and evaluation capacity.

Effective design, implementation and evaluation of SME&E policies require more and better data, as well as stronger evidence on policy synergies, complementarities and trade-offs. Through this *SME and Entrepreneurship Outlook*, the OECD will continue to foster enhanced international cooperation to ensure SMEs and entrepreneurs can reach their full potential and contribute to build more resilient, sustainable and inclusive societies.

Chapter 1. SME structure and business dynamism: Trends and performance in productivity and wages

This chapter provides an overview of trends in the small and medium-sized enterprises (SME) sector and in business dynamism, and offers insights, where data allow, on cross-country and cross-sectoral differences. While the general structure of the SME population in OECD countries has remained stable in the past decade, this chapter shows that dynamic changes are occurring in activities highly exposed to digitalisation, or able to capitalise on it. The chapter highlights that in recent years the majority of new enterprise entries and the resulting job creation occurred in sectors with below average productivity levels. It presents evidence that more jobs in lower-productivity activities translated into more lower-paid jobs, weighing down on material well-being. The chapter also highlights that, apart for exceptions in the services sector, productivity gaps are observed between SMEs and large firms that translate in lower pay in SMEs. The findings reveal that gaps in productivity and wages are smaller for SMEs that export, and that global value chains provide scope for technology and knowledge spill-overs but also increase competition. The chapter demonstrates that current official statistics are able to provide important insights, in particular with respect to structural heterogeneity, but also illustrates the importance of continuing to expand the statistical boundary, not least to tackle emerging issues.

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.

Highlights

- Although the general structure of the SME population in OECD countries has remained stable in recent years, dynamic changes are occurring in activities that are highly exposed to, or able to capitalise on, digital transformation.
- In the services sector, SMEs, and in particular medium-sized firms, outperform large enterprises in terms of productivity levels in many countries. This can be observed especially in wholesale and retail trade across almost all OECD countries but also in more knowledge-intensive services sectors, like professional, scientific and technical activities, with the notable examples of Austria, Belgium, Germany or Poland. However, in manufacturing activities characterised by capital-intensive production processes, large firms show consistently higher levels of productivity than SMEs.
- Digitalisation provides scope for SME growth but the pace of adoption varies across countries and sectors. However, the take up of digital tools is to a large extent still confined to basic services, while in many countries there are large adoption gaps compared with large firms in cloud computing services, which would provide scope for cost savings compared to the fixed costs of ICT investment.
- Between 2010 and 2016, in many economies, most new entries and job creation took place in sectors with below average productivity levels: for instance, accommodation and food services in Greece, Ireland and the United Kingdom; the construction sector in Italy and Norway; and wholesale and retail trade in most countries.
- More lower-productivity jobs has resulted in more lower-paid jobs, weighing down on material well-being. Between 2010 and 2016, close to 90% of all new jobs in France were created in activities with below average wages, close to two-thirds in Germany and the United Kingdom, and over three-quarters in the United States.
- Lower productivity in SMEs also translates into lower pay. SMEs typically pay employees around 20% less than in large firms, even in large SMEs. But gaps are smaller for exporting SMEs.
- Global value chains provide new avenues to tap into global markets both directly through exports of intermediates to larger downstream firms but also indirectly as upstream suppliers to larger direct exporters, providing scope for technology and knowledge spill-overs.
- But global value chains also increase competition, in particular in labour intensive activities in OECD countries, from low-wage economies. In sectors such as textiles for example, increased competition has had a profound impact on SME producers, forcing many to close but also acting as a stimulus to upgrade and move up the value chain.
- Understanding the direction and potential impact of these mega-trends is essential in developing sound policies, and stresses the importance of continuing to develop stronger statistical capacities to measure, identify, and highlight SME heterogeneity.

Introduction

As the predominant form of business and a major employer in the business economy, small and medium-sized enterprises (SMEs) are key actors for economic resilience, productivity and inclusiveness. The OECD work on the productivity-inclusiveness nexus documents that SMEs are central to the collective goal of increasing productive potential, reducing inequality and ensuring that the benefits from increased globalisation and technological progress are enhanced and shared (OECD, 2017[1]; Blanchenay, Criscuolo and Calvino, 2016[2]). The *OECD Declaration on Strengthening SMEs and Entrepreneurship for Productivity and Inclusive Growth*[1] recognises that strengthening SMEs and entrepreneurship policies is key to achieving more inclusive societies and growth.

Major transformations in the economy and society, such as increased globalisation, digitalisation, the next production revolution, the changing nature of work, demographic changes, the circular economy and the transition to a low-carbon economy, have far-reaching consequences for productivity and income distribution, including through their impact on SMEs and entrepreneurship. Against this backdrop governments are seeking innovative solutions to harness opportunities and address risks that are emerging, and, SMEs and entrepreneurs have an important role to play.

However, in looking at the impact of these mega-trends on businesses and on the types of policies needed to navigate them, it is important to recognise that a one-cap fits all approach may be too blunt an instrument. The SME population is composed of very diverse businesses, in terms of age, size, ownership, business models, and entrepreneurs' profiles, motivations and aspirations. It is increasingly becoming clear that firm heterogeneity matters in thinking about innovation, productivity, job creation and income, but it matters equally when thinking about the response and adaptation of economies to mega-trends.

This chapter aims to shed light on these issues using currently available data while also flagging up areas where improved statistics are needed (see Box 1.1). It provides detailed empirical evidence on the composition and economic contributions of SMEs, and on the changes that have occurred in SME structure and performance over the last decade. Where data allow, it also offers insights on cross-country and cross-sectoral differences in SME performance and business dynamics, and insights into how digitalisation and globalisation are impacting on SME performance. In exploring these issues, the chapter reinforces the need to focus on heterogeneity in analysing SMEs and in developing policies around them, while also highlighting the importance for improved data to better capture firm heterogeneity (Annex 1.A).

Given the breadth of issues influencing the structure and performance of SMEs, following guidance by the Working Party on SMEs and Entrepreneurship (WPSMEE), this first edition of the SMEE Outlook focuses in particular on trends in SME productivity and wage performance. The chapter sets the analysis against the backdrop of major engines of structural change, namely, digitalisation and globalisation.[2] The intention is for future editions of the Outlook to continue to focus on topical and priority issues, in consultation with the WPSMEE.

Box 1.1. Definition of SMEs

One particular challenge concerning the comparison of SMEs across countries is the definition of SMEs. Definitions in a national context can vary significantly across countries, and also within countries across policy domains, with smaller countries typically setting lower thresholds than larger countries. This creates challenges for international statistics on SMEs. In this publication, unless otherwise stated, the approach is to consider SMEs all enterprises with less than 250 persons employed. This provides a robust framework to compare statistics across countries but caveats are needed in interpretation. For example care is needed in drawing conclusions with analyses of statistics on firms with less than 250 persons employed and the impact of policies targeting a policy driven definition of SMEs, which may differ. Moreover, although the definition of an enterprise as the main unit in the country where decisions are made, risks are taken and reward accrue, for foreign owned enterprises (foreign affiliates) in particular, this may not be the case. Efforts to separately identify independent and dependent SMEs are being made in some countries but greater up-take is needed in many others.

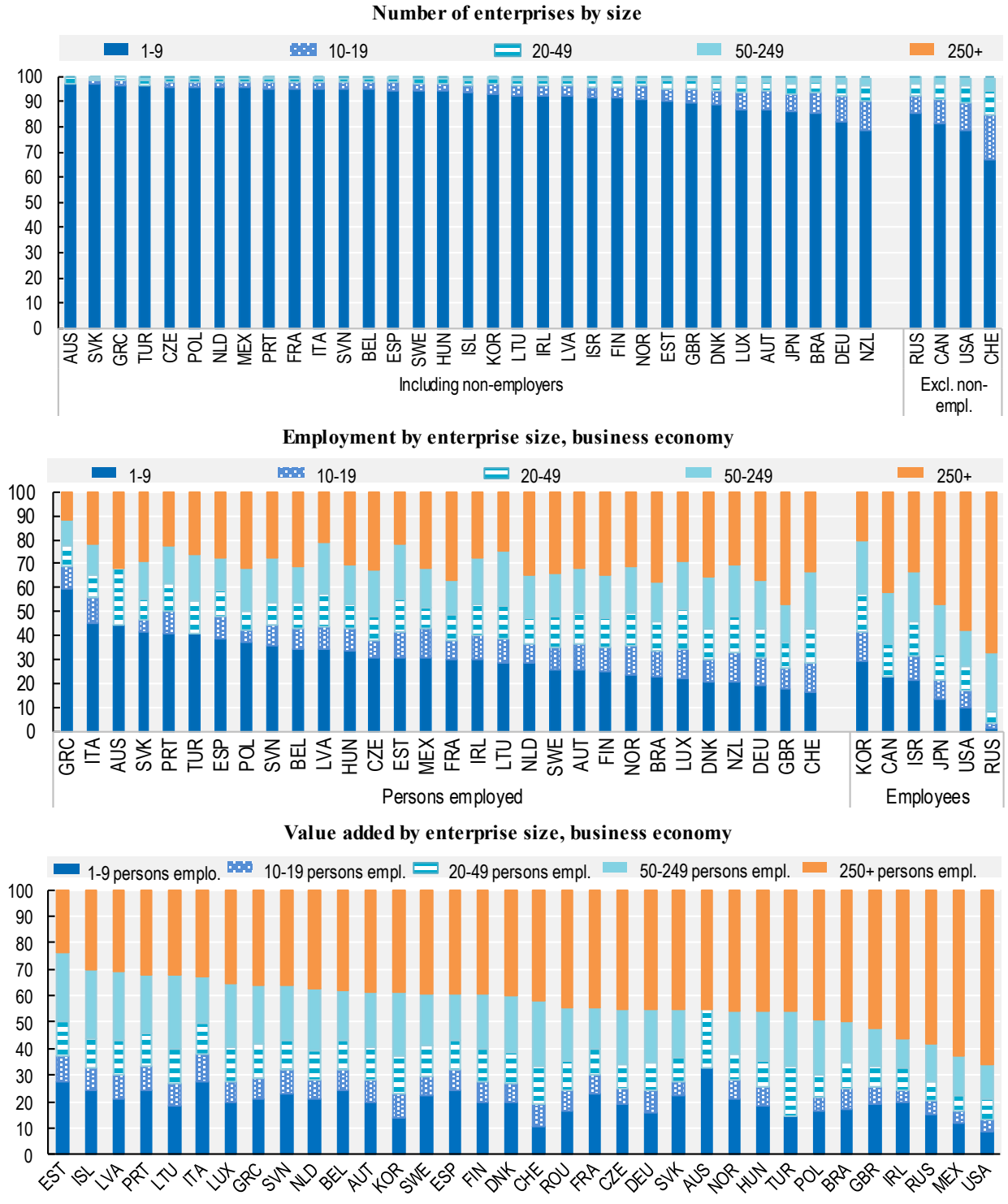
The structure of the SME population

SMEs account for a significant proportion of employment and GDP…

Across most OECD economies, SMEs account for nearly all firms (over 99%), provide over half of all business sector employment, employing on average five workers, and generate over half of all business sector GDP, creating on average around 270 thousand USD of value-added per firm (Figure 1.1). SME shares tend to be smaller the larger the economy – reflecting economies of scale, and the greater scope for operating larger firms in larger economies.

Figure 1.1. SMEs and their contribution to the business economy

Percentage 2016, or latest available year



Source: (OECD, 2018[3]), *Highlights of Entrepreneurship at a Glance 2018*, OECD, www.oecd.org/sdd/business-stats/EAG-2018-Highlights.pdf.OECD.

StatLink https://doi.org/10.1787/888933923583

However, despite these "framework" differences, there is broad comparability in the structure of SMEs across countries, i.e. in their sectoral distribution and economic weight in broad activities.

SME employment is concentrated in specific services sectors, notably wholesale and retail trade, and construction, where SMEs account for high shares of total jobs, reflecting relatively low requirements to operate, in terms of skills, capital and financing. In 2016, the wholesale and retail trade and construction sectors accounted, respectively, for between 19% and 30%[3] and between 7% and 18% of all employment in SMEs across OECD economies (Figure 1.2); equivalent to between half to 100% of all jobs in those sectors (see Annex Figure 1.B.2).

Conversely, across OECD economies, SMEs operating in manufacturing sectors -which are typically more capital-intensive than services - account for a lower share of employment and, in particular, value added. In 2016, manufacturing sectors accounted for between 12% and 29% of all employment in SMEs.

…but with cross-country differences in specific activities

Despite the broad similarities across countries, significant differences in SME participation emerge in some sectors, including at the broad industry level. In the United Kingdom for example, the share of SMEs operating in professional and scientific activities in 2016 was three times that of Korea, while in Poland very few SMEs operated in the hotels and accommodation sectors.

As noted above, this can reflect a number of "framework" differences that drive specialisation, as well the size of the economy, and in relation, outsourcing strategies driven by lead (typically large) firms in value chains, which may be outward looking (including through investment abroad, generating or sustaining SMEs in other countries that displace domestic SMEs) or through the development of domestic clusters.

In Germany for example, the vehicle and transport equipment sector has created strong upstream supply chains through outward investment in neighbouring, typically lower-wage economies, such as Poland and the Czech Republic, and SMEs' share of employment in the sector in those countries is around twice – 20% - that in Germany. In Korea however, where there have been targeted actions to promote linkages between domestic SMEs and larger Chaebols, the SME share of employment in the vehicle and transport sector is significantly higher (57.8%), despite the fact that the foreign content of exports in the sector in both Germany and Korea is around one-third (source: OECD Trade in Value-Added database).

Structures have remained broadly stable over time

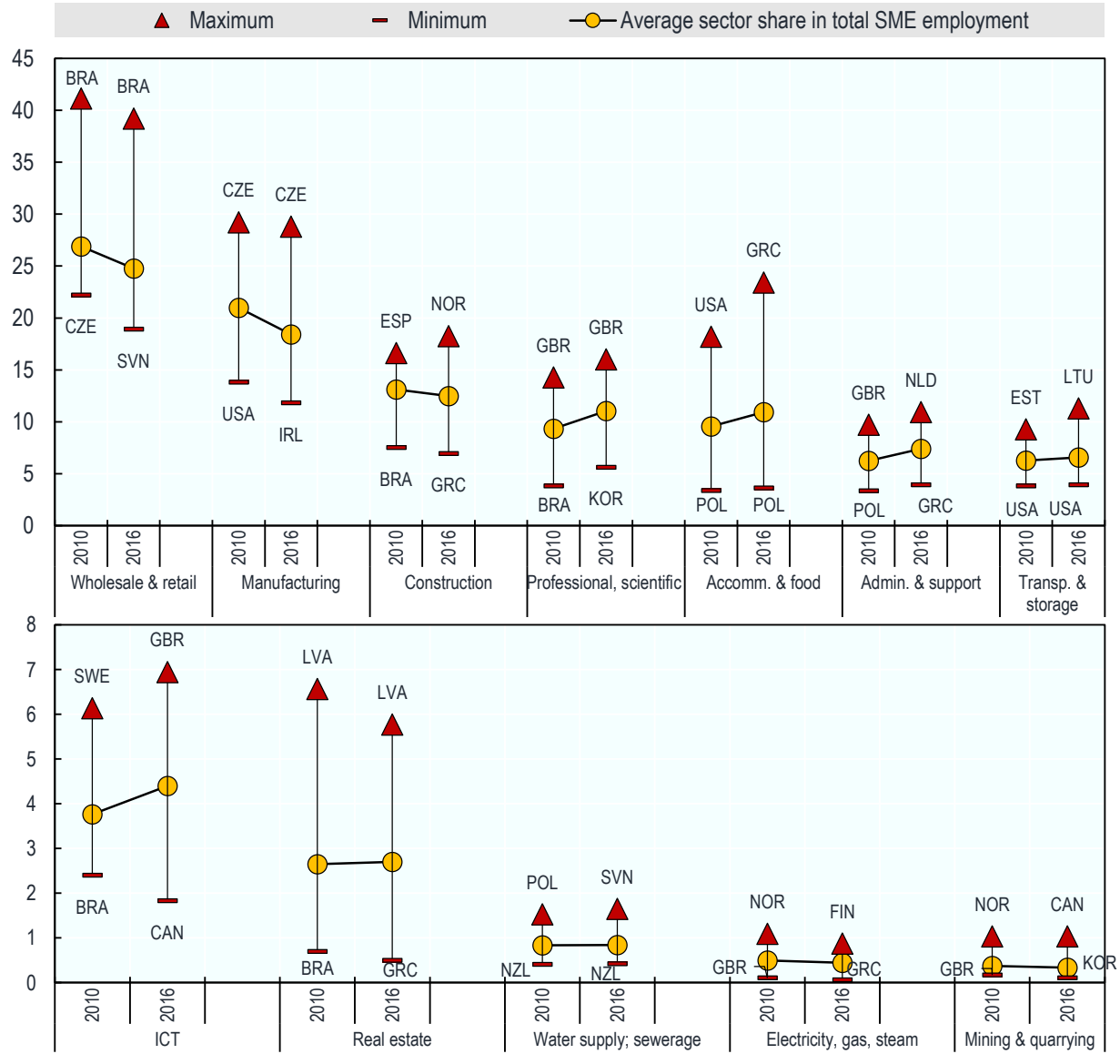
While the crisis had a significant impact on employment, affecting some sectors more than others, there have not been significant structural changes in the contributions of SME across broad industry groupings.

Between 2010 and 2016 for example, across OECD countries, the top five sectors, accounting for around 60% of all SME employment, were unchanged (Figure 1.2): i) wholesale and retail trade, accounting for one in four of all persons employed in SMEs; ii) manufacturing; iii) construction; iv) accommodation and food services; and v) professional, scientific and technical activities.

In addition, over the same period, the top five sectors where SMEs accounted for more than 80% of employment in the sector also remained the same: i) advertising, market research, other professional, scientific and technical activities; ii) real estate activities; iii) construction; iv) accommodation and food services; and v) legal, accounting and management services (see Annex Figure 1.B.2).

Figure 1.2. Broad specialisation of SMEs has changed little in recent years

Percentage, SME total employment=100



Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923792

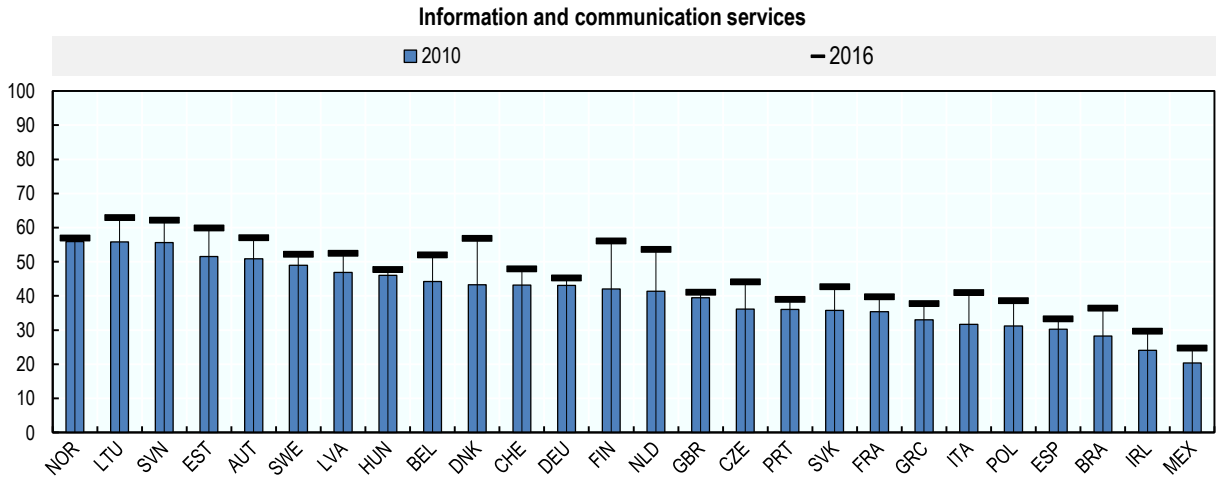
But changes are occurring at the sub-sector level

While the broad structure of the SME population has changed relatively little in recent years, more granular data at the sub-sector level point to important dynamic changes, particularly in those sub-sectors, such as the ICT sector, that are highly exposed or able to capitalise on the ongoing digital transformation, including through access to cheaper ICT goods and the ability to scale without mass.

Across OECD countries, the average employment share of SMEs in the ICT sector grew from 3.8% to 4.7% over the period spanning 2010-16, driven in large part by new entries, with SME shares of value-added increasing in nearly all OECD countries (Figure 1.3).

Figure 1.3. Share of SMEs in value added

Percentage of total sector value added



Note: Information and communication services cover two-digit sectors 58 to 63 of ISIC Rev. 4.
Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923944

A more detailed breakdown of the ICT sector reveals additional insights. In many countries, for example, SMEs saw substantial increases in their share of overall value-added in publishing activities (58), and also in telecommunications (61) (Figure 1.4).

In the publishing sector, which includes activities such as newspapers, increases generally took place against a backdrop of an overall contraction in the industry. The overall contraction in the publishing sector, which is partly explained by the appearance of new forms of media content and media providers in other sectors, appears to have had a mixed impact on SMEs across countries, possibly depending on the ability of many SMEs to occupy niche spaces in the sector; albeit, perhaps, with limited growth potential. In Italy for example, although value-added in publishing activities declined by over 10 percent between 2010 and 2016, SMEs, which make up 57% of total value added, increased their share by over 10 percentage points.

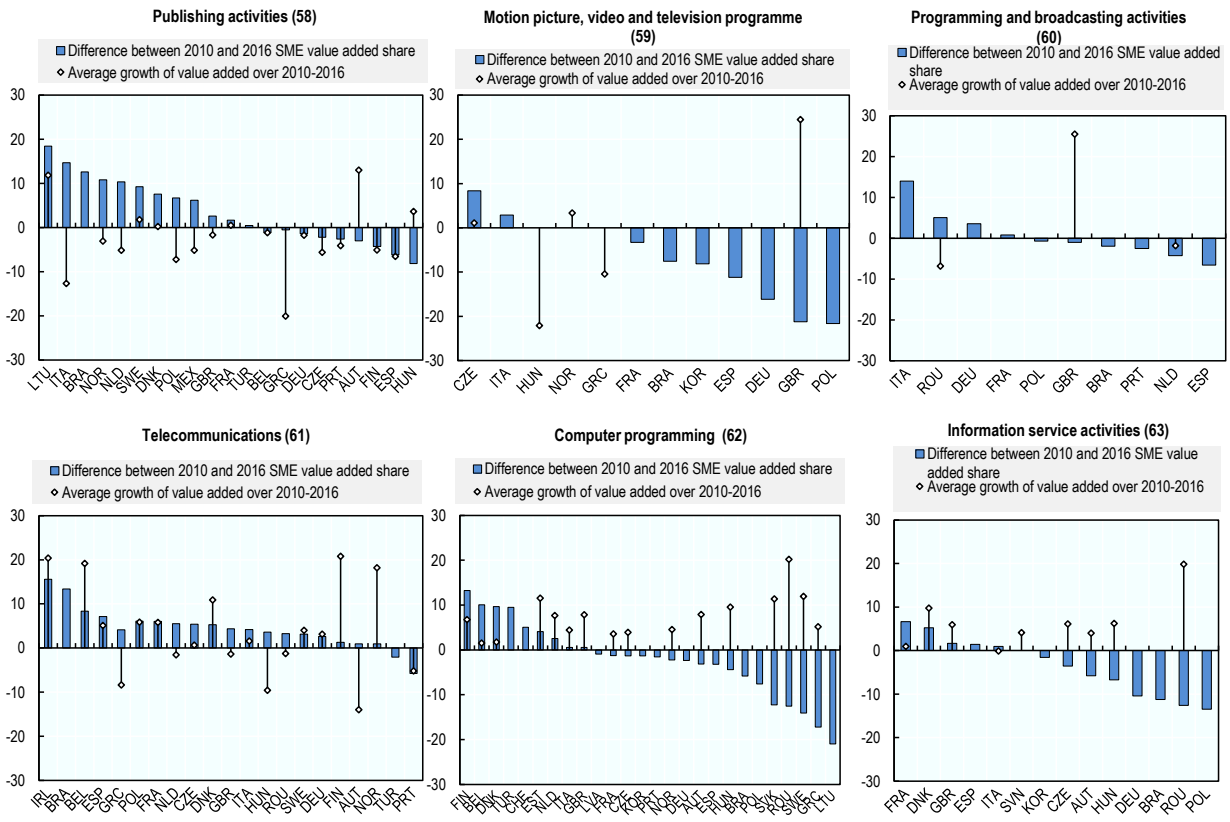
In telecommunications on the other hand, despite the strong association with only a handful of key (and large) firms in the sector, SMEs have increased their share of value added in many countries, in an expanding industry, which appears to reflect upstream specialised services to larger firms but also other entry routes, such as purchasing access

and network capacity from larger operators (i.e. entries of new smaller scale niche providers).

On the other hand, SMEs appeared to underperform relative to larger firms in the growing information service activities (63), with the exception of France, Denmark and the United Kingdom, where SMEs increased their share of value added of the sector.

Figure 1.4. Digitalisation provides scope for SME growth but the pace of adoption varies across countries and sectors

Share of SMEs value added and total sector value added growth, percentage



Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923963

Also, in spite of declining costs of ICT capital, many countries have experienced a declining economic weight of SMEs in computer programming activities (62), a sector which is expanding overall. The decline was particularly evident in Hungary, Poland, and the Slovak Republic.

Business dynamics and SMEs

New entries of SMEs have been an important driver of employment growth in the services sector in most countries but size still matters in manufacturing

Although there has been relatively limited change in the structure of SMEs across most economies, SMEs were a significant driver of overall employment growth in the market services sector between 2010 and 2016, mainly reflecting new entries (Figure 1.5 and Annex Table 1.C.1) and possibly a rebound effect as the impact of the crisis began to wane.

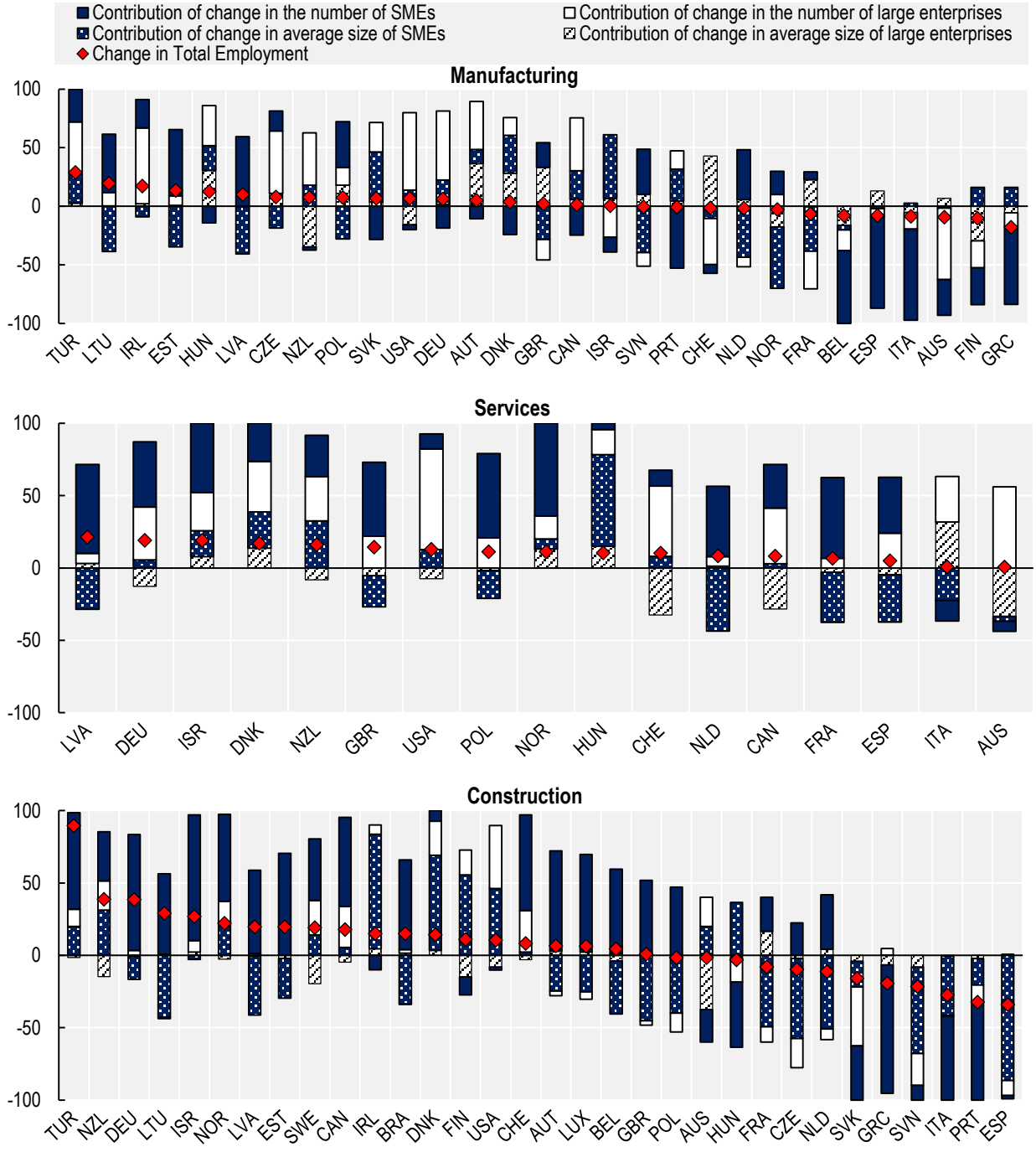
This, in part, reflects SMEs' relative share of overall employment in the services sector, with typically smaller contributions the larger the economy, but even in larger economies, such as France, Germany and the United Kingdom, SMEs were important drivers of job growth.

In the United States, on the other hand, nearly all employment growth in services was driven by an increase in the number of larger enterprises (including by SMEs that 'graduated' to large), with the average size of SMEs also increasing, whereas the average size of SMEs decreased in France and the United Kingdom. In Italy, on the other hand, the smaller average size of SMEs and the decline in the number of SMEs weighed negatively on job creation in the sector.

SME performance has been more muted in manufacturing, with larger firms driving employment growth in nearly all countries where manufacturing employment grew between 2010 and 2016. And in those countries where manufacturing employment contracted, such as in Spain, Italy and Greece, this was almost entirely through SME closures.

Figure 1.5. In most countries SMEs have been the primary drivers of employment growth in the service sector

Employment growth by sector and size class, contributions and percentage change between 2010 and 2016

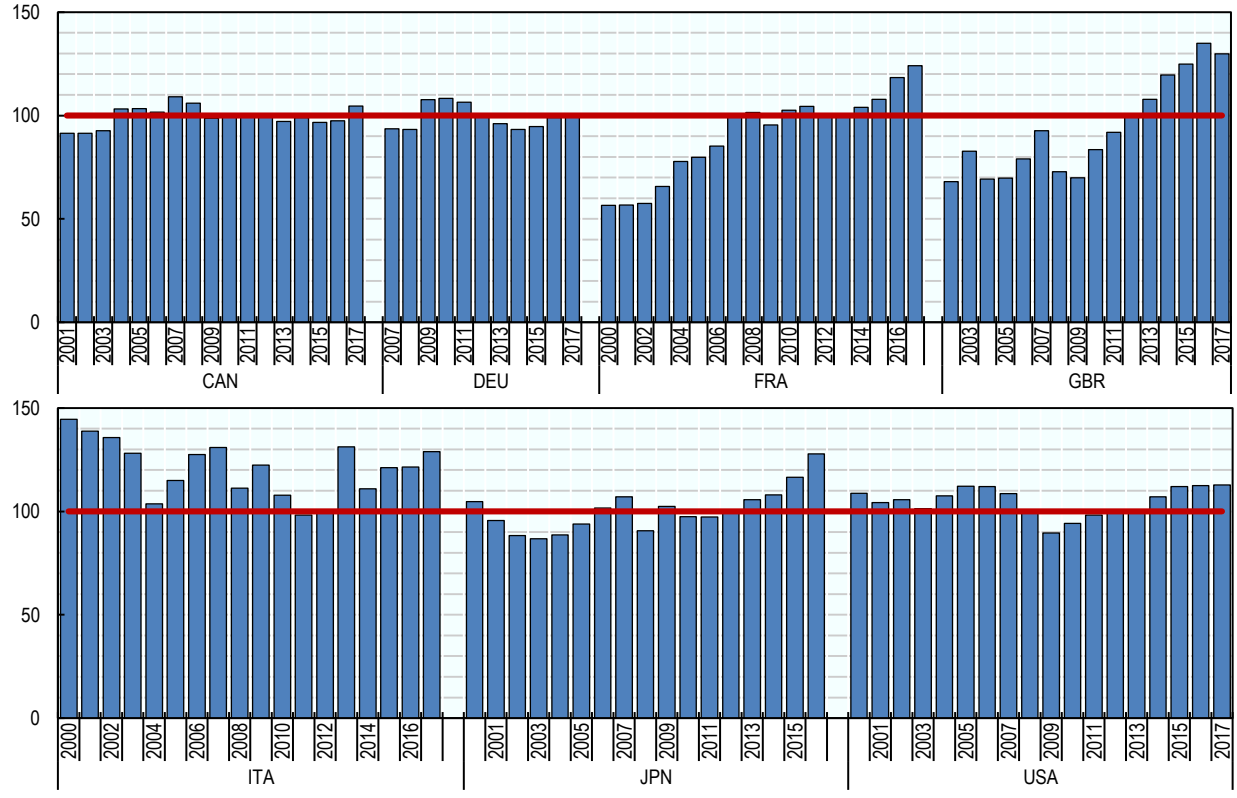


Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923982

Figure 1.6. Enterprise creations are back to pre-crisis levels

New enterprise creations, annual levels, index 2012=100



Note: For all countries data refer to creations of corporations or of other legal forms of employer enterprises.
Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924001

Despite the general positive trends in the number of firm entries, some care is needed in interpretation as birth rates (i.e. the ratio of enterprise creations over the total stock of enterprises) remain below pre-crisis rates in many countries, even if recent trends in birth rates are pointing upwards (such as in the UK) or showing signs of stabilisation (such as in the US) (Figure 1.7) (see also Annex 1.C).

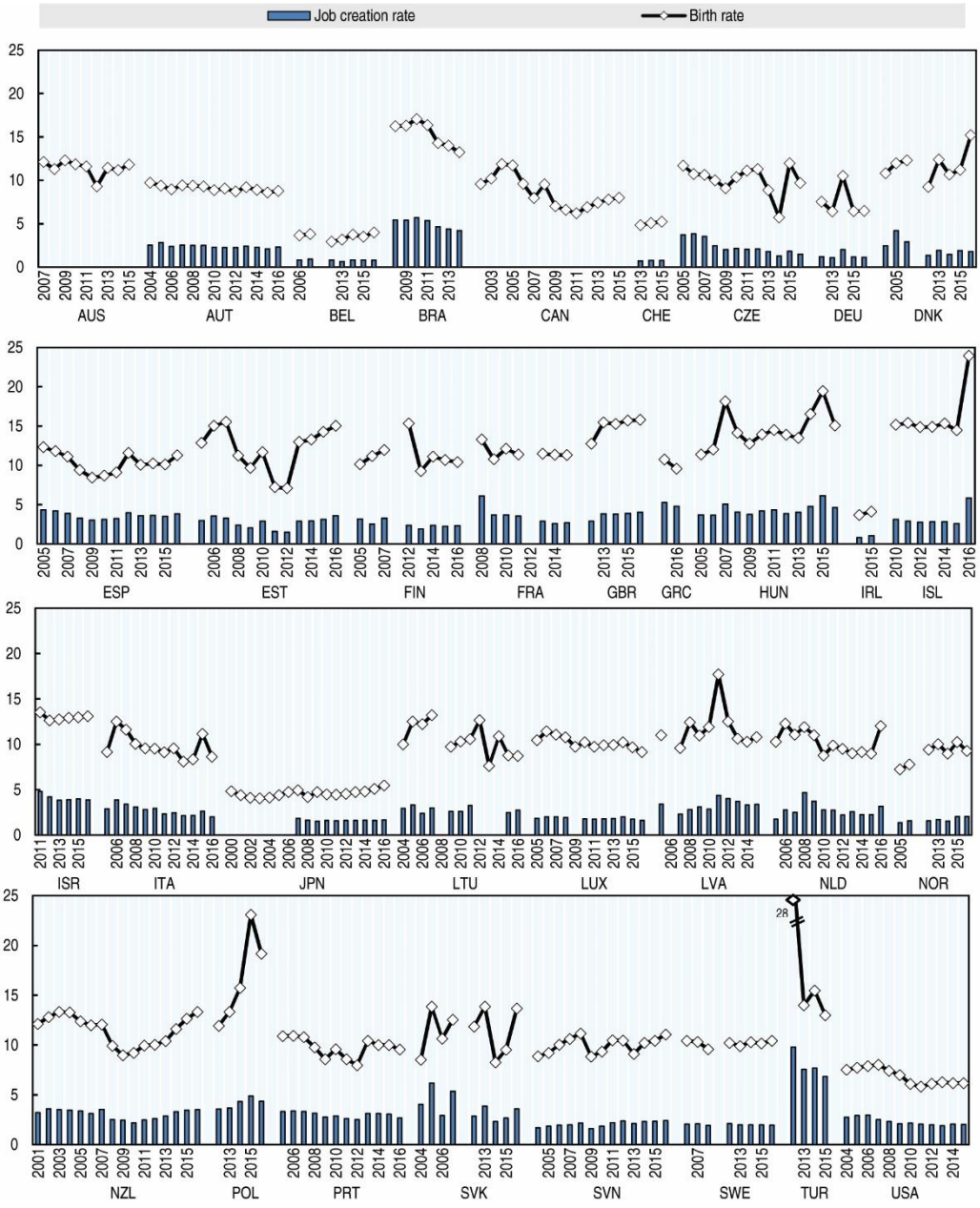
Of particular relevance to conclusions that can be drawn on underlying business dynamism is the fact that in many of the countries where birth rates improved, this was associated with a smaller average size of entries (OECD, 2017[4]), meaning that changes in the share of jobs created by enterprise births, as a percentage of total employment, has generally lagged behind changes in birth rates.

Smaller average sizes may reflect productivity gains and the ability to capitalise on new labour saving (and digital) technologies, but it may also reflect other factors not necessarily conducive to longer-term productivity growth, for example, if higher firm creations are driven by push factors such as fiscal tightening and lower levels of social security payments, rather than by pull factors e.g. business opportunities. Of note in this respect are the substantial differences across countries. For example, although job creation by enterprise births represented on average 4% of total employment, job creation

rates ranged from as high as 7-10% in Turkey to as low as 1% in Ireland in 2014 and 2015 (Figure 1.7).

Figure 1.7. Enterprise birth rates have risen in many countries but job creation rate remains low in some

Birth of and job creation by employer enterprises, percentage rates, business economy



Note: Birth rate is measured as the ratio of employer enterprise births over the population of active employer enterprises. Job creation rate is measured as the ratio of jobs created by employer enterprise births over the number of jobs in all active employer enterprises.

Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924020

SMEs and productivity

Many new SME jobs are in low productivity activities

Although there are signs emerging that business entries have begun to pick up in recent years, new employment is not universally created in high-productivity high-growth sectors. A higher pace of entries in lower-productivity activities can therefore work to weigh down on productivity levels and indeed on productivity growth observed across developed economies in recent decades (OECD, 2018[5]).

Across major economies, on average, between 2010 and 2016, increases in employment in activities with below average labour productivity were about two to four times higher than in those with above average labour productivity. In the United States, for example, 9.7 million more jobs in activities with below average labour productivity levels existed in 2016 compared to 2010, which is over four times the additional 2.4 million jobs in above average labour productivity activities. Comparable figures in other major economies were: 0.5 million and 0.2 million in Canada, 0.4 million and 0.2 million in France, 1.5 million and 0.6 million in Germany; minus 0.02 million and minus 0.2 million in Italy; and 1.9 and 0.6 million in the United Kingdom.

In nearly all major OECD economies, the top three sectors generating the largest net employment gains over the period 2010 to 2016 had below average labour productivity, with restaurants, health and residential care activities featuring highly in most economies (Table 1.1, Panel A). Only France saw a sector, namely legal, accountancy, management consultancy, with above average labour productivity in the top three sectors. On the other hand, in sectors that had lost most (net) jobs over the same period, most major economies had at least one above average labour productivity sector in the top three; all three in the case of the United States (Table 1.1, Panel B).

Table 1.1. Net employment creation and destruction between 2010 and 2016 (or latest available year)

	ISIC Rev.4 code	Activity label	Net employment creation	Labour productivity level of the sector
Panel A. Three sectors with largest net employment creation, G7 countries, thousands of persons				
CAN	G47	Retail trade, except of motor vehicles and motorcycles	141	Below average labour productivity
	I56	Food and beverage service activities	64	Below average labour productivity
	P85	Education	50	Below average labour productivity
FRA	Q_87_88	Residential care activities; social work activities without accommodation	128	Below average labour productivity
	Q86	Human health activities	114	Below average labour productivity
	M_69_70	Legal and account activities; activities of head offices; management consultancy activities	94	Above average labour productivity
DEU	Q86	Human health activities	357	Below average labour productivity
	Q_87_88	Residential care activities; social work activities without accommodation	306	Below average labour productivity
	N_80_82	Security and investigation activities; services to buildings and landscape activities; office administrative, office support and other business support activities	189	Below average labour productivity
ITA	I_55_56	Accommodation and food service activities	214	Below average labour productivity
	T_97_98	Activities of households as employers; undifferentiated goods- and services- producing activities of private households for own use	135	Below average labour productivity
	Q_87_88	Residential care activities; social work activities without accommodation	86	Below average labour productivity
GBR	I_55_56	Accommodation and food services activities	334	Below average labour productivity
	N_80_82	Security and investigation activities; services to buildings and landscape activities; office administrative, office support and other business support activities	292	Below average labour productivity
	M_69_70	Legal and account activities; activities of head offices; management consultancy activities	249	Below average labour productivity
USA	Q86	Human health activities	1 457	Below average labour productivity
	F_41_42_43	Construction	1 251	Below average labour productivity
	I56	Food and beverage service activities	1 214	Below average labour productivity
Panel B. Three sectors with largest net employment destruction, G7 countries, thousands of persons				
CAN	N80	Security and investigation activities	-8	Below average labour productivity
	O84	Public administration and defence; compulsory social security	-12	Above average labour productivity
	N82	Office administrative, office support and other business support activities	-15	Below average labour productivity
FRA	G45	Wholesale and retail trade and repair of motor vehicles and motorcycles	-40	Below average labour productivity
	T_97_98	Activities of households as employers; undifferentiated goods- and services- producing activities of private households for own use	-42	Below average labour productivity
	F_41_42_43	Construction	-76	Below average labour productivity
DEU	J58	Publishing activities	-43	Below average labour productivity
	S96	Other personal service activities	-44	Below average labour productivity
	O84	Public administration and defence; compulsory social security	-180	Below average labour productivity
ITA	A01	Crop and animal production, hunting and related service activities	-66	Below average labour productivity
	O84	Public administration and defence; compulsory social security	-120	Above average labour productivity
	F	Construction	-403	Below average labour productivity
GBR	C18	Printing and reproduction of recorded media	-27	Below average labour productivity
	K64	Financial service activities, except insurance and pension funding	-46	Above average labour productivity
	O84	Public administration and defence; compulsory social security	-260	Below average labour productivity
USA	G46	Wholesale trade, except of motor vehicles and motorcycles	-164	Above average labour productivity
	J60	Programming and broadcasting activities	-173	Above average labour productivity
	O84	Public administration and defence; compulsory social security	-296	Above average labour productivity

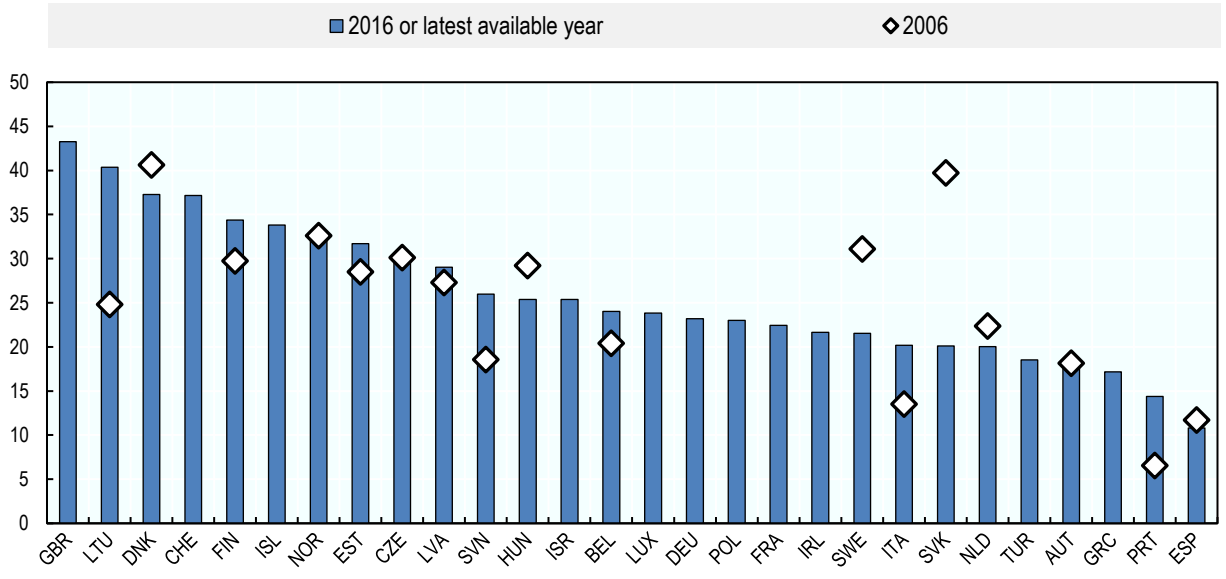
Note: Average labour productivity is measured as gross value added per person employed in the total economy.
Source: (OECD, 2018[5]), *OECD Compendium of Productivity Indicators 2018*, OECD Publishing, Paris, https://doi.org/10.1787/pdtvy-2018-en.

StatLink http://dx.doi.org/10.1787/888933924229

As noted above, a significant part of overall job creation has been through new entries, and in many economies these have been in sectors with below average productivity levels (see Figure 1.8 and Annex Figure 1.C.3): for instance: accommodation and food services in Greece, Ireland and the United Kingdom; construction in Italy and Norway; and wholesale and retail trade in most countries.[4]

Figure 1.8. Newly created jobs are mainly in lower productivity sectors

Percentage of jobs created by births in sectors with above-median productivity, as a share of all employment created by employer enterprise births



Note: Median productivity (value added per person employed) was calculated at the sectoral level (in ISIC REV.4: section-level and a selection of division-level manufacturing sectors) separately for each country and year.
Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924039

…which weighs down on wages

Labour compensation levels correlate highly with labour productivity levels; hence, having more jobs in lower labour productivity activities has resulted in more jobs with below average wages in most economies, working to weigh down on average salaries in the economy as a whole. Between 2010 and 2016, for example, close to 90% of all new jobs in France were created in activities with below average wages; close to two-thirds in Germany and the United Kingdom and over three-quarters in the United States (Table 1.2).

Table 1.2. Change in employment over the period 2010-2016, or latest available year

Thousands of persons

Country	Below average labour compensation and below average labour productivity in 2010	Below average labour compensation and above average labour productivity in 2010	Above average labour compensation and below average labour productivity in 2010	Above average labour compensation and above average labour productivity in 2010
CAN	228	-7	245	197
FRA	479	-2	-101	169
DEU	1 247	21	157	624
ITA	-99	1	5	-175
GBR	1 498	72	414	515
USA	8 752	626	1 039	1 785

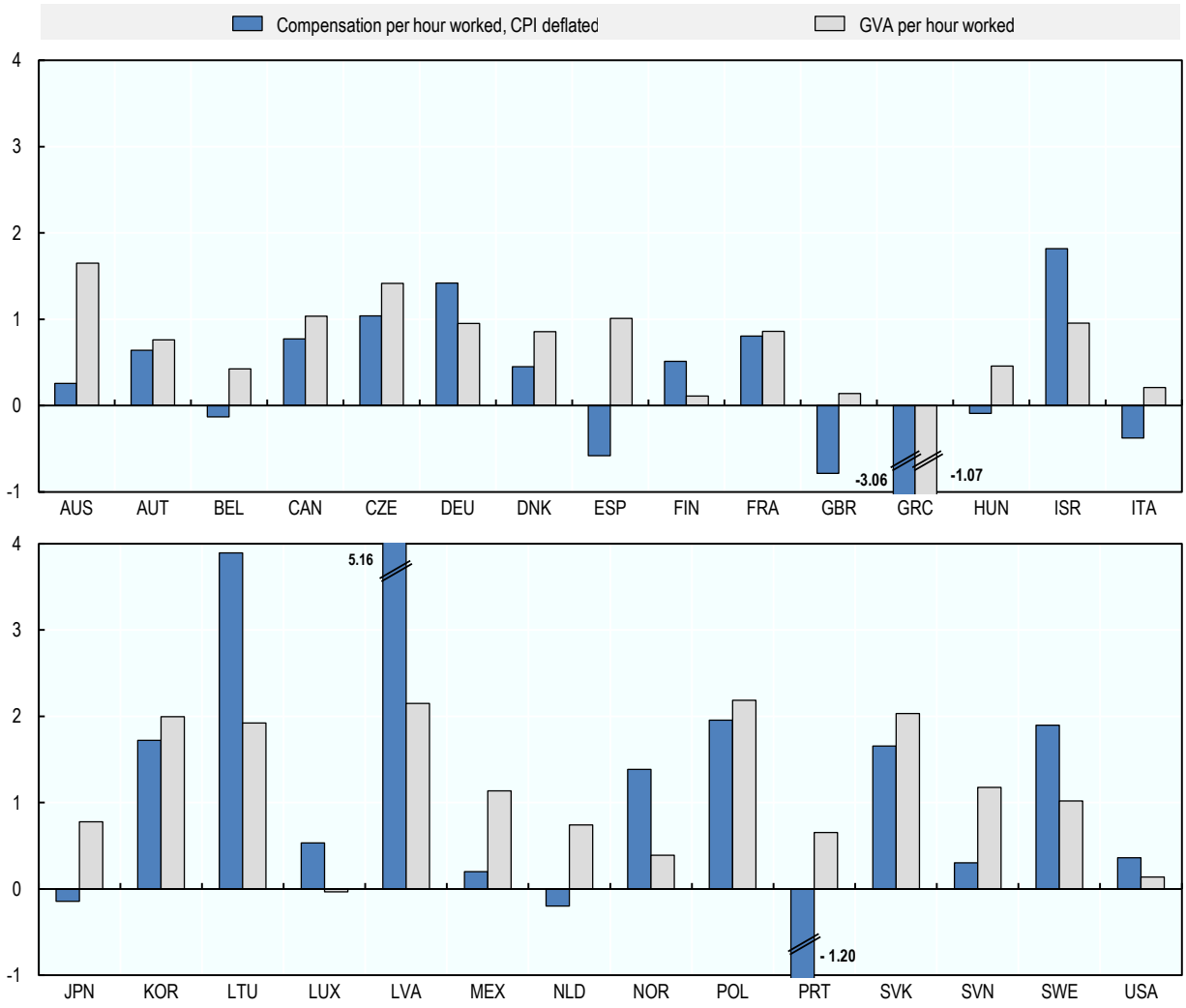
Note: Data for Canada refer to 2010-2013. Data for France, Germany and Italy refer to 2010-2015. At the time of writing the OECD Compendium of Productivity Indicators, data for the period 2010-2016 in Italy were available only at the whole economy level and show net employment creation equal to 56 thousand of persons.
Source: (OECD, 2018[5]), *OECD Compendium of Productivity Indicators 2018*, OECD Publishing, Paris, https://doi.org/10.1787/pdtvy-2018-en.

StatLink http://dx.doi.org/10.1787/888933924248

Growth in real wages, adjusted for inflation using the consumer price index, has also been lagging behind labour productivity growth in many countries (Figure 1.9) (OECD, 2018[5]; Schwellnus, Kappeler and Pionnier, 2017[6]). Indeed, real labour compensation per hour worked, adjusted for the CPI (which provides for a better measure of real purchasing power from a household perspective, compared to the GDP deflator), declined between 2010 and 2016 in Portugal, Spain and the United Kingdom. However, in some countries, such as Germany and the United States, real labour compensation has begun to rise in line with (albeit slow) labour productivity growth in recent years, helping to reverse pre-crisis decoupling.

Figure 1.9. Real wages have lagged productivity growth in many countries

GVA per hour worked and average hourly employee labour compensation, percentage change at annual rate (2010-2016), total economy



Source: (OECD, 2018[5]), *OECD Compendium of Productivity Indicators 2018*, OECD Publishing, Paris, https://doi.org/10.1787/pdtvy-2018-en.

StatLink http://dx.doi.org/10.1787/888933924058

Decoupling of wages and productivity can exacerbate inequalities

Even in countries where there is only limited decoupling of wages from labour productivity growth at the whole economy level, this can mask significant divergences within sectors (OECD, 2018[5]). In France, for example, where there has been limited decoupling at the whole economy level, out of 63 sectors, (according to ISIC Rev. 4 classification), 41 saw a decoupling in the post-crisis period; with the largest decoupling occurring in the water transport services and telecommunication services sectors. Similarly in the United Kingdom and Italy, over half of all sectors saw real average labour compensation grow at a slower pace than labour productivity, with the largest gaps in the fishing and aquaculture and education sectors in the United Kingdom and basic

metals and non-metallic mineral products in Italy. In the United States and Germany however, mirroring the improvement seen at the whole economy level, most sectors saw real wage growth outpacing productivity growth (40 out of 58 in the United States and 37 out of 63 in Germany). Across all major economies, sectors that saw the highest net increase in employment gains also saw wages outpacing, or keeping pace with, labour productivity growth.

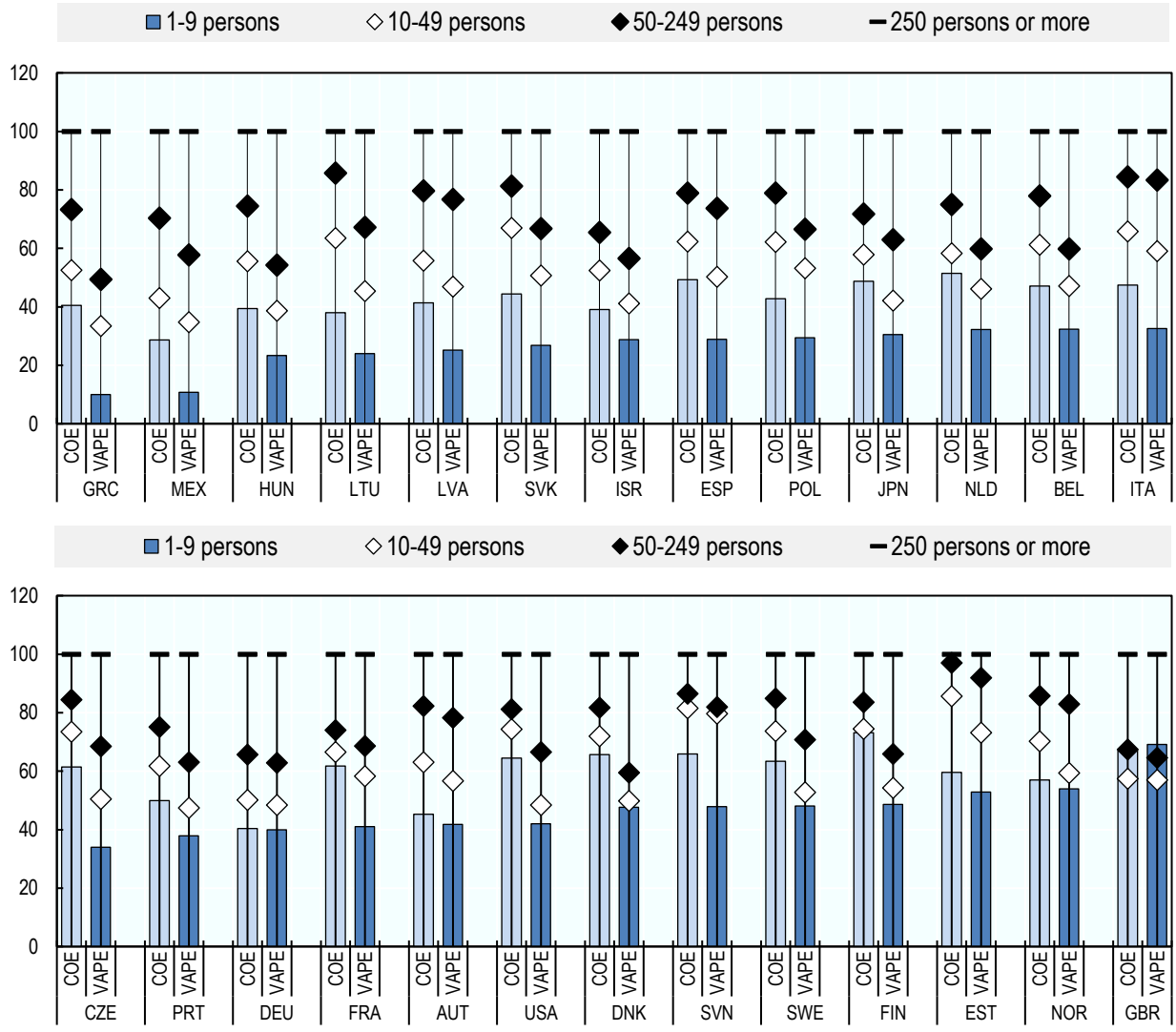
Many of the sectors where wage growth has lagged productivity have relatively high shares of SMEs. With average wages in SMEs typically, considerably lower than average wages in larger firms (Figure 1.10), and in some countries such as Mexico, significantly so, decoupling could exacerbate existing income inequalities between employees in SMEs and larger firms.

Figure 1.11 provides a more granular analysis of the gap between SMEs and large firms in terms of productivity and compensation per employee, highlighting, in turn, that, in some countries and sectors SMEs can, in fact, have higher labour productivity than larger firms. However, even in sectors where SMEs have on average higher labour productivity than larger firms they almost always pay on average lower salaries. In the Austrian chemicals sector for example, SMEs have over one third higher labour productivity than larger firms, but 20% lower salaries.

Of note is that within sectors, gaps between SMEs and larger firms vary considerably across countries, revealing real potential for improved productivity performance in countries with larger gaps.

Figure 1.10. Labour productivity and compensation per employee by enterprise size, manufacturing

Value added per person employed (VAPE) and compensation per employee (COE), index 250+ = 100, 2016, or latest available year

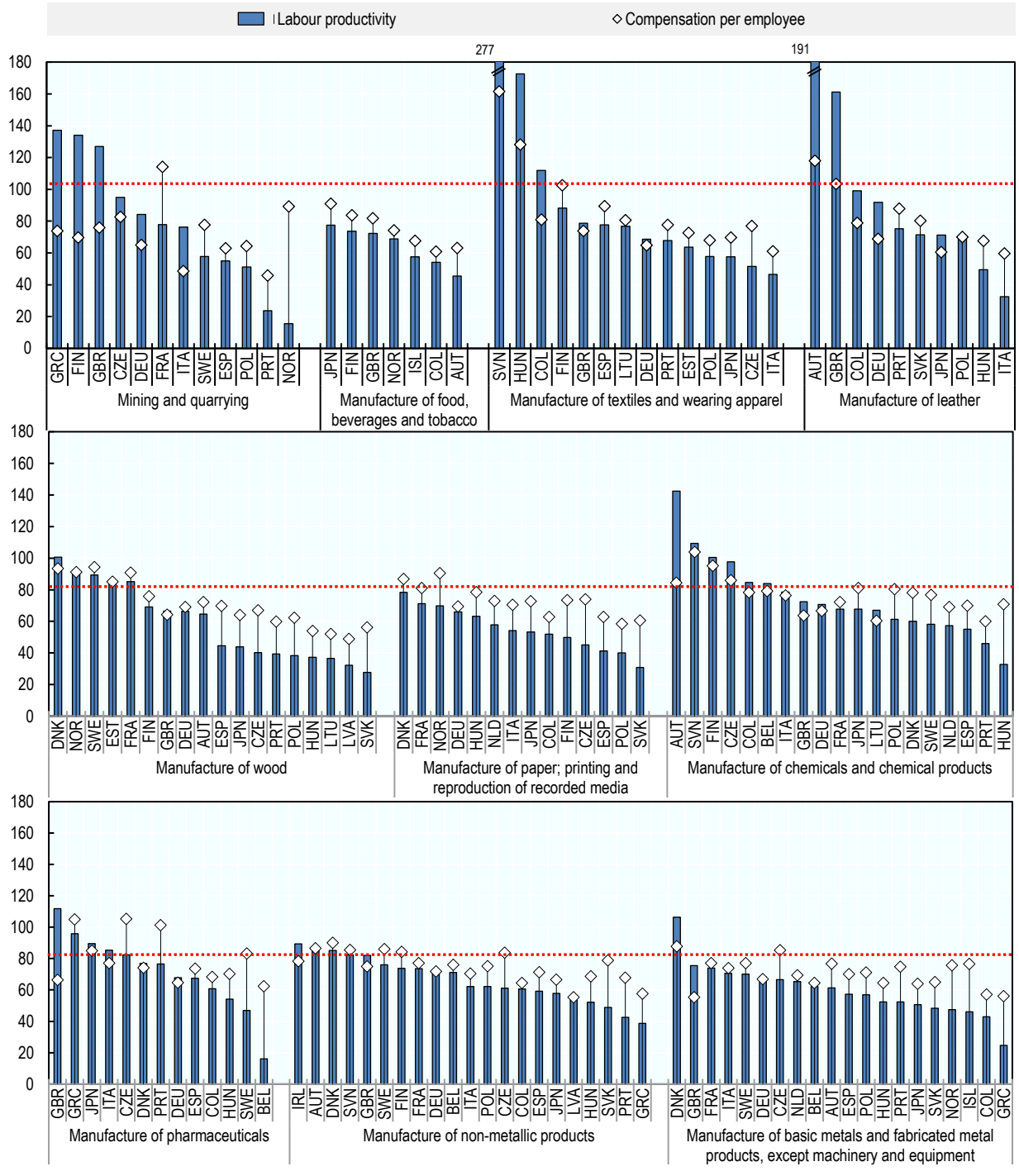


Source: *OECD Structural and Demographic Business Statistics Database*, 2018 (http://dx.doi.org/10.1787/sdbs-data-en).

StatLink http://dx.doi.org/10.1787/888933923602

Figure 1.11. SME labour productivity and compensation per employee, by industry sector

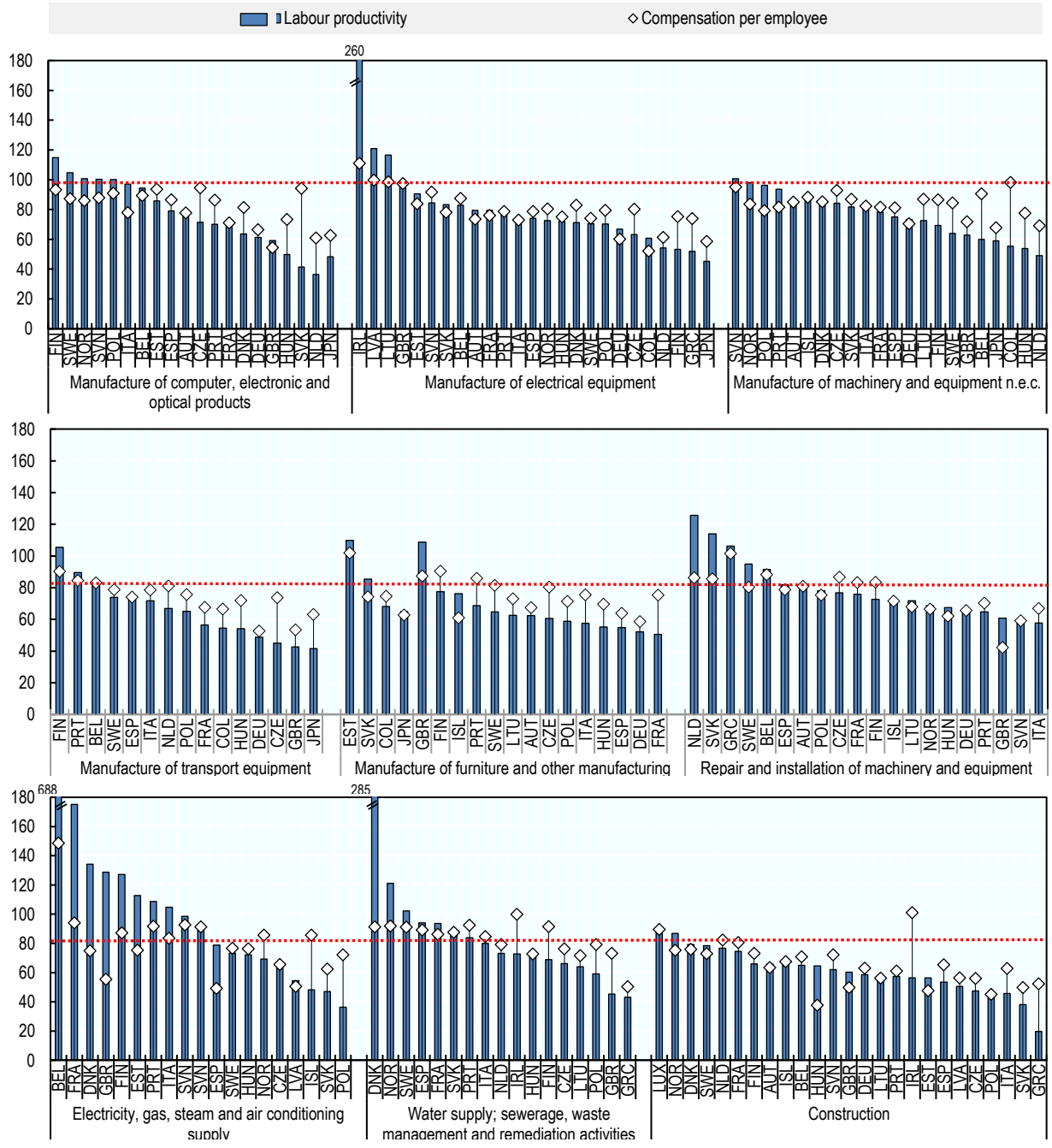
Value added per person employed and compensation per employee, index 250+ = 100, 2016, or latest available year



Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

Figure 1.11. SME labour productivity and compensation per employee, by industry sector (continued)

Value added per person employed and compensation per employee, index 250+ = 100, 2016, or latest available year



Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923621

…and productivity gaps between large and small firms are growing…

Since 2008, many countries have seen an increase in productivity gaps between SMEs and large companies (Figure 1.12), which could reflect also increased market concentration. The growth in gaps was particularly notable in Switzerland, the Netherlands, Italy and Turkey.

In manufacturing activities characterised by capital-intensive production processes, large firms show consistently higher levels of productivity than SMEs. In the United Kingdom and Germany gaps have increased slightly in the last decade but in other large European economies such as Spain and Poland they have decreased, in particular, between medium-sized firms and large enterprises (Figure 1.12, Panel A). Interestingly in the United States, between 2007 and 2012 (the period for which data are available), the relative labour productivity of manufacturing SMEs showed a marginal increase, suggesting that if productivity spill-overs have stalled, the impact on the manufacturing sector (where concerns about concentration have been less prevalent) may have been at most limited.

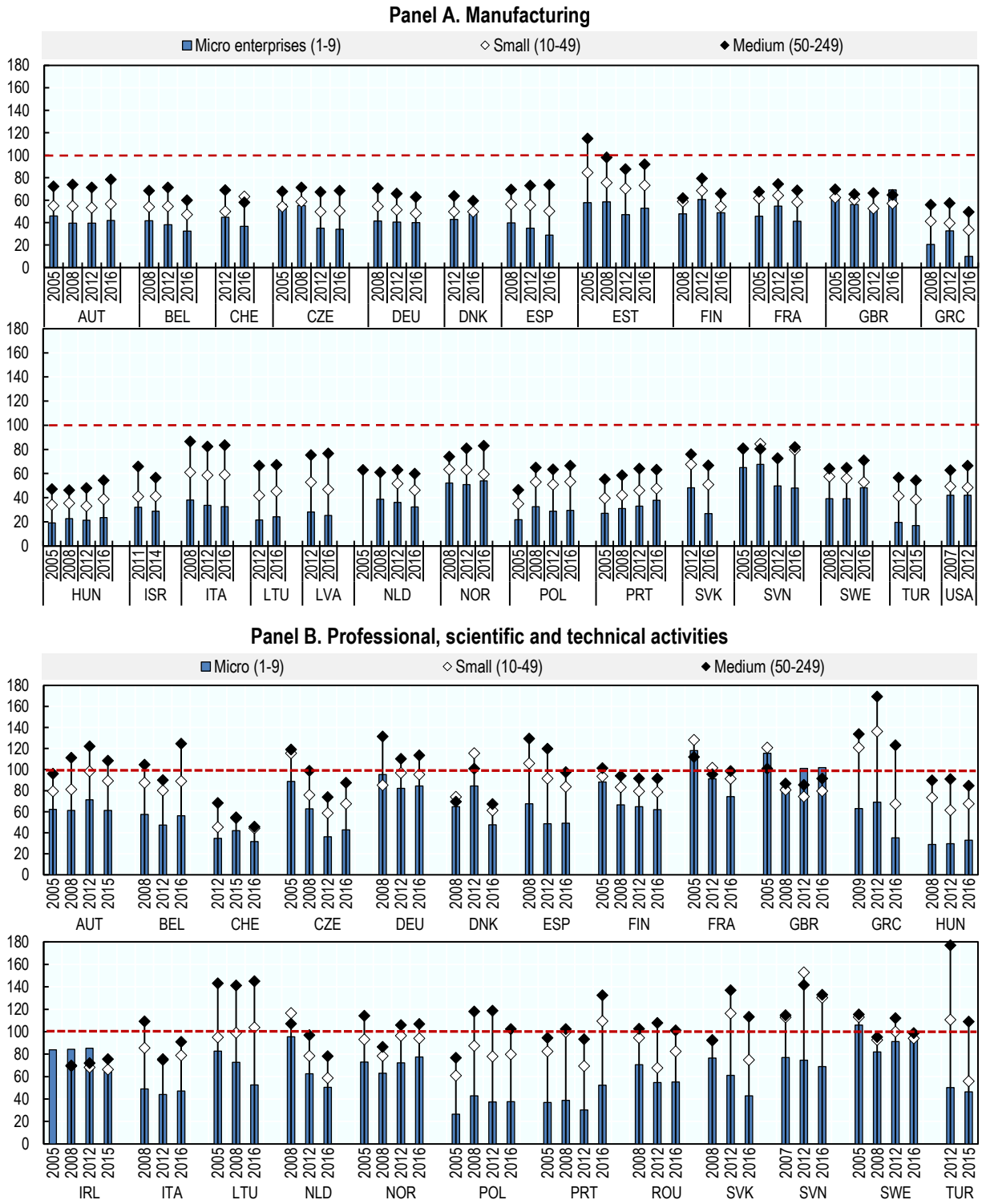
…but specialised high-skilled SMEs can outperform larger firms

In professional, scientific and technical activities, however, where SME entries have been relatively high in many economies (which include the activities of advertising agencies and consulting companies, including legal services, architectural services, etc.,) SMEs can be as productive as, or indeed more than, large firms, with micro firms in France, Sweden, and the United Kingdom (Figure 1.12, Panel B) performing as well as large firms.

Although most countries, whatever the sector, saw their micro SMEs perform significantly behind larger companies, the experience of France, Sweden and the United Kingdom in professional activities suggests that significant productivity gains could be made.

Figure 1.12. Labour productivity of SMEs

Index, productivity of large enterprises =100



Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

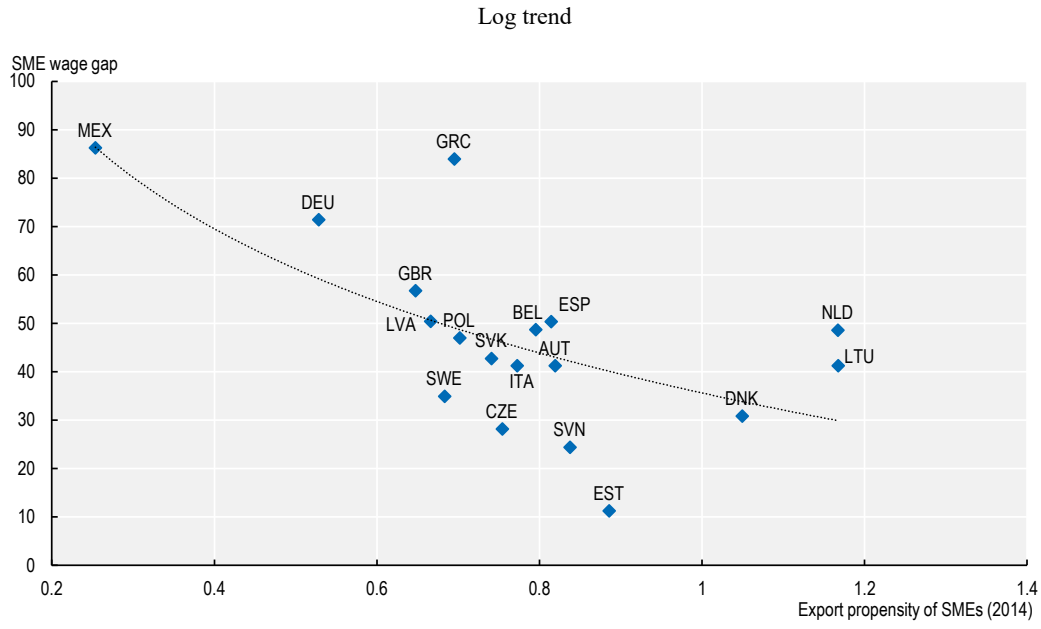
StatLink http://dx.doi.org/10.1787/888933923640

SME participation in global markets

SME activity in international trade can help reduce the wage gap with larger firms

In recent years, there have been growing concerns that the benefits from globalisation have not been spread evenly within economies, possibly exacerbating long-standing wage gaps between large and smaller firms (OECD, 2017[7]). Average compensation per worker across OECD economies is considerably smaller, the smaller the firm size, with remuneration levels, even in large SMEs, around 20% lower than in large firms. This reflects, in large part, correspondingly lower productivity, but the level of direct exports by SMEs also appears to play a role. In countries where SMEs have a relatively high share of exports for example, differences in average salaries between SMEs and larger firms are smaller (Figure 1.13).

Figure 1.13. Manufacturing wage gaps and SME trade, 2014



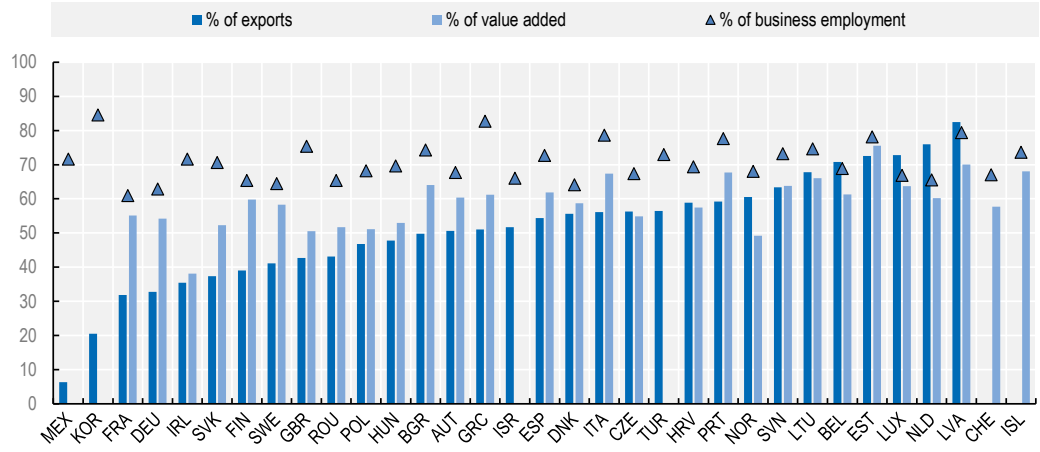
Notes: Current prices, US Dollars - converted using period average exchange rate.
SME wage gaps are measured as the difference between average salaries per employee in large firms and SMEs as a ratio of average salaries in SMEs. Export propensity of SMEs is measured as the share of exports by SMEs divided by the share of output by SMEs.
Sources: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en and *Trade by Enterprise Characteristics Database*, 2018, https://doi.org/10.1787/eeefdd40-en.

StatLink http://dx.doi.org/10.1787/888933923659

Relative to their share of overall activity and employment, SMEs account for only a small proportion of exports. As noted above, in most OECD economies SMEs account for 99% of all firms, around two-thirds of total employment and over half of business sector value-added. The SME contribution to overall exports is for most countries similar to their contribution to value added (Figure 1.14).

Figure 1.14. SME export activity, value added and employment shares

As a percentage of exports (value added, business employment), total business economy, 2015 or latest available year



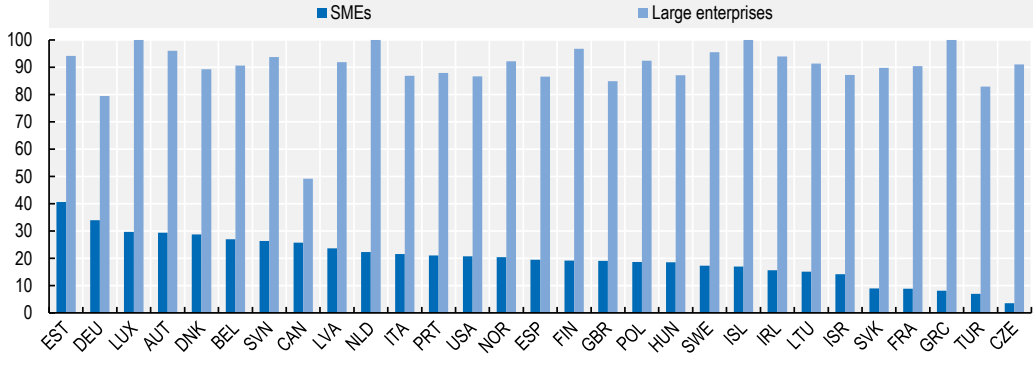
Sources: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en and *Trade by Enterprise Characteristics Database*, 2018, https://doi.org/10.1787/eeefdd40-en.

StatLink http://dx.doi.org/10.1787/888933923678

The relatively low contribution of SMEs to overall exports reflects their lower contribution in particular to mining and manufacturing (industry), where economies of scale play a role. Indeed, the share of industrial SMEs engaged in exports is notably lower than the corresponding share for large firms. In most economies, for example, the vast majority (when not the totality) of large industrial firms export, whereas only between 5%-40% of SMEs do so (Figure 1.15).

Figure 1.15. Industrial firms engaged in exports, 2016 or earliest available year

As a percentage of total firms by size class



Sources: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en and *Trade by Enterprise Characteristics Database*, 2018, https://doi.org/10.1787/eeefdd40-en.

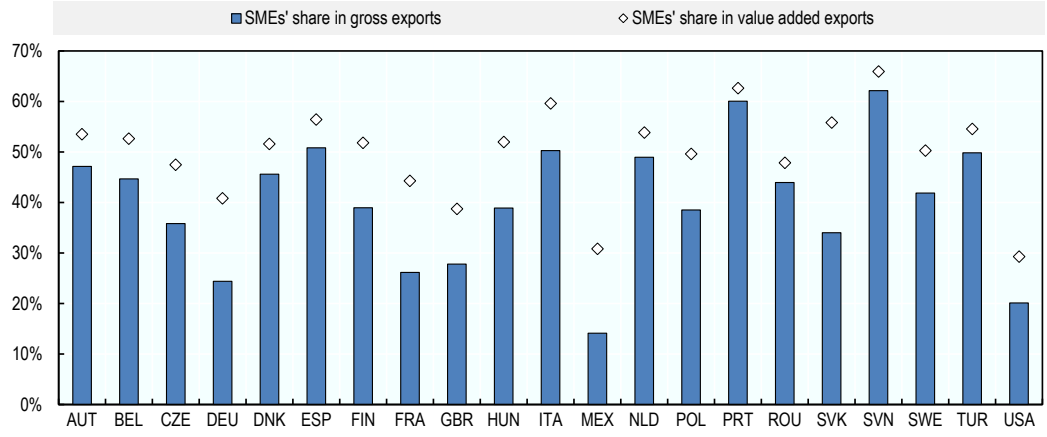
StatLink http://dx.doi.org/10.1787/888933923697

…and SME participation in global value chains offers access to foreign markets and new sources of growth

Evidence suggests that, in OECD countries, looking only at direct exports by SMEs under-represents the actual engagement of small firms in a country's gross exports. When the role of SMEs as suppliers of inputs to larger direct exporters is taken into account, the importance of SMEs as exporters increases considerably. In the Slovak Republic, for example, SMEs account for 34% of gross exports, but for 56% of the total value added in the country's exports (Figure 1.16).

Figure 1.16. Direct and indirect exporting activity of SMEs in OECD countries

As a percentage of gross exports, 2014



Source: OECD (2018), "Accounting for firm heterogeneity in global value chains: The role of Small and Medium sized Enterprises", OECD Working Party on International Trade in Goods and Trade in Services Statistics.

StatLink http://dx.doi.org/10.1787/888933923716

The significance of indirect channels is especially important for independent SMEs (i.e. those not owned by a larger domestic firm or foreign firm). For example, while only 4% of total value added generated by independent micro SMEs in Norway is exported directly, an additional 23% of their value added is indirectly embodied in exports by other firms (Figure 1.17).

Indirect exports by SMEs are particularly large in sectors where GVCs are important and where scale matters. In the transport equipment sector, for example, SMEs accounted for over 40% of total US value-added exported, with nearly all of that contribution reflecting upstream component and services suppliers to the transport equipment industry (OECD, 2017[7]). This indirect mode of internationalisation provides SMEs access to foreign markets and new sources of growth, but without incurring trade related costs.

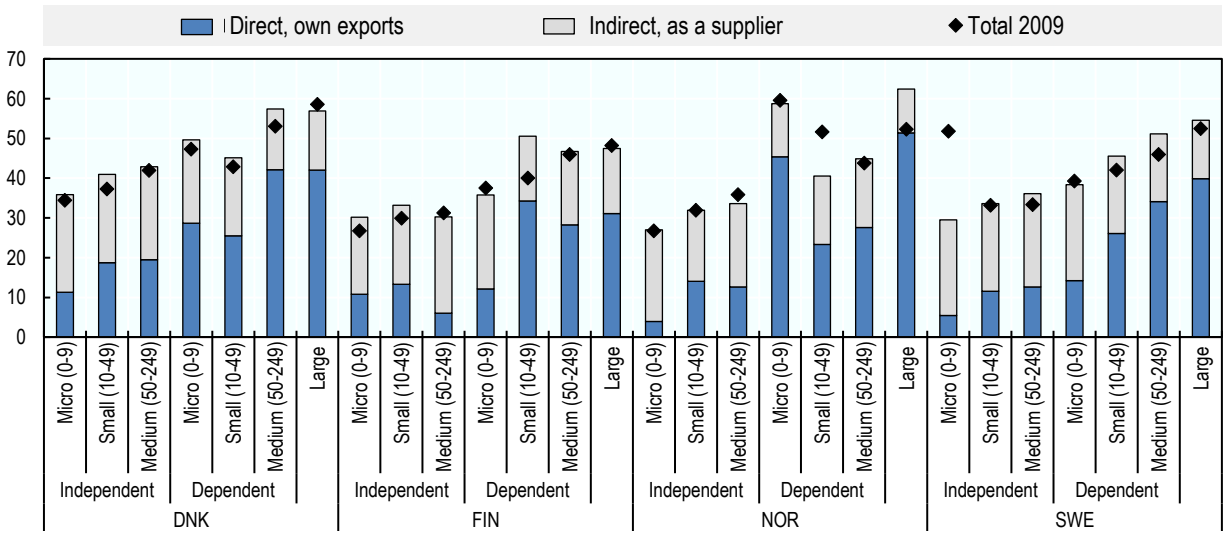
SMEs may also benefit from GVCs on the input side (Lopez Gonzalez, 2016[8]) and (López González and Jouanjean, 2017[9]). Recent studies have found evidence that firms which use more imported goods and services are more productive and better able to face the costs of exporting (Bas and Strauss-Kahn, 2015[10]) and (Bas and Strauss-Kahn, 2014[11]). SMEs, including non-exporters, can increase their productivity by drawing on cheaper and more sophisticated imports; by exploiting new technologies embodied in new and cheaper capital products; as well as through improved access to new technologies

from engagement with internationally-oriented firms, including through linkages arising from foreign investment. All of these channels can also help to target specialisation in parts of the value-chain, where SMEs have comparative advantages and can in turn foster upgrading.

Benefits from GVC participation, including in terms of productivity growth, depend on the position of the firm within global production networks and the nature of inter-firm linkages. 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 display 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[12]).

Figure 1.17. Direct and indirect exporting activity of SMEs in Nordic countries

As a percentage of total value-added, 2013



Source: OECD (2017), *Nordic Countries in Global Value Chains*, report by the OECD Statistics Directorate and the National Statistical Offices in the Nordic countries, https://www.dst.dk/Site/Dst/Udgivelser/GetPubFile.aspx?id=28140&sid=nordglobchains.

StatLink http://dx.doi.org/10.1787/888933923735

Closer global integration also has implications for firms that operate in local markets, through increased competition, which can have disruptive effects on local economies and requires enhanced market knowledge and competitiveness by small businesses.

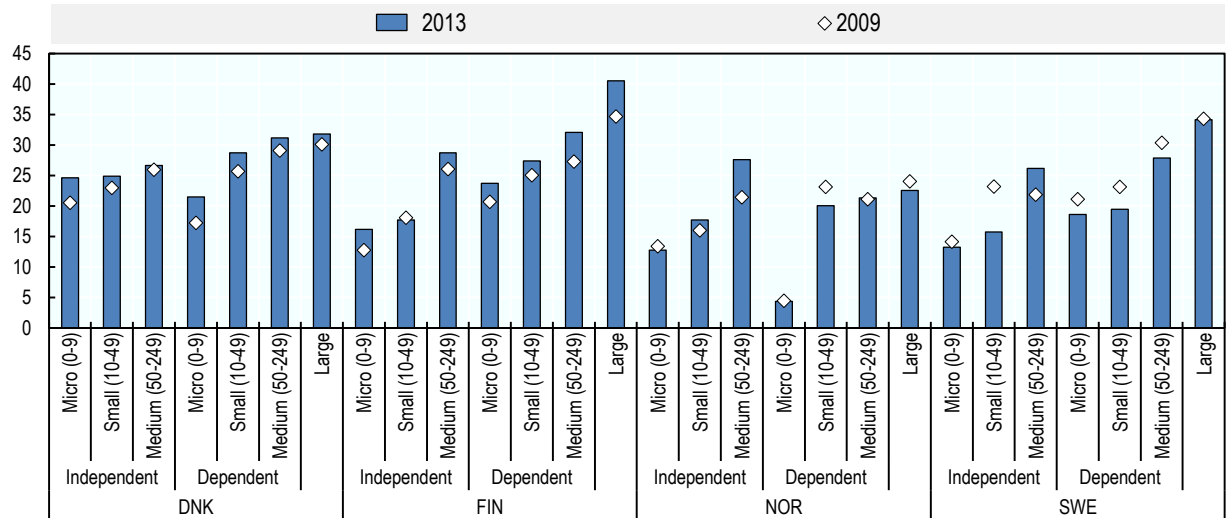
GVCs amplify the importance of goods and services trade policies. Trade and investment openness, trade facilitation, intellectual property protection, and infrastructure and institutional quality, are all key to SME engagement in global markets. However, while some trade costs have fallen significantly in recent years, due also to the expansion of digital platforms, others remain. Reform of slow or cumbersome border procedures can cut costs of trading by 12%-18%, depending on a country's level of development (Blanchenay, Criscuolo and Calvino, 2016[2]). OECD analysis shows that opening up services markets would primarily benefit SMEs. For instance, for cross-border exports of

services, an average level of services trade-restrictiveness represents the equivalent of an additional 14% tariff for SMEs relative to large firms (OECD, 2017[1]).

Statistics for analysis on this topic are currently scarce, but where they have been developed, the insights generated are of high relevance. For example, data are available for Nordic economies, showing that SMEs consistently source a lower share of foreign goods and services to produce exports than larger firms (Figure 1.18). The evidence also highlights that dependent SMEs have higher integration from an import perspective than independent SMEs, which indicates that they leverage on those links to overcome barriers to import trade.

Figure 1.18. Foreign value added share of exports in Nordic economies

As a percentage



Source: OECD (2017), *Nordic Countries in Global Value Chains*, report by the OECD Statistics Directorate and the National Statistical Offices in the Nordic countries, https://www.dst.dk/Site/Dst/Udgivelser/GetPubFile.aspx?id=28140&sid=nordglobchains.

StatLink http://dx.doi.org/10.1787/888933923754

…and increase competitive pressures in local markets

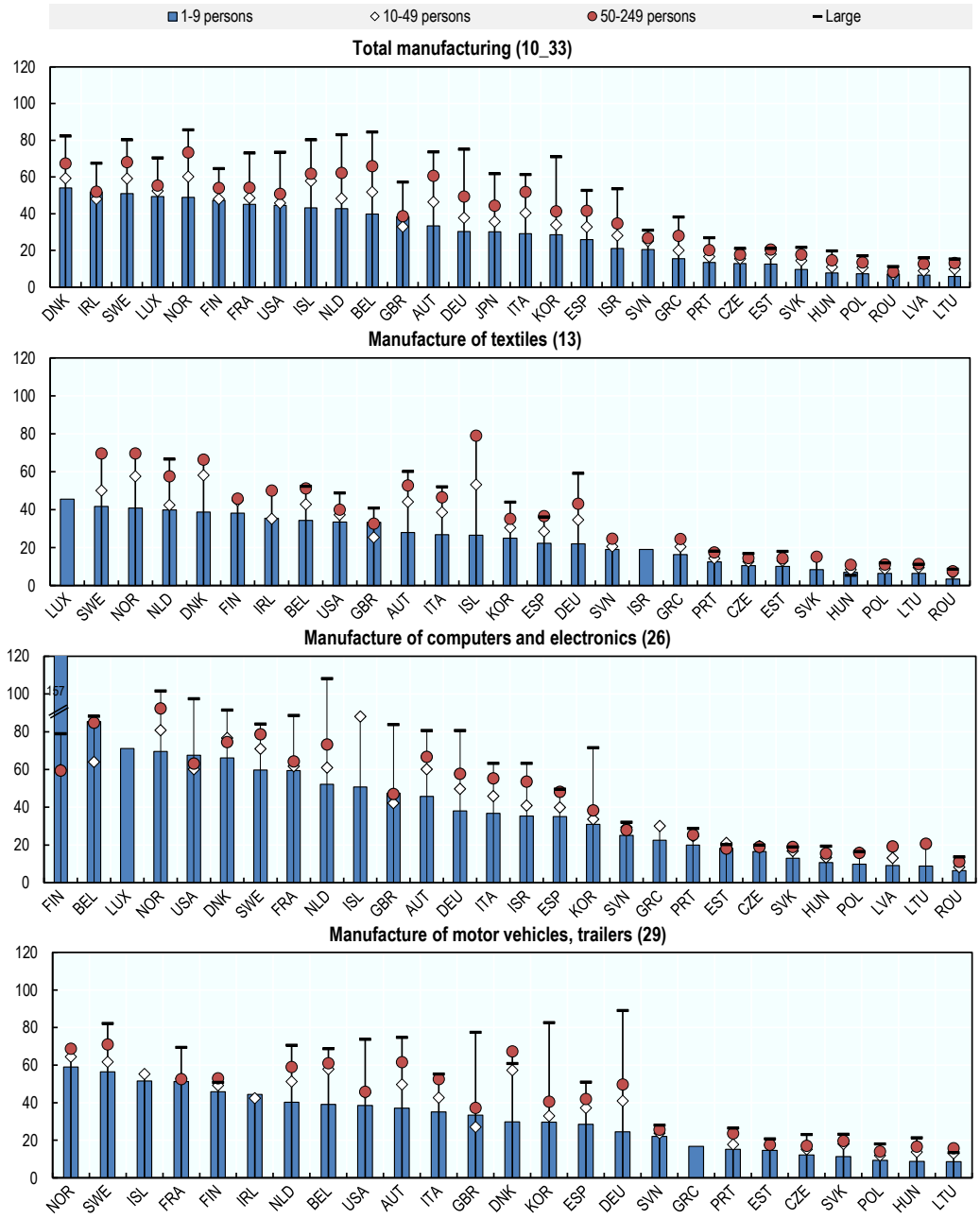
While global value chains provide opportunities to access new markets (see also Chapter 3) and in turn growth, whether directly or indirectly for SMEs, they also create avenues for increased foreign competition in their home markets, in particular in lower productivity (i.e. labour intensive) sectors and activities, as larger firms and especially multinationals capitalise on international sourcing of intermediate parts from countries with lower wages costs - and often lower regulations. The evidence from databases such as the OECD-WTO Trade in Value-Added database confirms this, with increasing foreign content, typically from lower skilled activities (such as assembly) from lower income countries with an abundance of cheap labour, in the sourcing patterns of high income countries.

This foreign competition may have a disproportionate impact on SMEs in the upstream part of the value chain (e.g. producing parts for larger firms), especially if the competition emerges from larger foreign firms that are able to capitalise on economies of scale.

Substantial differences in average salaries, even within OECD economies, suggest that the scope for larger firms to capitalise on GVCs is indeed not insignificant (Figure 1.19). The result is that, for example, employees in manufacturing micro firms in France earned on average almost twice the compensation of employees in large firms in Portugal in 2015. In the case of computers and electronics the differences between countries are even larger, with Finnish micro firms paying on average more than twice the salaries of the United States.

Figure 1.19. International competitiveness in wages

Compensation per employee, thousands of USD per employee, 2016



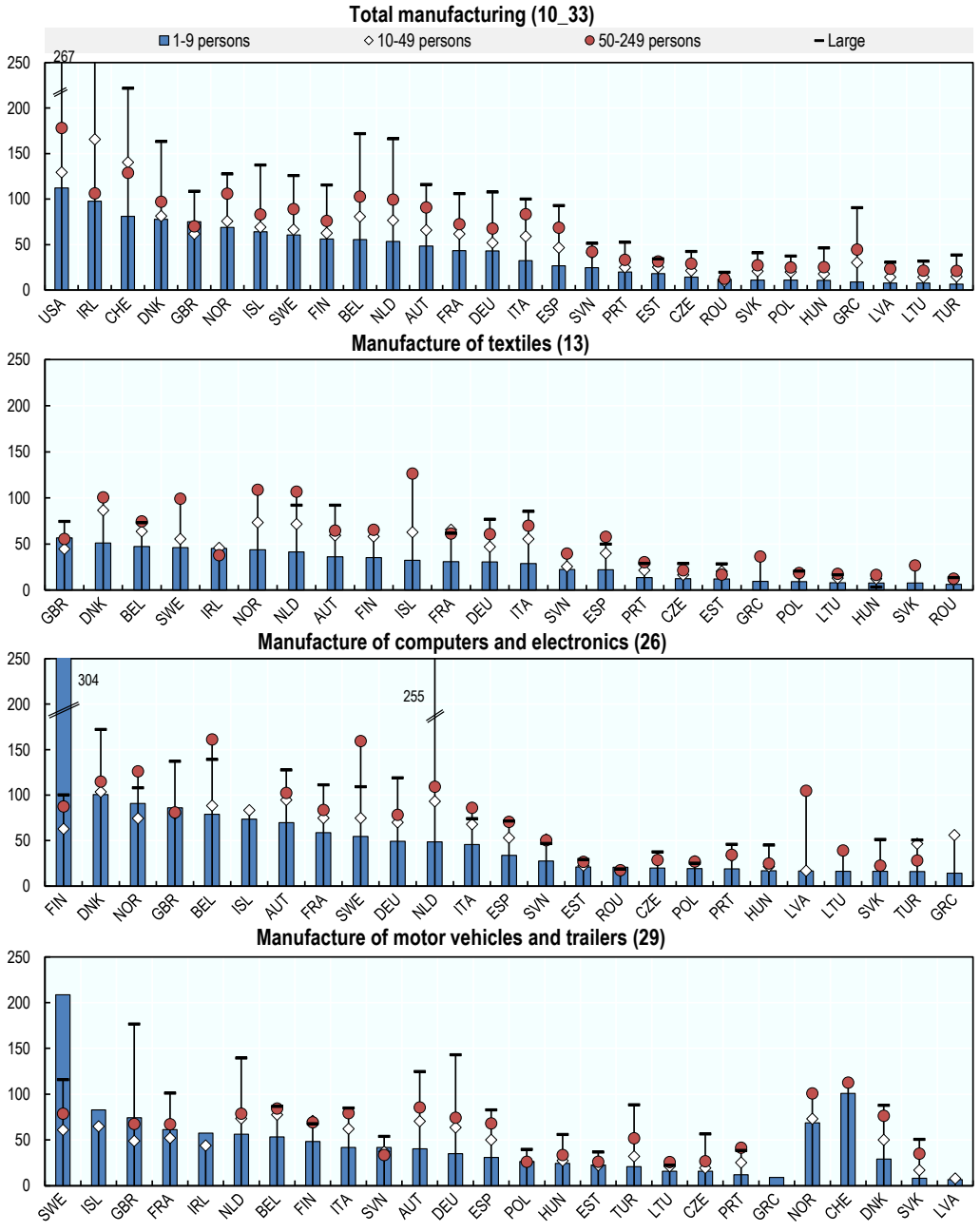
Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923773

To some extent, this exaggerates the potential scale of the challenge for high wage SMEs, as outsourcing decisions are not solely based on relative differences in salaries, there are many other factors that determine a firm's sourcing pattern (Just-in-Time delivery, trade related costs – behind the border, tariffs and transportation – regulatory costs, reliability, etc), but one particularly important factor is relative productivity. In general, in countries with lower relative labour costs, labour productivity is also relatively lower (Figure 1.20).

Figure 1.20. International competitiveness through productivity

Value added in 000 current USD per person employed, 2016



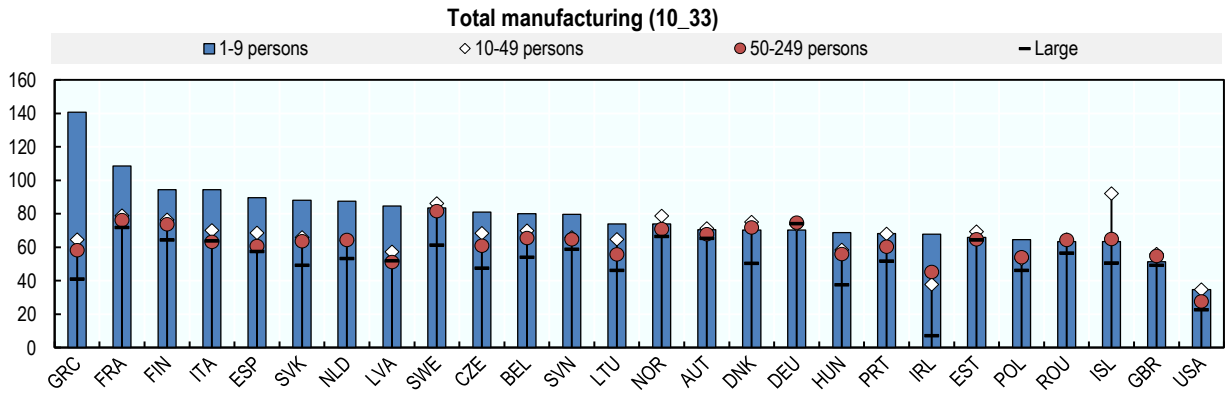
Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923811

However, often relative differences in labour productivity are smaller than relative differences in labour costs. For example, large Portuguese manufacturers have about the same labour productivty as French micro firms. Looking at unit labour cost levels (taking the share of compensation per employee over productivity) Austria, Estonia and Germany present similar levels regardless of the size of the enterprise Figure 1.21).

Figure 1.21. Labour income shares in manufacturing

Total compensation as a share of gross value added, total manufacturing, percentage, 2016 or latest available year



Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

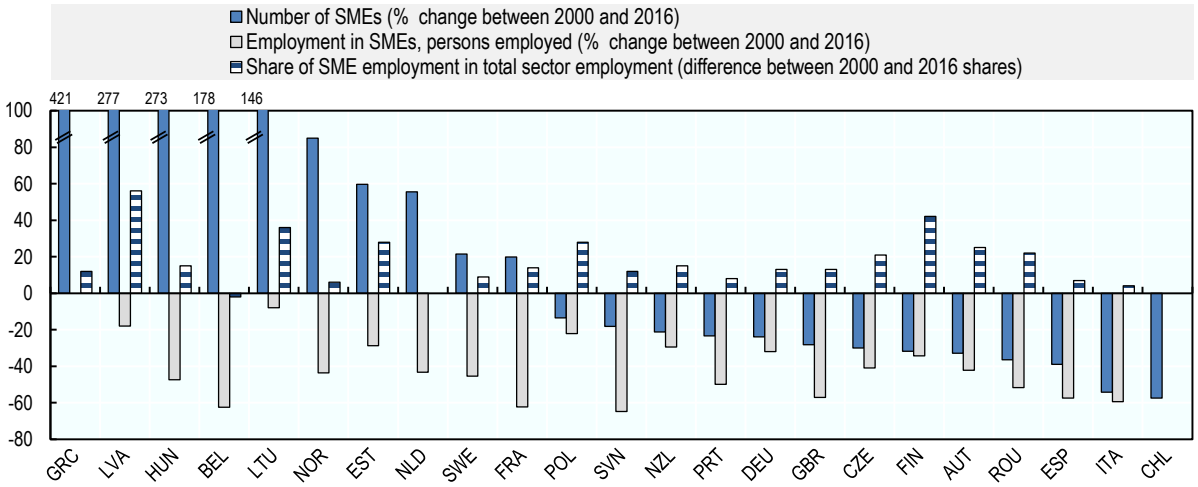
StatLink http://dx.doi.org/10.1787/888933923830

Textiles is one sector that has been particularly transformed by GVCs in the last twenty years, in large part reflecting the fact that the assembly of clothing at the end of the value chain remains a labour intensive task, and so in many countries low-skilled activities have been outsourced to low wage countries. At least for now, assembly has not been greatly affected by automation, with firms in the sector in developed economies specialising in design, often fabric and high-quality assembly; and firms in lower income countries specialising in the basic assembly. This is a factor that has seen the number of SMEs in the sector decline considerably in many OECD countries over the last 16 years, especially in Italy, Spain, Denmark and Chile (Figure 1.22) with contractions in employment even more severe.

However, precipitous though the declines have been, SMEs increased their domestic market shares across all countries, as a result, in many, of a focus on niche activities of higher value. France for example, where SMEs have increased their share of production in the sector from 75% in 2000 to 89% in 2016, has specialised in higher value technical textiles (accounting for one-quarter of European production), and so although the number of individuals in the sector fell signifcantly, from just under 92 000 in 2000 to just under 35 000 in 2016, the number of firms increased from 5.5. to 6.6 thousand, turnover per employee was up over 40%, exports per employee nearly doubled, with wages (amongst the highest in the OECD) increasing from 10% below the whole economy average to 10% over.

Figure 1.22. SMEs in the manufacturing textiles sector

Percentage, 2016 or latest available year



Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923849

Other OECD countries have adopted different adaptive strategies to the competition from cheaper imports. In Spain for example, which also saw precipitous falls in numbers, and employment in SMEs, exports rose over 50% over the period, as firms capitalised on cheaper intermediate imports of textile products (with the foreign content of Spain's exports rising from 27.5% in 2000 to over 35% in 2014) but, arguably only through considerable reductions in costs, as relative salaries fell from 97% of the economy average in 2000 to 85% in 2016.

Digitalisation presents opportunities for SMEs to strengthen their performance in terms of growth, innovation and internationalisation

Digital technologies are evolving rapidly and combining in often unforeseeable ways, with large scale effects on market structures and competitive conditions for SMEs (see also chapter 3 on market conditions). Shifts in client demands and supply-chain processes are exerting pressure to reshape business models to become more compatible with the digital era of continuous connection and instantaneous global reach. The impact of advanced digital technologies has also transformed and disrupted many sectors traditionally dominated by SMEs, notably transportation (e.g. Uber), restaurants (Deliveroo), real estate (via a whole range of on-line platforms), or travel and accommodation (Expedia, Booking.com, AirBnb) (see also chapter 7 on access to innovation assets).

Digitalisation is therefore playing a major role in shaping market conditions and SME performance, whether through cheaper digital tools (ICT equipment) that provide scope for new innovative firms to enter the market, the provision of digital services (which reduce the space between consumers and producers), or access to new (including international) market places via digital intermediation platforms, such as Amazon and Task Rabbit, and other dedicated company websites.

Indeed, digitalisation represents an important vehicle for SMEs to be "born global" and opens new opportunities to enhance competitiveness, through product or service innovation and improved production processes. Furthermore, Big Data and data analytics can enable a better understanding of the processes within the firm, the needs of their clients and partners, and the overall business environment.

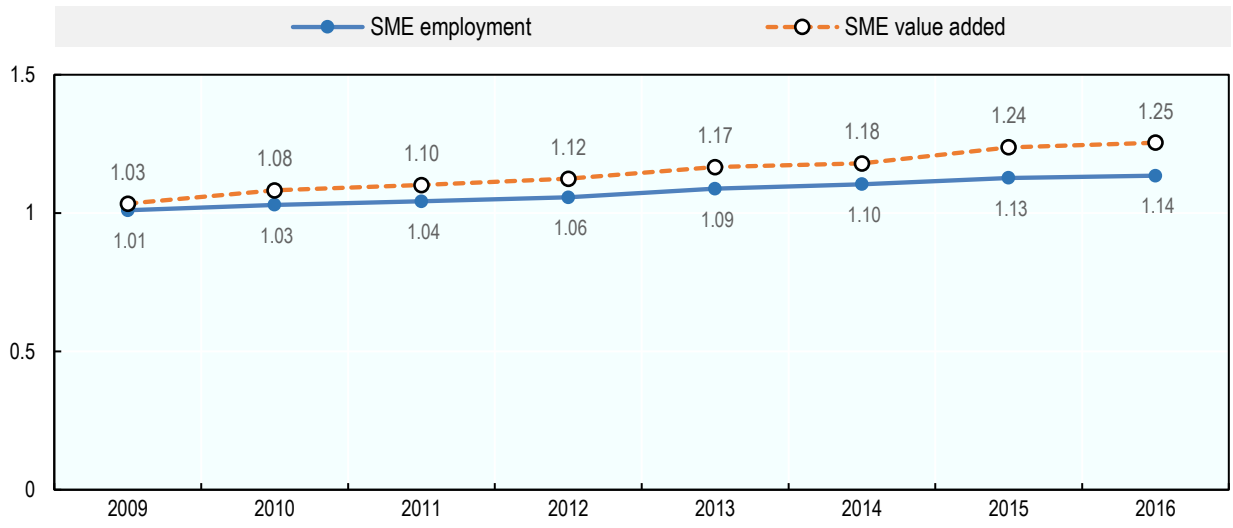
Digitalisation has also transformed the possibilities of scaling up, and different forms of business growth are emerging, with some companies able to achieve significant scale, market share and high-productivity without affording large investment in tangible assets. "Lean start-ups" are emerging that leverage the Internet to lower fixed costs and outsource many aspects of the business to stay agile and responsive to the effect market (OECD, 2017[13]).

The use of digital technologies can also ease SMEs' access to skills and talent, through better job recruitment sites, outsourcing and online task hiring, as well as connection with knowledge partners (OECD, 2017[13]). It can facilitate access to a range of financing instruments. Mobile banking and online payments have had an important impact on traditional SME financing, and digitalisation has allowed new financial services to emerge, with innovative solutions to address information asymmetries and collateral shortages (see also chapters 5-6 on access to finance and skills).

Indeed SME value-added and employment growth in high-digital intensity[5] activities have outpaced those in low digital intensity activities (Figure 1.23).

Figure 1.23 High-digital intensity SMEs have higher growth

Ratio of high over low digital intensity sectors growth rate of employment and value added



Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933923868

But many SMEs struggle to seize the emerging opportunities

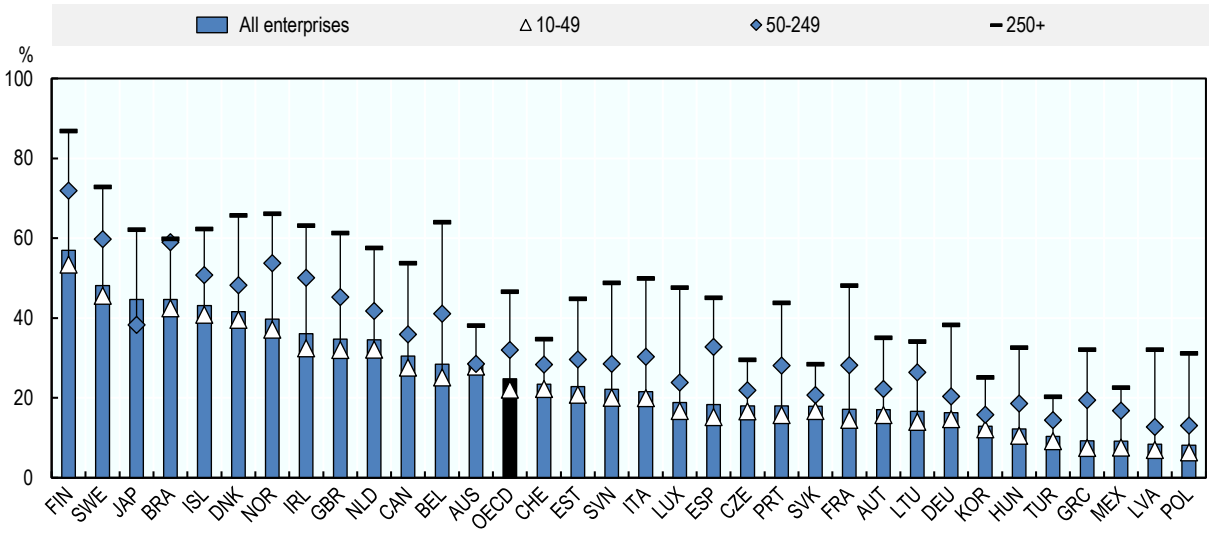
To date, a large number of SMEs have still not capitalised on these possibilities. SMEs often lack the vision and resources to seize the opportunities opened up by the digital transformation.

In most countries, gaps with larger firms are narrow with respect to simple connectivity and web presence, but large in e-commerce and, especially, as concerns the uptake of more sophisticated applications. For instance, across OECD countries, enterprise resource planning (ERP) software applications to manage business information flows are popular among large firms (78% adoption rate in 2016) but considerably less so among SMEs (less than 28%). Computer programming activities are being more frequently outsourced by SMEs, due to a facilitated access to ready-to-go software, processing power and storage capabilities offered by large firms in their cloud computing services (see Chapter 7 on Access to Innovation). Still, in many countries there are also large adoption gaps in cloud computing services, which provide scope for cost savings compared to the fixed costs of ICT investment (Figure 1.24).

The adoption lag of SMEs is also related to a lack of investment in complementary knowledge-based assets, such as R&D, human resources, organisational changes and process innovation, and this lag has implications for their capacity to turn technological change into innovation and productivity growth. Furthermore, SMEs face specific challenges in managing digital security and privacy risks, mainly due to lack of awareness, resources and expertise to assess and manage risk effectively (see Chapter 6 on access to skills).

Figure 1.24. SMEs lag in the adoption of more sophisticated digital technologies

Enterprises using cloud computing services, by firm size (2016), as a percentage of enterprises in each employment size class



Source: OECD ICT Access and Usage by Businesses (database), http://oe.cd/bus (accessed June 2017).

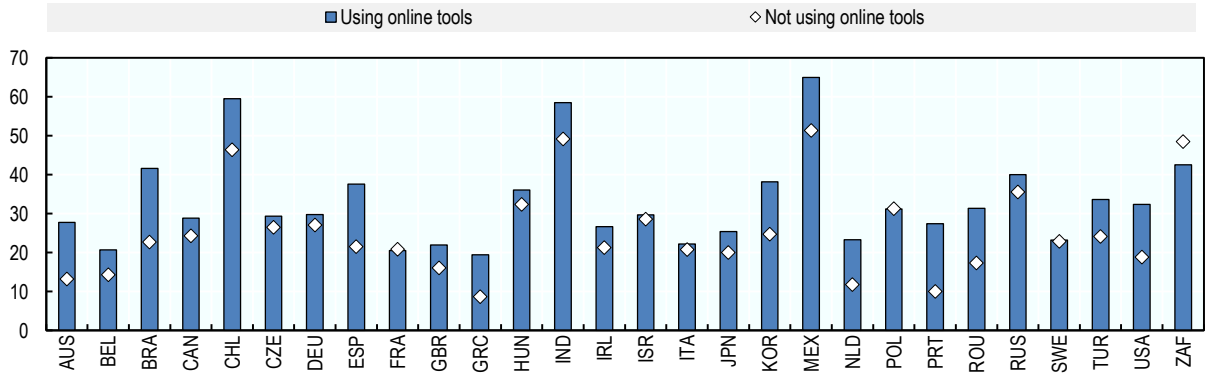
StatLink http://dx.doi.org/10.1787/888933923887

For those SMEs and start-ups that are responding to the challenges of digitalisation, the evidence, where available, points to a positive impact on business confidence and performance. For example, data from the Future of Business Survey reveal that among SMEs with a web presence (i.e. a Facebook page) those using a range of digital on-line tools to advertise and sell their products are more likely:

1. to have a positive assessment of future employment growth (Figure 1.25); and
2. to be involved in international trade (Figure 1.26).

Figure 1.25. Firms planning to increase employment in the next six months

Percentage of all firms, July 2017 – April 2018

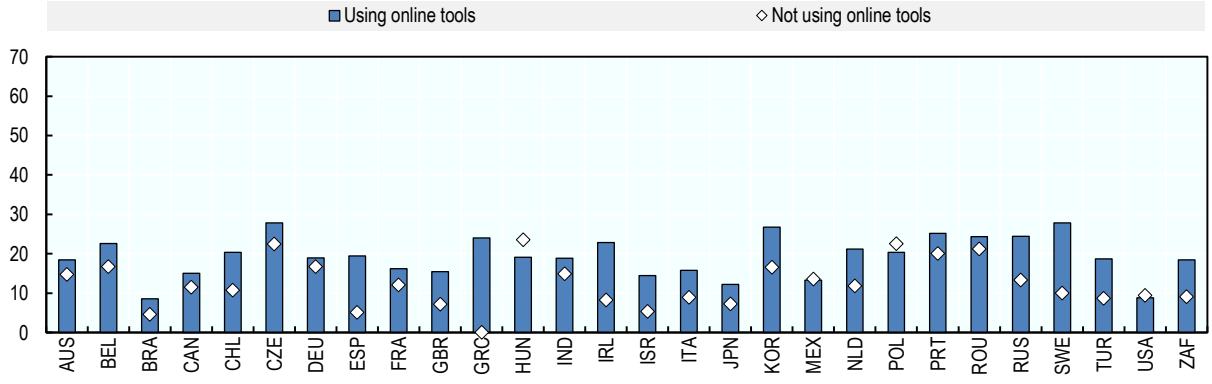


Source: Facebook-OECD-World Bank, *Future of Business Survey*.

StatLink http://dx.doi.org/10.1787/888933923906

Figure 1.26. Firms trading internationally, by the use of online tools

Percentage of all firms, July 2017 – April 2018



Source: Facebook-OECD-World Bank, *Future of Business Survey*.

StatLink http://dx.doi.org/10.1787/888933923925

Box 1.2. The Future of Business Survey

The *Future of Business Survey* is a survey launched in February 2016 by Facebook, the OECD and the World Bank, which jointly work at its design and continuous development. The survey covers the population of enterprises whose digital presence includes a Facebook Page and was run, as of September 2018, in 42 developed and emerging economies.

The *Future of Business Survey* provides timely information on how firms assess the current state and future outlook of their business, the job creation perspectives, and the main challenges. Regular survey questions allow profiling of businesses according to their size, age, gender of business ownership/management, participation in trade and use of online tools. The survey also features ad hoc modules, where specific topics are investigated such as motivations for starting-up and sources of business financing.

The survey constitutes an innovative experiment of public-private partnership in data development and collection that contributes to deliver new insights on SMEs in the digital economy.

Conclusions and looking ahead

SMEs are key players in the economy and the wider eco-system of firms. They provide the main source of employment, and often value added, across countries. However, their contributions vary widely across and within countries and sectors. In this regard, improving knowledge about heterogeneity is essential for analysis and evidence-based policy making, not least during a period of rapid digital transformation, set against a backdrop of two decades of increasing globalisation, which may now be slowing as trade tensions rise and as digitalisation and automation begin to impact on global value chains – i.e. global fragmentation of production – that have been at the vanguard of globalisation.

The evidence shows that a broad view of the SME sector can mask the impact of these mega-trends, as they affect more some SMEs and sectors than others. The structure of the SME population as a whole has been broadly stable in recent years, with the bulk of SMEs in most countries engaging in activities with relatively low entry costs such as in the distribution and construction activities. Important dynamic changes are however occurring in sub-sectors highly exposed or able to capitalise on the digital transformation, such as in the information and communication sector.

The same is true of exposure to globalisation. While global value chains (GVCs) have provided significant opportunities for SMEs to participate and specialise in tasks within value chains that offer scope for access to foreign markets, either as direct or indirect exporters, they have also increased competition within domestic markets, from lower-cost producers in other parts of the world, particularly in emerging economies. In sectors such as textiles for example, this increased competition has had a profound impact on SME producers in developed economies with higher-wage costs, forcing many to close but also acting as a stimulus to upgrade and move up the value chain through the provision of higher value, and higher productivity, tasks. Similar impacts have almost certainly occurred in other sectors exposed to low-wage competition. However, GVCs have also presented opportunities for high-skilled, knowledge intensive SMEs in developed

economies, and exploring the evidence on them will form an important part of the broader work programme as the data are developed.

Both of these mega-trends have a clear impact on wages and productivity, but they are not the only drivers. The productivity slowdown in the post-crisis period has concerned both large and smaller firms. Slower productivity growth reduces the potential for wage growth, and it is no coincidence that wage growth has been weak in the post-crisis period, with real wages barely above their pre-crisis levels in many countries.

There is an on-going debate and considerable analyses on the potential causes of the productivity slowdown, including through a slowing in technology diffusion, winner takes all dynamics, lagged effects of new digital innovations, and slower business dynamism. The evidence presented in this chapter suggests that an additional factor may also be at play. In most OECD economies the level of firm entries is rising again but are these entries increasingly in high-growth high-productivity activities? The answer appears to be no. In all OECD economies most new entries are in activities with below average labour productivity, and below average wages; and this may be working to weigh down on overall labour productivity and wages.

This of course is not new and reflects the traditional gravitational lure of lower-entry cost sectors to budding entrepreneurs, whether they are pushed or pulled into their orbit. Digitalisation, and in particular gig or sharing economy factors, may have added a new dimension, so that many of these new entries have very limited growth potential and little desire from the 'entrepreneurs' behind them to scale-up.

With SMEs paying on average less than 20% lower compensation per worker than in larger firms (and significantly more in some countries), this matters, especially in considering inequalities. Policies predicated on delivering higher-growth and higher productivity start-ups necessarily require a focus on those sectors that can capitalise on the digitalisation and globalisation mega-trends; especially as they can drive higher wages and reduce inequalities. Exporting SMEs typically have higher productivity and pay higher wages than non-exporting SMEs, and although the causal relationship between higher-productivity and exports is complex, it is clear that both are important targets for reducing inequalities.

At the same time, strong impacts on economic growth and inclusion can be achieved if small established enterprises in traditional sectors of the economy, which represent the vast majority of SMEs, are given the means and opportunities to upgrade their productivity levels, including through the adoption of digital technologies. Indeed, SMEs across sectors are likely to benefit from greater mass customisation and the reduction of distance and time to market enabled by digital technologies. For many SMEs, however, the lag in the adoption of digital technologies and investment in complementary knowledge based assets, including skills and practices to adequately manage digital risks, could jeopardise their transition towards the next production revolution and participation in global markets, as well as limit the benefits they can accrue from the rise of open innovation.

As illustrated in this Outlook, part of the policy toolkit to enhance productivity in traditional SMEs and sustain business dynamism in high growth activities already exists, for example with regard to integrating SME-related considerations in regulatory policy making and reducing administrative burden, using Big Data and digital tools to deliver higher quality and more customised public services to businesses, consolidating and expanding ICT infrastructures to ensure better SME connectivity, and improving access

by SMEs to strategic resources, such as diversified sources of finance, innovation assets, a broader pool of talent and upskilling opportunities for workers and managers. However, the pace of pro-growth structural reforms has slowed in recent years and large differences remain across the SME population in their capacity to seize the benefits of the digital transition, including in public services. In addition, a changing policy landscape, particularly with regards to trade, and the development of new technologies, such as blockchain and automation, requires flexibility and adaptability from firms.

Many of these developments are pulling in the direction of reshoring, which could provide scope for SME growth in sectors that have seen slow growth or retrenchment in recent years, but they may also provide threats if they increase the costs of entry, either through direct acquisitions of capital or through the need for higher skilled employees.

More broadly, the effects of the digital transformation may only be beginning to be felt and sectors with high SME participation today, such as retail and real estate may be significantly affected in the future. Understanding the direction and potential impact of these changes is essential in developing sound policies, especially as these threats also present opportunities for SMEs that are able to embrace or capitalise on digital technologies – and the evidence shows they are currently lagging.

These new developments require new statistics to address policy relevant questions. What for example is the motivation behind new entries – push or pull? Have firms exposed to international competition upgraded, through higher innovation, or developed survival strategies through wage cuts? How are SMEs capitalising on digitalisation - how many SMEs use digital technologies to reach new markets and/or generate efficiencies? Are successful SMEs really SMEs or are they affiliates of larger firms, or in 'control' relationships? Can SMEs improve participation in GVCs through links to larger domestic exporters? Are SMEs able to penetrate emerging, and higher growth markets?

This chapter demonstrates that current official statistics are able to provide important insights, in particular with respect to structural heterogeneity, but also illustrates the importance of continuing to expand the statistical boundary, not least to tackle emerging issues.

Notes

[1] www.oecd.org/cfe/smes/ministerial/SME-Ministerial-Declaration-ENG.pdf.

[2] (OECD, 2018[19]; OECD, 2018[18]; OECD, 2017[13]).

[3] 30% refers to Greece.

[4] For top sectors with the highest job creation rate, see (OECD, 2018[3]).

[5] (Calvino et al., 2018[17]) propose a taxonomy of digital sectors, where high digital intensity sectors include not only ICT but also: transport equipment, legal and accounting activities, scientific research and developments, advertising and market research; other business services, administrative and support service activities, and other service activities (94-96 of ISIC REV. 4). Also finance and insurance is identified as a high digital intensity sector, but data for this sector are not covered in Figure 1.23.

Data sources

Chapter 1 primarily builds on i) the OECD databases of official business statistics, in particular the *Structural and Demographic Business Statistics (SDBS)* and *Trade by Enterprise Characteristics (TEC),* databases that are built by the OECD in cooperation with national statistical offices and Eurostat; ii) indicators developed from the macro-linking of data from these two databases with other official statistics; and iii) the OECD *Productivity Statistics* database containing productivity measures computed using the OECD *National Accounts* and *Employment and Labour Market Statistics* databases. The chapter also relies on the *OECD Timely Indicators of Entrepreneurship* database, covering official statistics and administrative data, and on enterprise statistics from new data sources, such as *Facebook-OECD-World Bank Future of Business Survey*, as relevant for the analysis.

References

Ahmad, N. and J. Ribarsky (2018), *Towards a Framework for Measuring the Digital Economy*, Working Paper for the 16th conference of the International Association of Official Statisticians (IAOS), http://oecd.org/iaos2018/programme/IAOS-OECD2018_Ahmad-Ribarsky.pdf. [14]

Bas, M. and V. Strauss-Kahn (2015), *Input-trade Liberalisation, export prices and quality upgrading*, Journal of International Economics, https://doi.org/10.1016/j.jinteco.2014.12.005. [10]

Bas, M. and V. Strauss-Kahn (2014), *Does importing more inputs raise exports? Firm-level evidence from France*, https://doi.org/10.1007/s10290-013-0175-0. [11]

Blanchenay, P., C. Criscuolo and F. Calvino (2016), "Cross-country evidence on business dynamics over the last decade: from boom to gloom?", *OECD Science, Technology and Industry Working Papers*, OECD Publishing, Paris. [2]

Calvino, F. et al. (2018), "A taxonomy of digital intensive sectors", *OECD Science, Technology and Industry Working Papers*, No. 2018/14, OECD Publishing, Paris, https://dx.doi.org/10.1787/f404736a-en. [17]

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://dx.doi.org/10.1787/56453da1-en. [12]

Decker, R. et al. (2016), *Declining Business Dynamism: Implications for Productivity?*, Brookings Institution, Washington, DC. [15]

Haltiwanger, J. (2016), *Top ten signs of declining business dynamism and entrepreneurship in the United States*, Kauffman Foundation, http://www.kauffman.org/neg/section-3. [16]

Lopez Gonzalez, 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://dx.doi.org/10.1787/5jlpq82v1jxw-en. [8]

López González, J. and M. Jouanjean (2017), "Digital Trade: Developing a Framework for Analysis", *OECD Trade Policy Papers*, No. 205, OECD Publishing, Paris, https://dx.doi.org/10.1787/524c8c83-en. [9]

OECD (2018), *Highlights of entrepreneurship at a Glance 2018*, OECD, http://www.oecd.org/sdd/business-stats/EAG-2018-Highlights.pdf. [3]

OECD (2018), *OECD Compendium of Productivity Indicators 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/pdtvy-2018-en. [5]

OECD (2018), *Opportunities for All: A Framework for Policy Action on Inclusive Growth*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264301665-en. [19]

OECD (2018), *The Productivity-Inclusiveness Nexus*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264292932-en. [18]

OECD (2017), *Entrepreneurship at a Glance 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/entrepreneur_aag-2017-en. [4]

OECD (2017), "Making trade work for all", *OECD Trade Policy Papers*, No. 202, OECD Publishing, Paris, https://dx.doi.org/10.1787/6e27effd-en. [7]

OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264276284-en. [13]

OECD (2017), *Services Trade Policies and the Global Economy*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264275232-en. [1]

Schwellnus, C., A. Kappeler and P. Pionnier (2017), "Decoupling of wages from productivity: Macro-level facts", *OECD Economics Department Working Papers*, No. 1373, OECD Publishing, Paris, https://dx.doi.org/10.1787/d4764493-en. [6]

Annex 1.A. Developing new data

Although the definition of an SME varies by country, partly reflecting the size of the economy, statistics on the size of firms provide a basis for some comparability. For the purpose of Chapter 1, SMEs are considered to be firms with less than 250 persons employed.

Within the universe of SMEs lays considerable heterogeneity, not just in terms of their core industrial activity, i.e. what they produce, which is well covered in the statistical information system, but also in terms of why and how they produce, where the coverage of statistics is currently patchy. Heterogeneity in this sense concerns a number of firm characteristics and business models such as: hobby activities; subsistence activities; social enterprises; informal firms; high-growth firms; unicorns; gazelles; firms that are part of a multinational; firms with a multitude of customers, firms locked-in to supplying to one customer; firms that export; firms that sell only to local markets; and so on.

To understand the performance of SMEs, help them grow and enable them to improve well-being, better knowledge is needed of specific groups of SMEs. This chapter demonstrates what can be done with current data, using detailed information on the composition of the business population and its characteristics, in particular as provided by OECD databases of official business statistics compiled in cooperation with National Statistics Offices of member and partner countries.

But the chapter is also designed to illustrate the importance of continuing to expand the statistical boundary, not least to tackle emerging issues. Two of the most pressing current challenges concern digitalisation and globalisation. The chapter tries to provide insights on the potential impact these may be having on the SME population but while the current range of statistics provide useful insights, there remain significant data gaps, in part reflecting the way, and the reasons, that national statistics on structural business statistics and business demography were originally developed.

Typically the focus has been on what the eventual output of a firm was and what types of inputs were used in production, primarily as inputs to developing the national accounts; with firms classified to sectors largely on the basis of what their final output was. Globalisation, and now digitalisation, are beginning to question this approach, and whether new data need to be collected within information systems. Both phenomena have resulted in considerable heterogeneity on what firms actually do, even when classified to the same industrial activity. For example a vertically integrated firm producing computers will find itself classified to the same sector as a firm only assembling computer parts but the underlying use of capital, labour, inputs, and human and organisational capital will be significantly different, not to mention exposure to international trade and take-up of digital tools.

There have of course been, and continue to be, important innovations and changes in national statistics information systems over the years to address these challenges, including for example the development of Trade by Enterprise Characteristics databases,

and indeed one should not forget that even the development of Business Demography statistics is in itself a relatively recent innovation designed to meet growing demands for better data and insights on entrepreneurship and business dynamism. More recently there have been significant advances to better understand the role of SMEs in GVCs, being managed by the OECD Expert Group on Extended Supply-Use Tables and in developing a stronger understanding on the impact of digitalisation (Ahmad and Ribarsky, 2018[14]), which will provide the basis for improved insights on digital intermediaries and also on the gig economy. Yet, more can be done, especially in the area of SMEs and business dynamics.

To advance in new areas and to sustain momentum in on-going areas, this Annex makes the following recommendations:

Consider the development of modules to existing surveys, such as the Labour Force Survey, to estimate whether individuals were pushed or pulled into self-employment, and/or whether that employment (secondary activity or otherwise) was part of the gig economy.

Develop statistical business registers that differentiate between independent and dependent (i.e. affiliates that are owned and managed by a larger firm) SMEs.

Explore the ability of statistical business registers to identify (and group) firms on the basis of ages (alongside conventional and complementary – industry and size – characteristics) and tabulate regularly statistics based also on this dimension.

Develop and disseminate composite indicators from existing statistics that can be disclosed without breaching statistical confidentiality – for example productivity distributions of SMEs within sectors (or indeed other aggregations, including the whole economy), concentration indices.

Ensure that structural business statistics cover all economic activities (including financial services) and all variables (for example wages in the services sector).

Explore the possibility of further developing structural and demographic business statistics broken down by region (i.e. regular production, extended coverage of variables, improved international comparability).

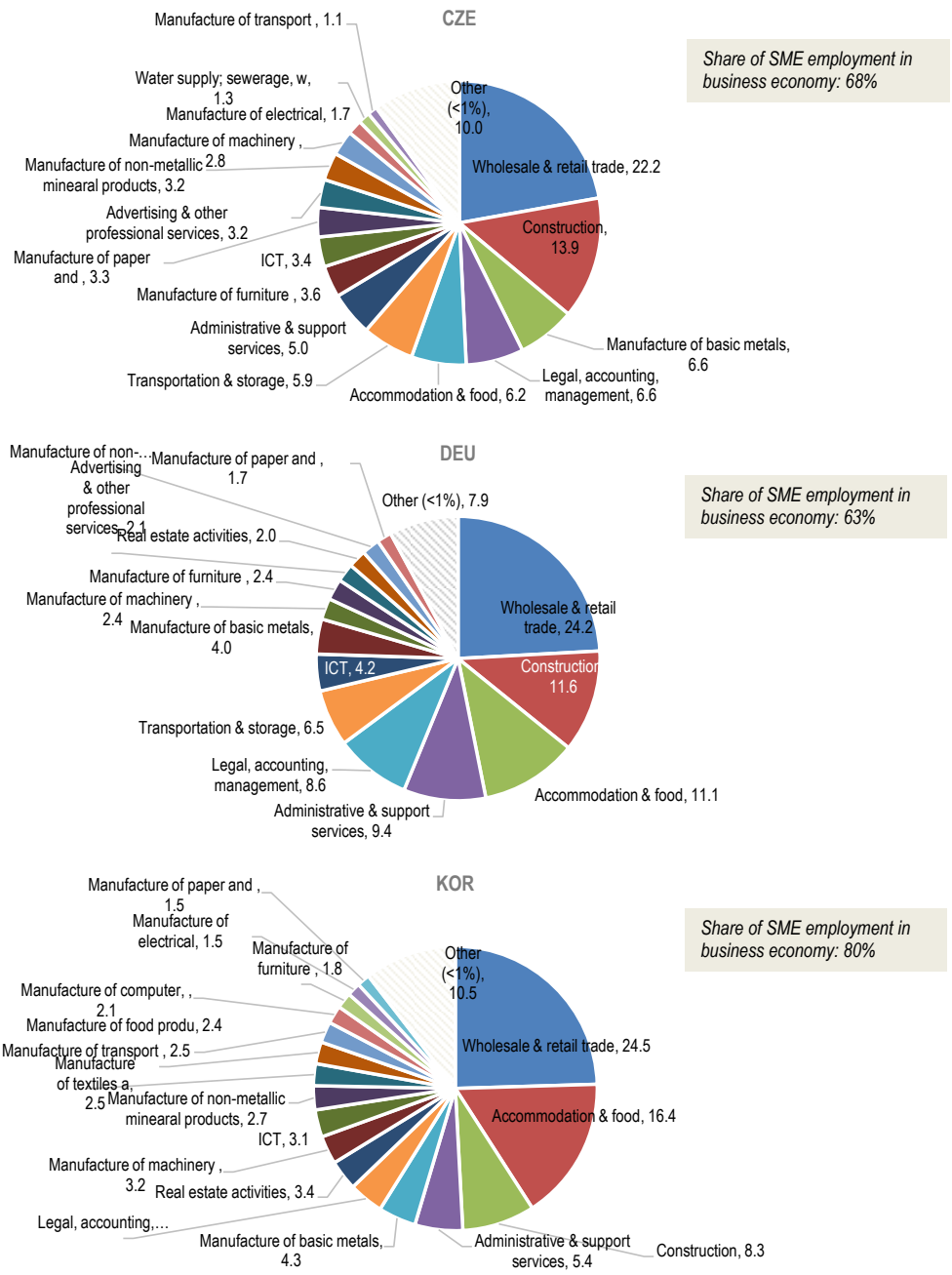
Explore the scope to link various datasets and registers, in particular employment and labour related registers with firm level registers

Explore, or improve, access to types of data that remain underexploited, notably open data from public and private sources, and continue to explore innovative approaches to data development, such as public-private partnerships, webscraping or crowdsourcing methods.

Annex 1.B. Sectoral specialisation

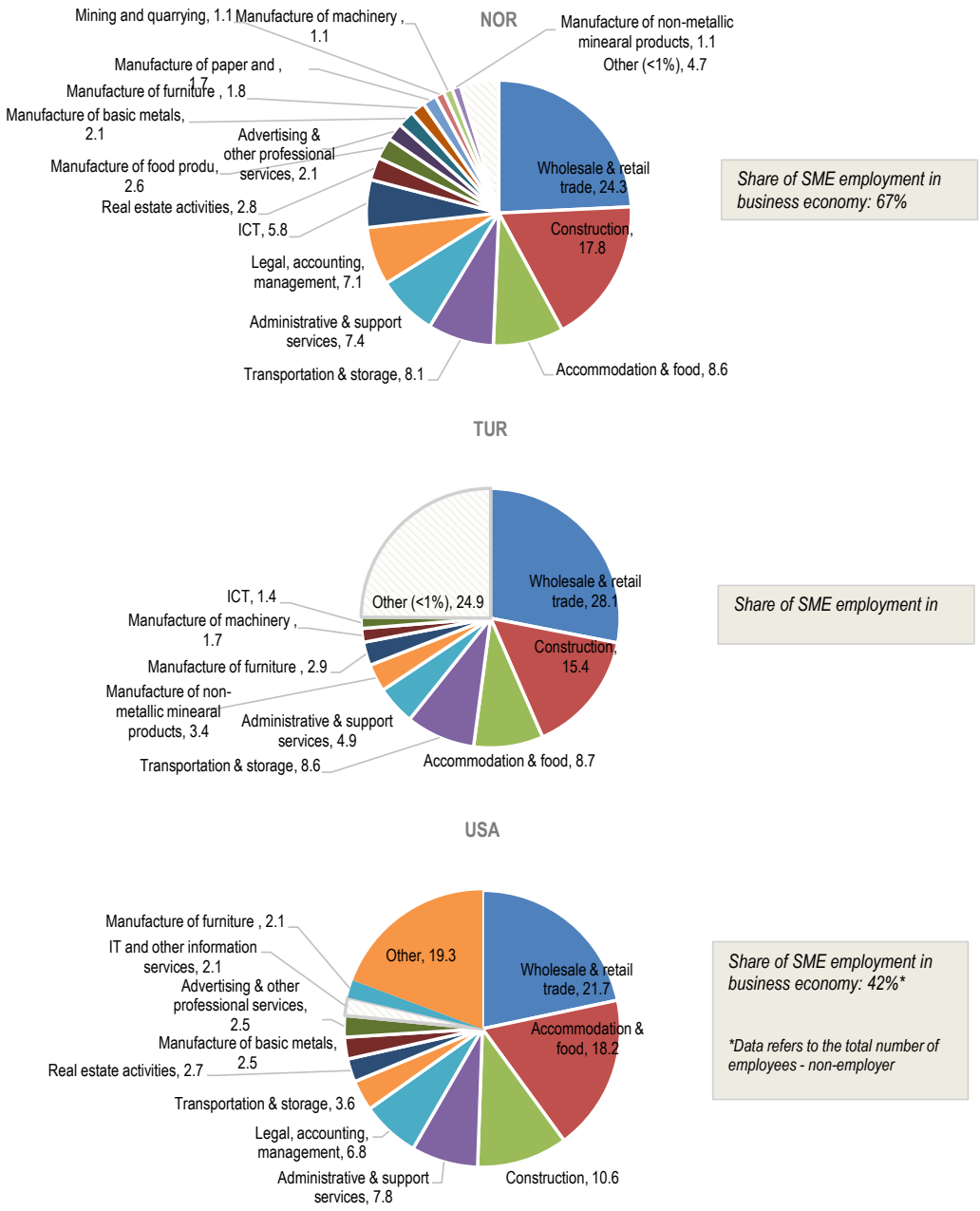
Annex Figure 1.B.1. SME employment by economic activity, selected countries, 2015

Percentage



Annex Figure 1.B.1. SME employment by economic activity, selected countries, 2015 (continued)

Percentage

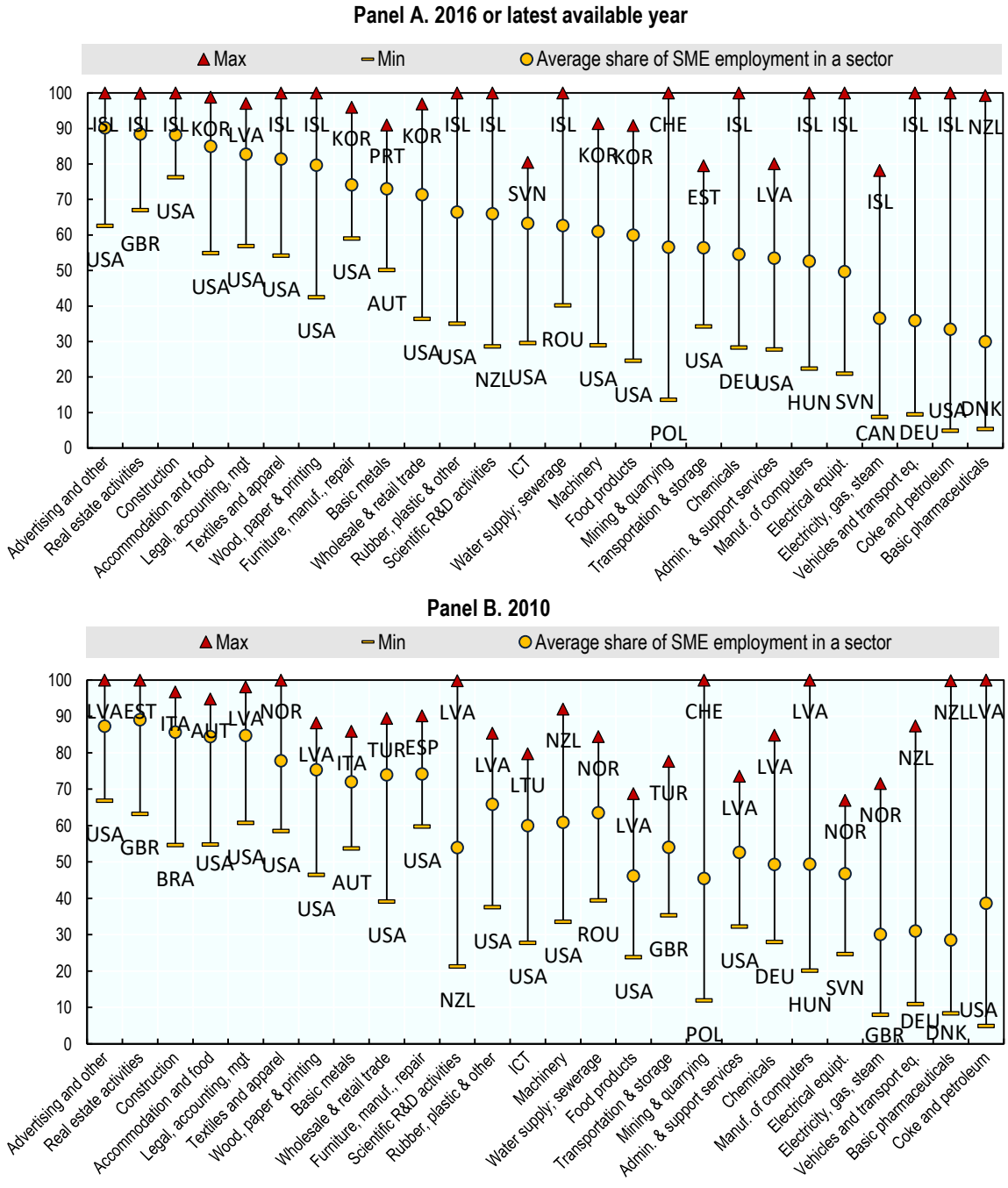


Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924077

Annex Figure 1.B.2. SME share of employment within sectors

Percentage, total employment in sector x =100



Source: OECD Structural and Demographic Business Statistics Database, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924096

Annex 1.C. Enterprise creation rates

In recent years there has been a considerable debate, set against a backdrop of declining trends in productivity, on a possible 'secular decline' in enterprise creation rates. The debate has focused primarily on US data, where relatively long time series going back to the 1980s are available (Decker et al., 2016[15]; Haltiwanger, 2016[16]), but similar studies, although with shorter time series (Blanchenay, Criscuolo and Calvino, 2016[2]) have drawn similar conclusions for other countries.

It is instructive to highlight the statistical nature of the construction of enterprise creation rates and how this may need to be interpreted. In many analyses, statistics on creation rates of businesses are viewed analogously to birth rates in the general human population. However, it is often forgotten that, unlike with general population measures, existing firms do not typically give birth to new entries, and where they do engage in the creation of new firms, these are often recorded as 'growth' in the existing firm and not new creations.

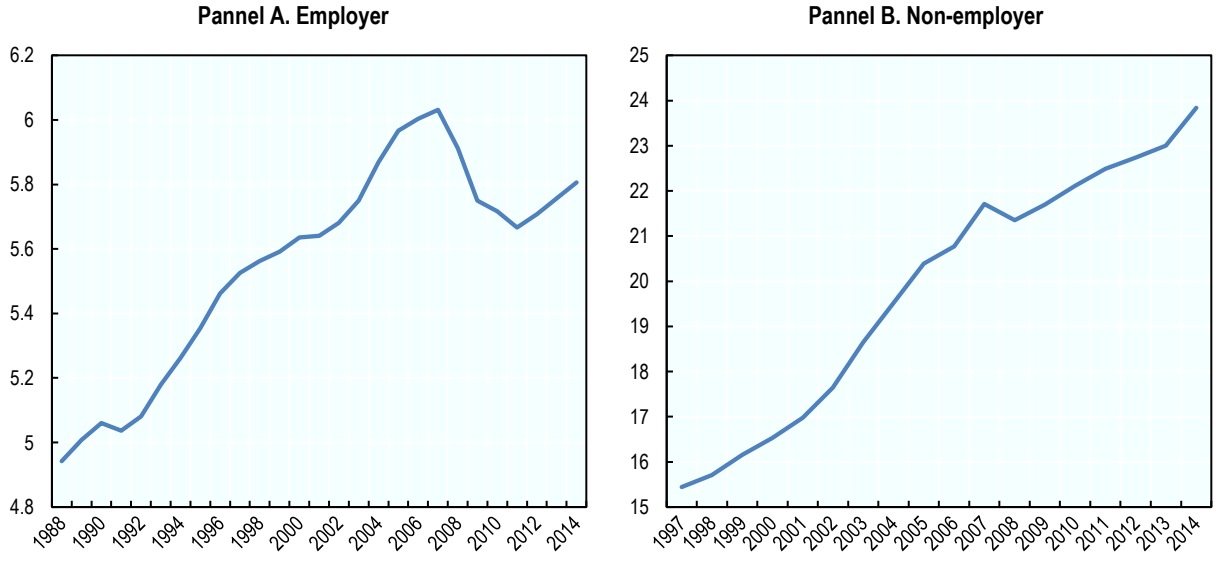
The use of the number of existing firms as the denominator in measures of enterprise creation rates is a convenient choice (and generates consistent measures of rates of enterprise death where also the denominator is the population of existing firms), but does come with statistical caveats that can impact on comparability over time and across countries.

For example, two countries with exactly the same numbers of new creations in a given year can have very different creation rates if the population of firms differ. For this reason, it is helpful to consider also levels of creations and not just the rates.

Panel A of Annex Figure 1.C.1shows the number of employer establishments in the United States over the last quarter of a century, revealing a strong upward trend, notwithstanding the crisis dip, which presents the secular decline story in a slightly more nuanced context (US Small Business Administration data). The strong growth in the population of large enterprises (with more than 500 employees) registered in the United States increased market concentration and may have crowded out potential new entrants (Annex Figure 1.C.2). However, the number of non-employer establishments increased by around 60% in the last fifteen years (Annex Figure 1.C.1Panel B).

Annex Figure 1.C.1. Number of establishments in the United States

Millions

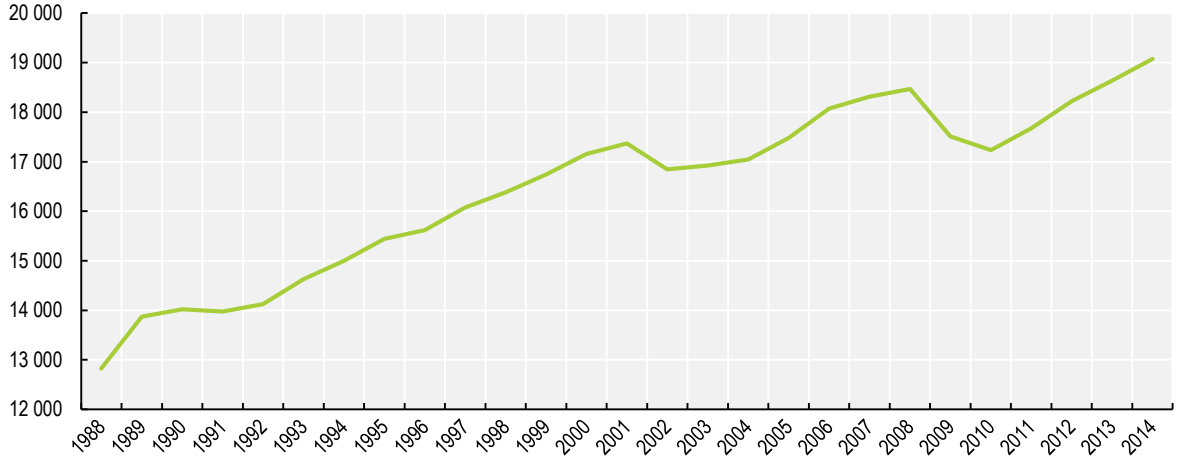


Source: US Small Business Administration.

StatLink http://dx.doi.org/10.1787/888933924115

Annex Figure 1.C.2. Number of employer establishments with 500+ employees in the United States

Number



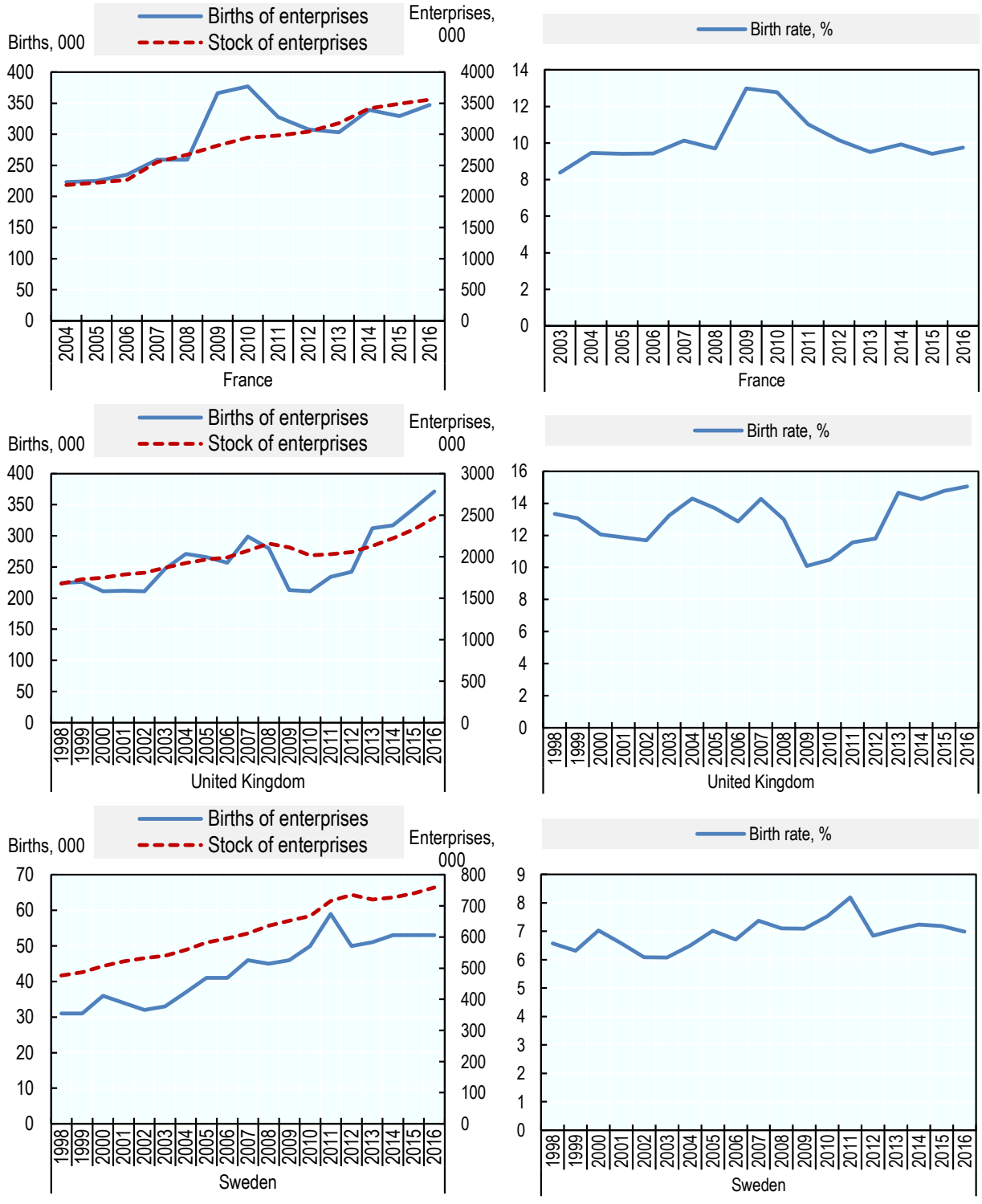
Source: US Small Business Administration.

StatLink http://dx.doi.org/10.1787/888933924134

Annex Figure 1.C.3 provides an additional illustration of the statistical nature of rates by comparing enterprise birth rates in France, Sweden and the United Kingdom, showing that flat or declining trends in birth rates (i.e. graphs on the right side) can go hand-in-hand with rising numbers of births (i.e. graphs on the left side).

Annex Figure 1.C.3. Number of enterprise births, number of enterprises and birth rate, selected countries

Thousands for births and stock of enterprises; percentage for birth rates



Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924153

Finally, increases in the population of firms can also be associated with decreases in the number of creations ***and*** decreases also in failures, which would be a sign of lower levels of creative destruction and by extension entrepreneurialism. The focus on the number of active firms, which has increased significantly in many countries despite lower levels of start-ups, helps to inform the analysis; specifically, it may suggest that the state of entrepreneurialism in its broadest sense has been less bleak than that suggested by creation rates alone (Annex Table 1.C.1).

Annex Table 1.C.1. Number of enterprises, employment and enterprise births

Business economy

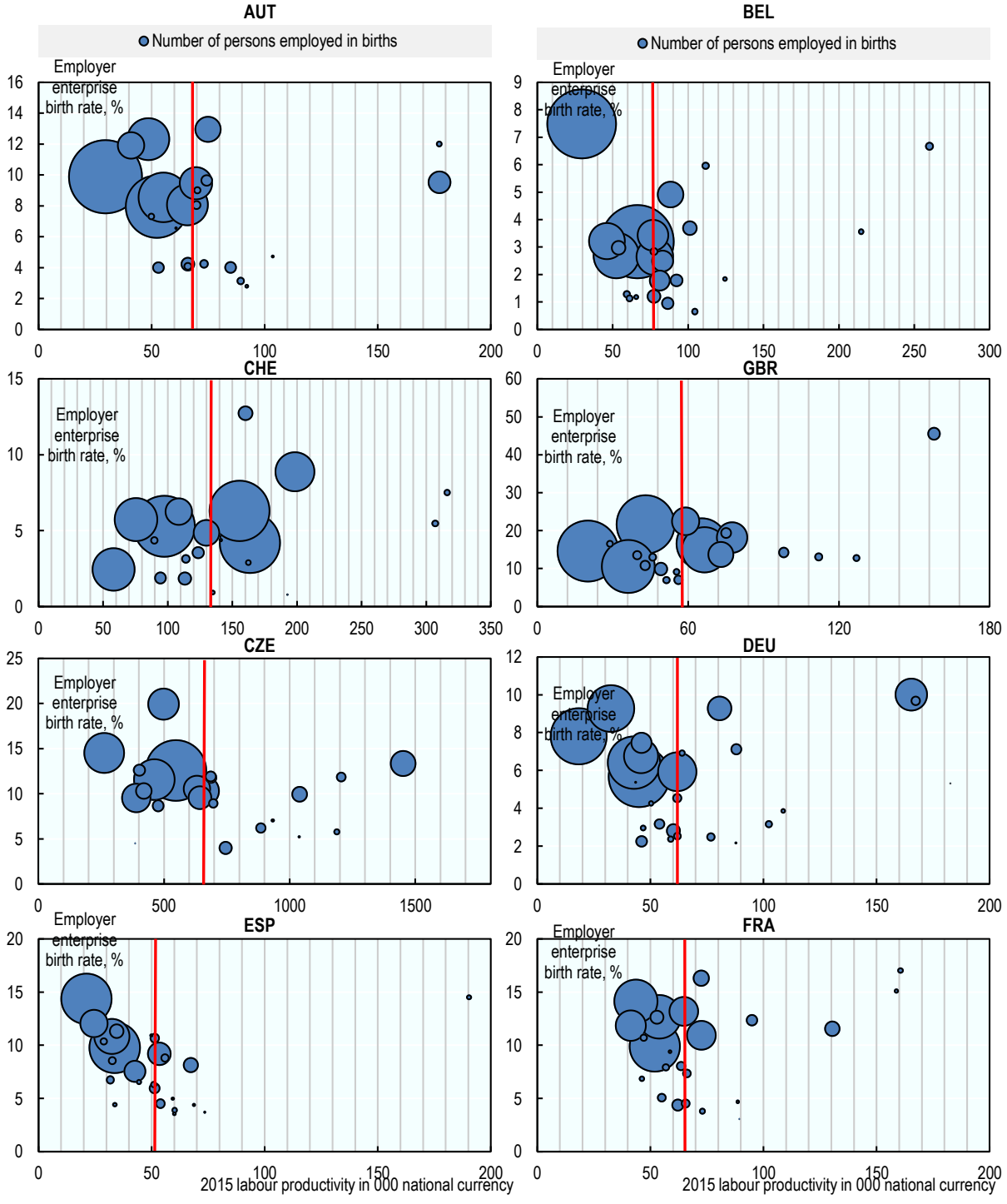
	Number of enterprises			Persons employed			Enterprise births		
	2005	2010	2015	2005	2010	2015	2005	2010	2015
AUS	1 614 586	1 649 734	1 678 411	7 480 000	7 934 000	7 912 000	242 861	231 024	248 898
AUT	313 885	426 815	413 929	2 581 345	2 871 123	3 004 647	24 568	34 198	28 311
BEL	483 809	597 850	642 130	2 551 169	2 771 320	2 824 001	32 218	41 162	41 102
BRA*		1 936 862	2 244 939		31 431 860	35 797 020		330 419	297 494
CAN*	789 290	738 880	808 330	9 502 575	9 817 862	10 571 770	92 560	48 810	64 720
CHE	293 746	384 559	395 608	2 647 914	3 416 639	3 451 971	10 684	11 071	27 677
CZE	889 726	969 801	1 026 355	4 081 346	3 986 570	3 701 741	77 672	110 880	85 645
DEU	2 810 118	2 958 720	2 795 899	22 650 420	23 334 510	28 071 530	283 105	258 076	198 135
DNK	205 145	212 593	217 960	1 413 589	1 331 449	1 754 365	26 939	23 266	24 283
ESP	3 047 021	3 102 016	2 970 947	13 780 000	12 508 930	11 711 550	317 273	242 228	274 172
EST	62 149	70 302	82 769	432 706	408 069	455 287	6 440	7 794	8 512
FIN	239 381	286 432	291 722	1 374 143	1 418 660	1 593 226	21 253	28 424	19 623
FRA	2 220 897	2 947 623	3 492 052	14 840 630	16 999 170	16 056 040	224 819	376 631	328 884
GBR	1 966 355	2 013 225	2 326 020	18 583 780	18 731 650	20 466 460	265 545	210 950	343 550
GRC	799 040	847 055	777 268	2 575 832	2 768 305	2 552 875	69 716	72 186	39 896
HUN	580 885	563 368	531 121	2 672 856	2 533 662	2 695 977	52 646	56 370	56 799
IRL	203 083	195 431	248 843	1 483 966	1 237 385	1 402 981	11 954	11 237	18 100
ISL	23 107	23 774	26 039	109 067	95 934	112 913		3 289	3 221
ISR*	162 793	188 695	217 737	1 615 088	1 922 201	2 256 815	14 800	16 664	28 253
ITA	3 966 758	3 985 434	3 819 956	15 637 520	16 010 810	14 806 370	308 307	265 060	279 132
JPN*	2 001 152	2 033 692	2 139 380				87 966	91 300	109 202
KOR		4 717 796	4 946 304	11 490 520	13 348 190	11 888 300		701 123	714 902
LTU	113 201	120 830	185 954	932 629	904 828	1 007 609	30 807	25 463	34 490
LUX	23 194	27 611	31 906	250 896	290 425	315 848	2 225	2 629	2 989
LVA	63 529	82 650	110 310	644 569	565 660	651 593	7 278	13 803	19 003
NLD	638 118	970 457	1 112 691	4 972 465	5 570 939	5 683 695	62 040	101 002	107 946
NOR	243 776	268 949	295 204	1 320 552	1 502 994	1 678 695	24 811	20 758	26 753
NZL*	102 984	101 733	107 586	1 268 693	1 222 571	1 366 556	12 765	9 390	13 467
POL	1 667 934	1 957 113	2 059 967	8 156 535	9 532 762	9 644 727	195 970	270 271	249 815
PRT	889 084	875 083	818 120	3 356 756	3 344 375	3 093 225	116 920	103 859	130 156
SVK	323 836	374 114	446 471	1 640 182	1 318 844	1 562 409	43 278	49 354	53 899
SVN	95 554	123 467	141 118	610 824	633 904	613 502	8 579	12 757	15 154
SWE	581 622	667 421	740 182	2 712 453	2 944 008	3 113 746	41 212	50 214	53 185
TUR		3 088 887	3 210 972		12 652 270	15 972 460		717 573	387 385
USA	6 523 644	6 460 877	6 596 243	114 186 342	109 805 388	118 016 100	785 419	596 872	654 444

Note: Countries marked with asterisk (*) refer to employer business demography data, which excludes non-employing businesses and births of enterprises with no employees. On the other hand a transition from non-employer enterprise to employer enterprise counts as birth in employer business demography.
Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924267

Annex Figure 1.C.4. Birth rates, job creation and productivity

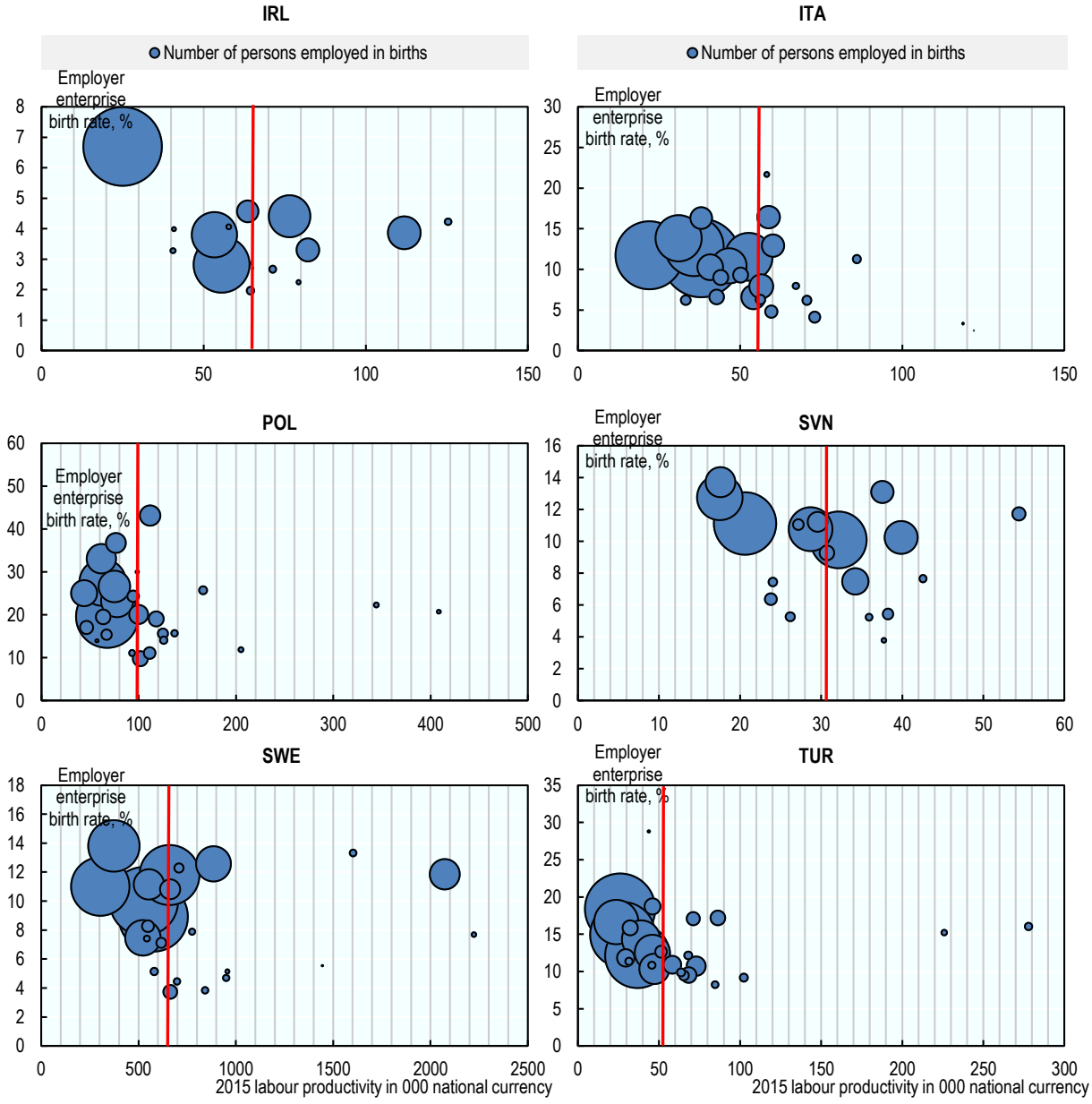
Percentage (employer enterprise births rates), labour productivity (value added in thousands of national currency per person employed), and number of persons employed in births, 2016



Note: The red line corresponds to the median productivity calculated for 2-digit ISIC Rev. 4 sectors.
Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

Annex Figure 1.C.4. Birth rates, job creation and productivity (continued)

Percentage (employer enterprise births rates), labour productivity (value added in thousands of national currency per person employed), and number of persons employed in births, 2016



Note: The red line corresponds to the median productivity calculated for 2-digit ISIC Rev. 4 sectors.
Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

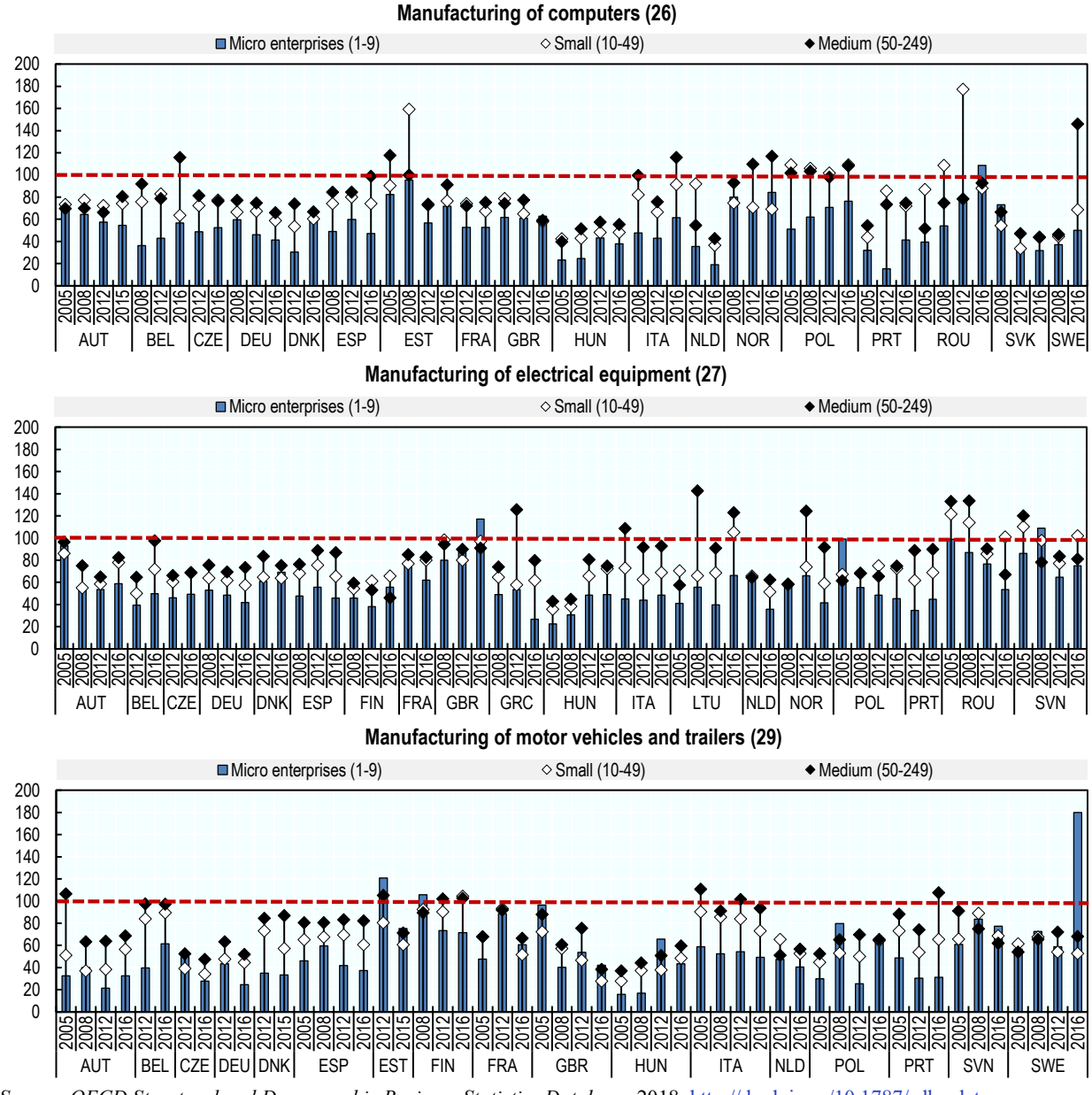
StatLink http://dx.doi.org/10.1787/888933924172

Annex 1.D. Labour productivity of SMEs by sector

Annex Figure 1.D.1. Labour productivity of SMEs

Index, Large enterprises =100

Panel A. Selected manufacturing sub-sectors

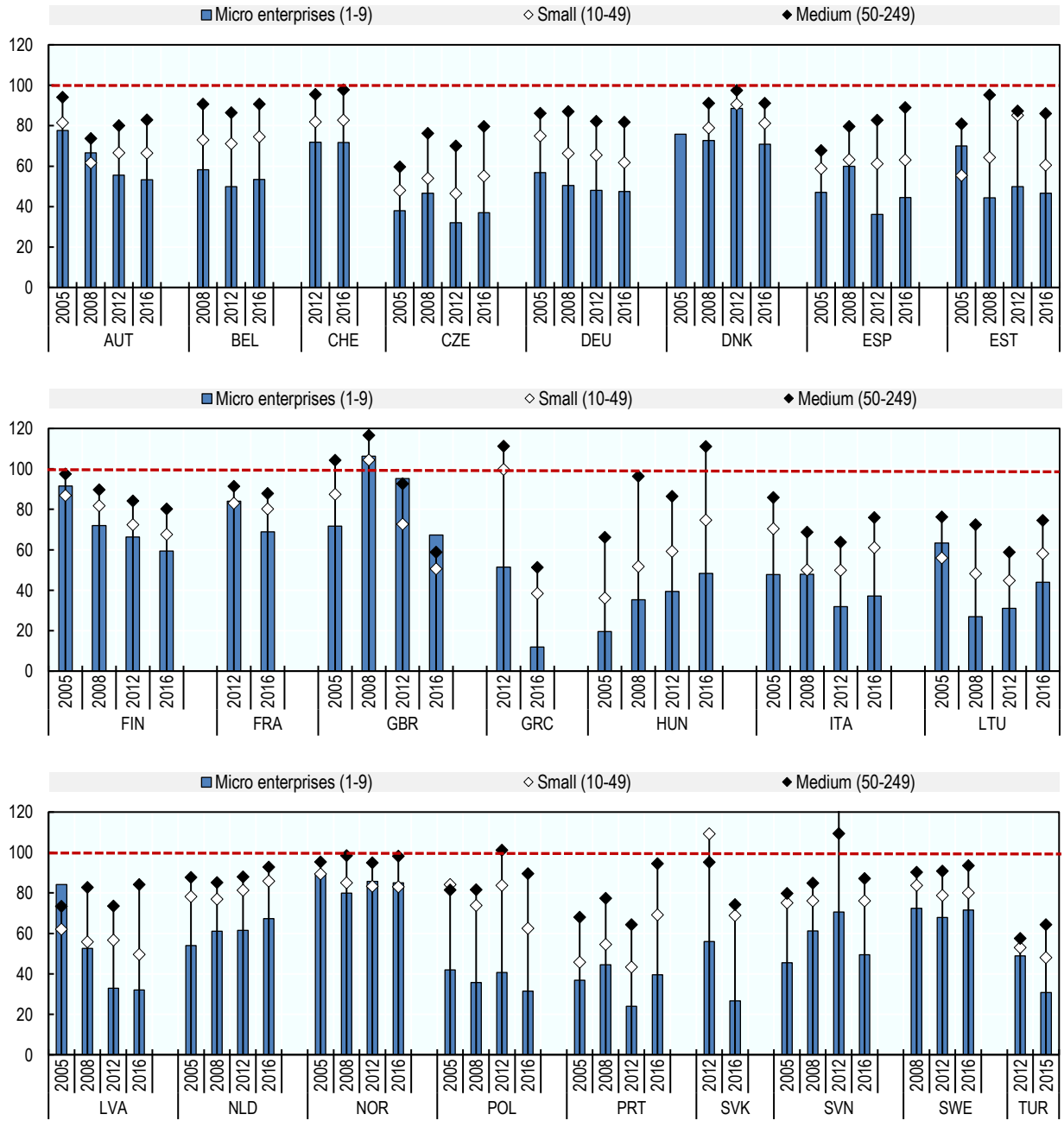


Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

Annex Figure 1.D.1. Labour productivity of SMEs (continued)

Index, Large enterprises =100

Panel B. Construction

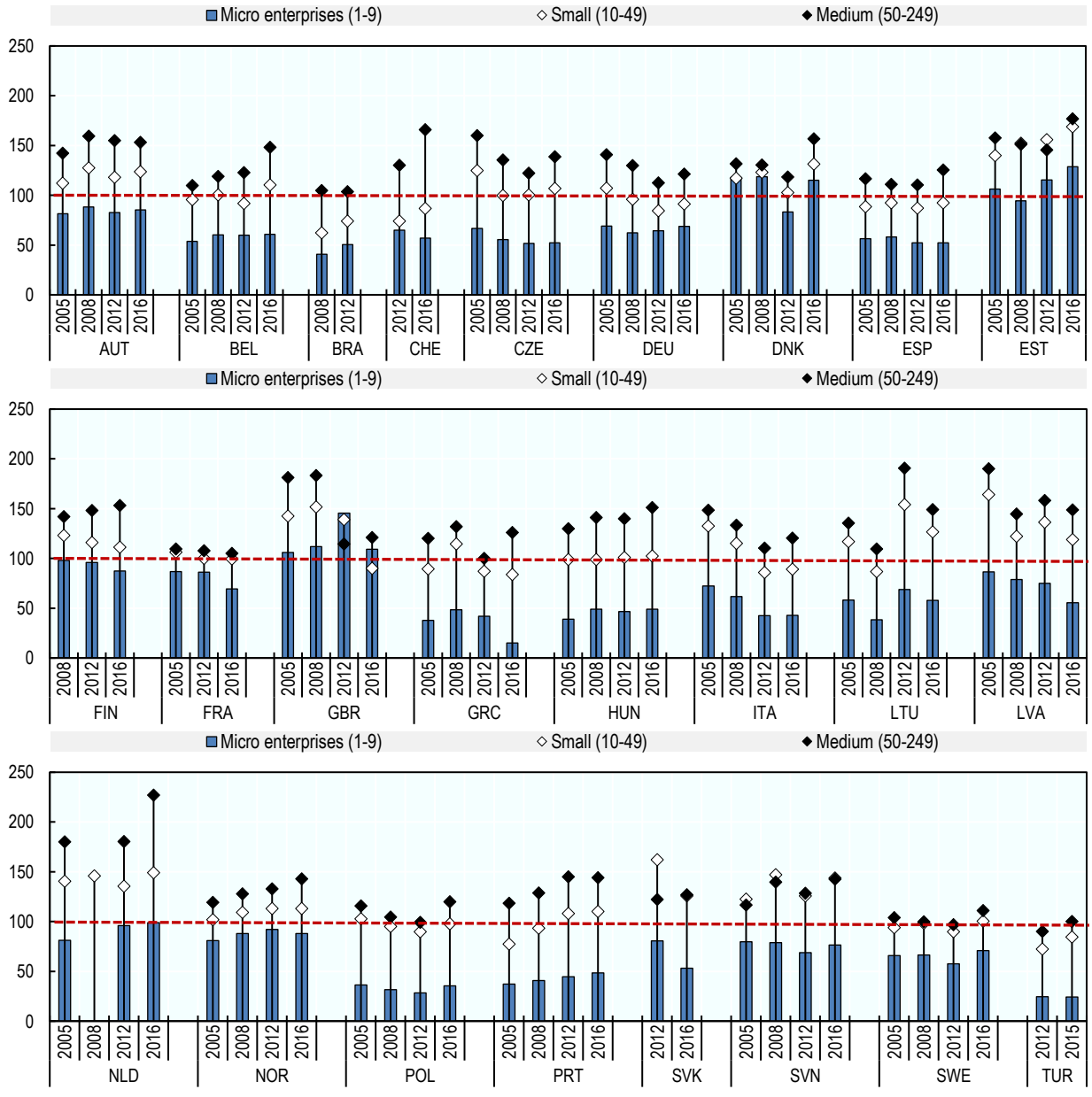


Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

Annex Figure 1.D.1. Labour productivity of SMEs (continued)

Index, Large enterprises =100

Panel C. Trade

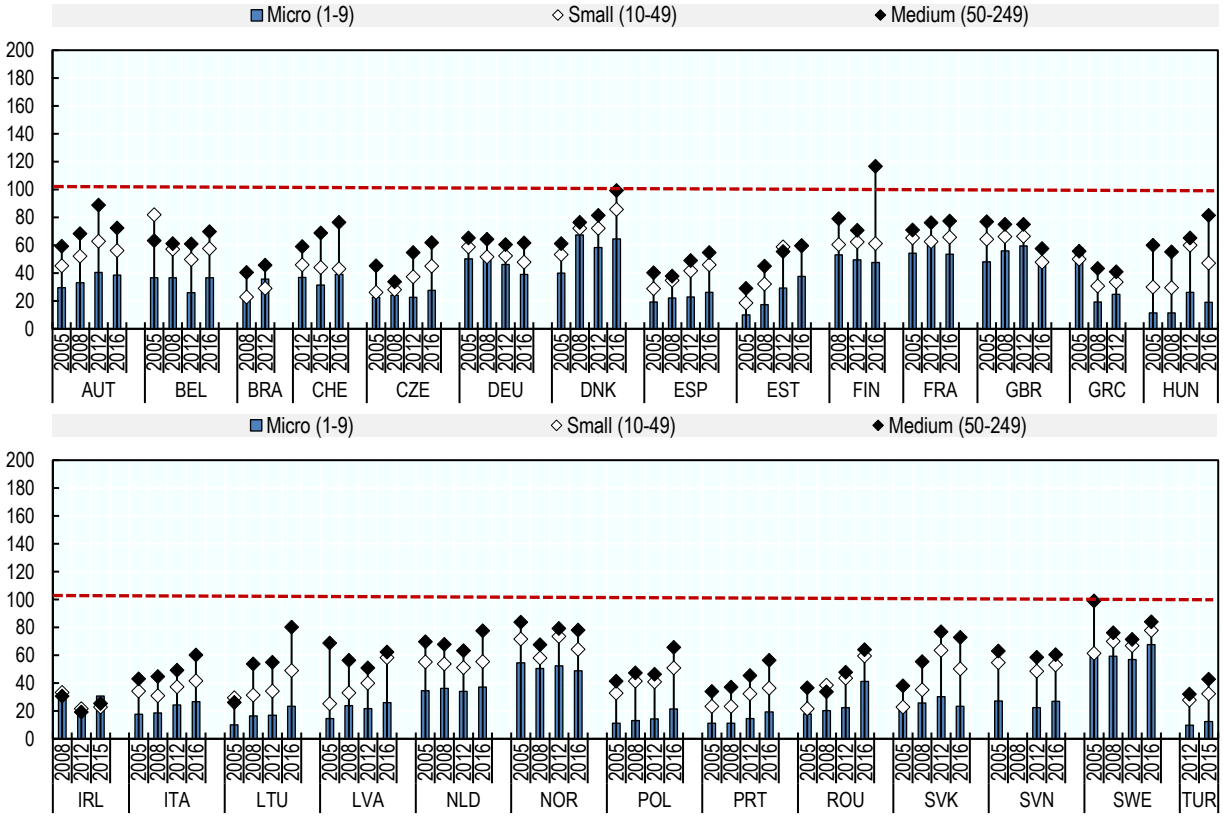


Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

Annex Figure 1.D.1. Labour productivity of SMEs (continued)

Index, Large enterprises =100

Panel D. Information and communication

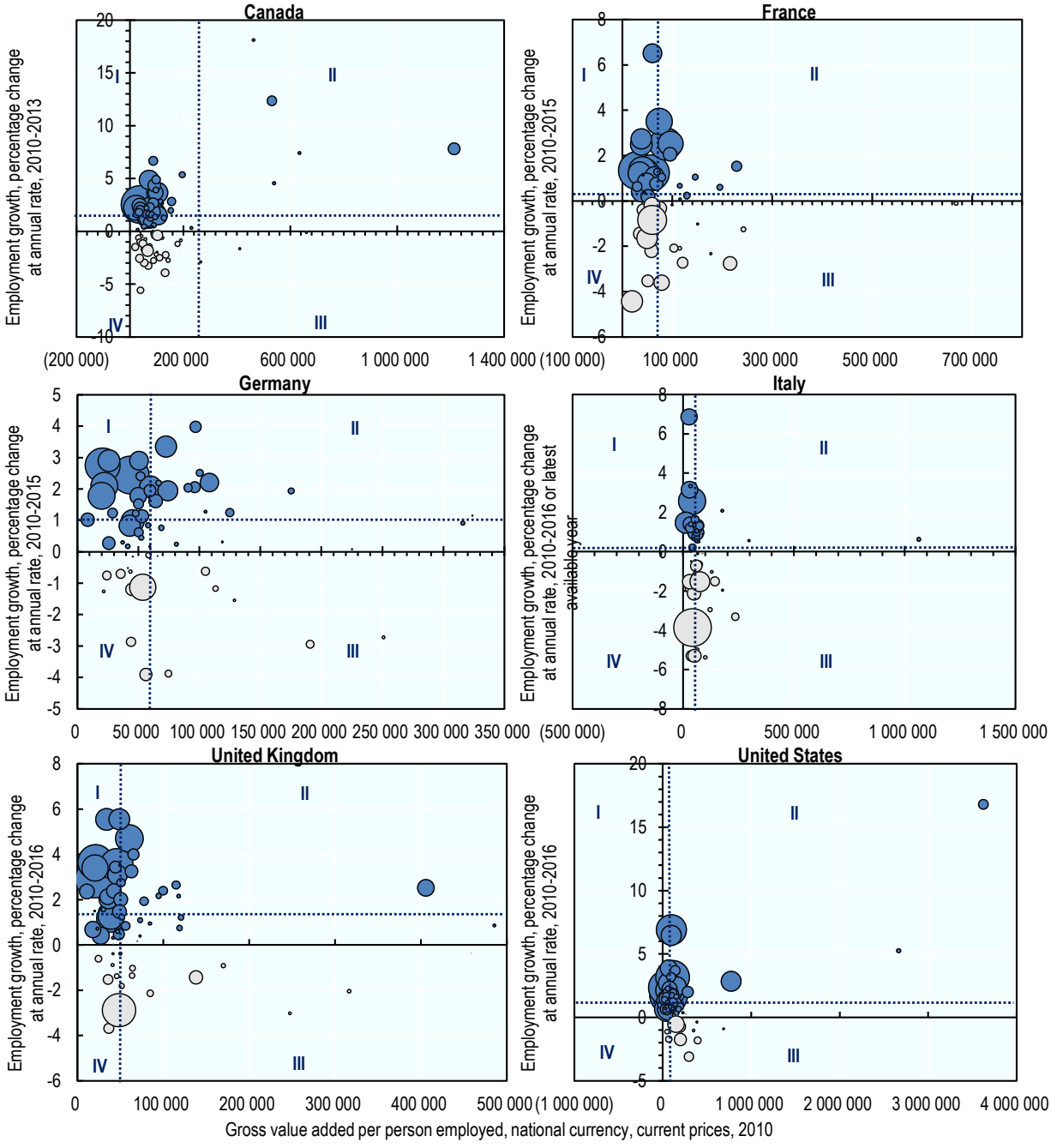


Source: *OECD Structural and Demographic Business Statistics Database*, 2018, http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924191

Annex Figure 1.D.2. Labour productivity in 2010 and employment growth over 2010-2016 (or latest available year)

Selected countries, detailed sectors (ISIC Rev 4), national currency, current prices and percentage change at annual rate



Note: Bubbles in dark blue denote employment creation; bubbles in grey denote employment destruction. The size of the bubbles increases with the absolute change in employment on a person's count basis in the different sectors. Quadrants are relative to the average labour productivity levels in 2010 and average employment growth between 2010 and 2016. Measurement of value added, and hence labour productivity, in the primary sector, real estate services, public administration, health, education and other non-market activities is subject to a number of conceptual and measurement issues.

Source: (OECD, 2018[5]), *OECD Compendium of Productivity Indicators 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/pdtvy-2018-en.

StatLink http://dx.doi.org/10.1787/888933924210

Part I. Business conditions for SMEs and entrepreneurship and policy responses

Chapter 2. Institutional and regulatory framework

Effective product and labour market regulations, taxation, competition, insolvency regimes, contract enforcement, civil justice systems and public governance are key to ensure that businesses of all sizes compete on a level playing field, encourage risk-taking by entrepreneurs and incentivise business investment. Regulatory inefficiencies, complexities and high compliance costs are particularly detrimental to new firms and SMEs, which are affected disproportionately by regulatory burdens or face greater constraints than large firms in seeking legal redress. This chapter presents recent developments in institutional and regulatory frameworks, discussing implications for SMEs and entrepreneurship. It illustrates cross-country progress in reducing regulatory barriers on entrepreneurship and administrative burdens on start-ups and SMEs, such as through smart regulation, reforms in taxation and the strengthening of e-government functions, hinging on a comprehensive infrastructure for information exchange across government bodies, individuals and businesses. It also highlights that the pace of structural reforms has slowed down in recent years, and comments on areas in which progress is slow or uneven across countries, including the ex-post evaluation of norms and policies, insolvency regimes, enforcement of competition laws and civil justice systems. The chapter concludes on recent policy initiatives aiming to implement a user-centric approach to regulation and policy making, enhancing transparency and efficiency in public services and legal frameworks, and leveraging digital technologies and Big Data for better public administration and regulation.

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.

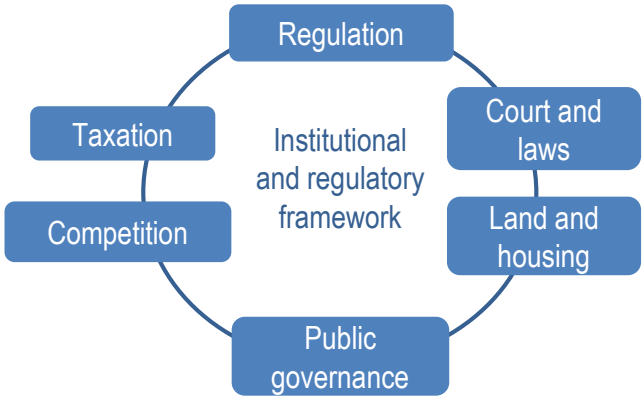
Highlights

- Improving the quality and outcomes of regulatory processes, simplifying administrative procedures and cutting red tape are at the core of pro-growth reforms in many countries. Governments have been promoting smart regulation by integrating SME-related considerations upstream in regulatory policy making, encouraging broader stakeholders' consultation and reinforcing regulatory impact analysis. However, ex-post evaluation systems remain underdeveloped.
- The digitalisation of public services offers new opportunities for SMEs to access higher quality and more customised services and interact with public administration in more collaborative and efficient ways. Applications are already spreading across a broad range of areas, including business development services, license systems and courts.
- Greater data availability also enables governments to better adapt public sector operations to end users' needs and preferences. Behavioural insights are being applied to better integrate a user perspective in policy delivery. Data analytics is also transforming the relationship between tax administrations and tax payers and improving tax compliance conditions. Reforms hinge on a comprehensive infrastructure for information exchange across government bodies, individuals and businesses.
- Governments are increasingly institutionalising the open government principles of transparency, accountability and participation. Efforts are placed on strengthening public sector integrity and facilitating collaborative approaches with businesses and citizens, also as a response to a declined confidence in national governments.
- However, the pace of structural reforms has slowed in recent years, particularly in terms of strengthening insolvency regimes and offering entrepreneurs a second chance. There is persistent and significant cross-country variability in the enforcement of competition laws and progress in civil justice systems is uneven.

Why is it important

Institutional and regulatory settings are critical for entrepreneurial activity and to ensure that businesses of all sizes compete on a level playing field. Regulation in product and labour markets, taxation, competition, insolvency regimes, legal framework and court efficiency and public governance impact entrepreneurship and SME development at all stages of the business cycle, including entry, investment and expansion, transfer and exit.

An effective regulatory environment, which provides clear and universal rules of the game, is essential for promoting risk-taking, incentivising business investment, lowering informality and reducing corruption. Conditions for regulatory compliance are especially important for start-ups and SMEs, since the proportion of resources that they divert to administrative functions is usually greater than for large firms; as a consequence, unnecessary regulatory burdens affect them disproportionately (OECD, 2017[1]).



This is the case also for tax compliance due to the substantial fixed costs incurred for record keeping, filing and payment processing that place smaller businesses at a disadvantage. High compliance costs and complex tax regimes may act as a deterrent to formalisation and hamper young firms' growth. Furthermore, certain aspects of business taxation, including asymmetric treatment of profits and losses, the distribution of taxation between capital and labour income and the design of R&D tax credits and incentives, can unintentionally disadvantage young and small firms (OECD, 2015[2]).

Competitive conditions, including transparency and consistency of competition rulings and competitive neutrality between state-owned enterprises (SOEs) and private businesses, are essential to an efficient use of economic resources (OECD, 2012[3]), (OECD, 2017[4]). Regulatory restrictions that limit market entry and anti-competitive practices, such as market power abuse by incumbents and predatory pricing behaviour, can undermine business dynamism and discourage innovation. Their effects tend to fall disproportionately on SMEs, which typically face greater constraints than large firms in seeking legal redress when a competitor breaches antitrust or trade practices law.

Effective contract enforcement and civil justice system are key to business entry and growth, since they tend to improve the predictability of business relationships and investment returns. On the other hand, court inefficiency increases the internal resources that firms may need to divert for enforcing contracts and resolving commercial disputes, undermines confidence in the integrity of markets and may discourage firms to engage in new business partnerships, which is particularly prejudicial to new entrants (Johnson, McMillan and Woodruff, 2001[5]).

Securing property rights plays a critical role for business development. In particular, land and buildings represent essential collateral for many SMEs to access credit. Accessing appropriate and affordable lands, premises and offices are essential conditions for setting a business, accessing markets and scaling-up activities. Trends in land and housing prices and use, which are affected by a wide array of public policies, have important implications for business investment. Land-use planning can ease the coordination of public and private investments, foster agglomeration economies and facilitate synergy between different activities and land use functions, as in the case of industrial symbiosis and the circular economy. Furthermore, land-use regulation can affect competition, such as in the case of adverse impact tests that allow new businesses to enter markets only if established businesses are not harmed (OECD, 2017[6]).

Insolvency regimes are critical for business dynamism. Bankruptcy laws that ensure a balance between the guarantees given to investors and the burden placed on entrepreneurs

in case of failure can favour investment and growth. On the other hand, inefficient insolvency regimes limit SME access to external finance and the restructuring of viable firms. Lengthy and complicated insolvency processes can significantly affect the capital and reputation of small entrepreneurs, drastically decreasing the chance of starting a business again. Cross-country evidence suggests that lower personal costs to failed entrepreneurs can increase self-employment rates, firm entry rates and the use by small entrepreneurs of insolvency proceedings, as well as attract entrepreneurs with higher human capital (OECD, 2018[7]).

As businesses interact in multiple ways with the public administration, public service integrity, efficiency and quality are important drivers of firm competitiveness. Opacity and corruption in the public sector, while detrimental to all businesses, pose particular problems for SMEs, which often lack the capacity to design and implement anti-corruption strategies and lobby for their needs in the absence of an established framework for broad participation in public decision making. Inefficiency in public services and high administrative burdens can also affect integrity. Evidence shows that when faced with excessive administrative burdens, SMEs are more likely than large firms to make illegal payments in order to circumvent the burden. Also, arbitrary decision making and corruption in public administration discourage formalisation of business activities and can induce formal companies to "de-formalise" their operations (G20/OECD, 2015[8]); (UNIDO, 2007[9]).

Regulation, institutions and recent trends

Regulatory barriers to entrepreneurship and SME development have been declining

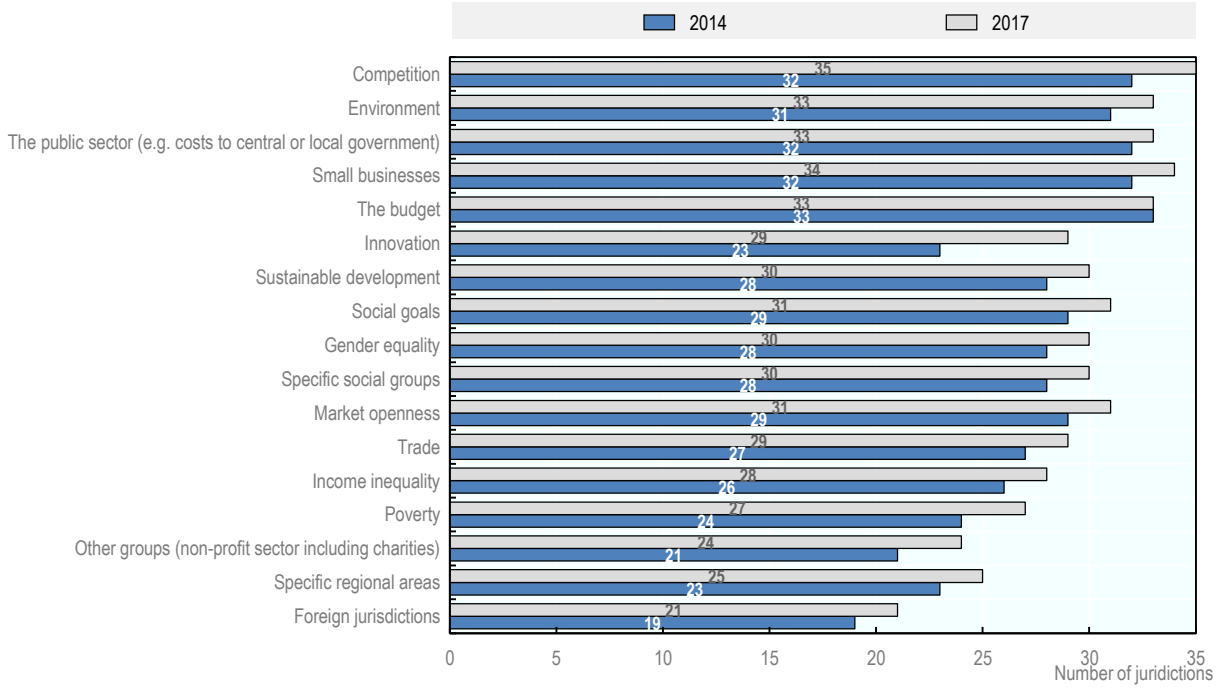
Over the last two decades, in many countries, important progress has been made to reduce regulatory barriers to entrepreneurship, such as legal barriers to entry, administrative burdens on start-ups, regulation complexity and regulatory compliance costs in different areas (e.g. environment, labour legislation, product standards and certification) (OECD, 2017[1]).

Regulatory impact analysis (RIA) has become a widespread practice to improve the quality and outcomes of regulatory processes. In a large number of countries, the evaluation of costs and benefits of regulation for achieving policy goals, which often considers also the costs and benefits of non-regulatory alternatives, is being institutionalised. In almost all OECD countries, RIA has become a requirement for the development of both primary laws and subordinate regulations. At the same time, the scope of requirements has changed over time, to take into account also the burdens and complexities that RIA processes can bring. In fact, in line with a proportionate approach to impact assessment, the number of OECD countries requiring RIA on all regulations has decreased from 30 in 2014 to 19 in 2017. In addition, about one third of OECD countries use threshold tests for determining whether a simplified RIA is undertaken, as opposed to a full one (OECD, 2018[10]).

Regulatory impact on small businesses is assessed in a large majority of countries and for a wide range of regulations (Figure 2.1). Also, increasingly across countries, the RIA process provides broad public consultation opportunities, as well as safeguards to ensure that adequate account is taken of comments received from stakeholders, including extensive periods of consultation on the draft RIA (OECD, 2015[11]), (OECD, 2018[10]).

Figure 2.1. Small business impacts are among the most systematically assessed through RIA

Types of impacts assessed in RIA, 2014 and 2017



Note: Data for OECD countries is based on the 34 countries that were OECD members in 2014 and the European Union. Data on new OECD member and accession countries in 2017 includes Colombia, Costa Rica, Latvia and Lithuania.
Sources: OECD (2018[10]), *OECD Regulatory Policy Outlook 2018*, https://dx.doi.org/10.1787/9789264303072-en, based on OECD (2014[12]) and OECD (2017[13]), *Indicators of Regulatory Policy and Governance Surveys 2014 and 2017*, http://oe.cd/ireg.

StatLink http://dx.doi.org/10.1787/888933924286

But the quality of regulatory impact assessment is uneven, and ex-post evaluation remains largely underdeveloped

Despite significant progress in adoption, challenges remain for ensuring even quality in RIA processes and outcomes and for increasing its effectiveness on small business regulations. Barriers include the lack of SME-related data and shared methodologies within administrations, as well as limited resources and analytical capability in regulatory bodies. RIA is in fact a time consuming and resources intensive process, which calls for prioritisation. A general tendency is observed to adopt a procedural approach and use RIA as a legitimisation tool rather than as an information instrument and a learning process in support of decision making (OECD, 2017[14]).

Enhancing the application of RIA in the policy process requires significant investment to trigger a change in the administration and strengthen the economic analysis of regulatory proposals in contexts often dominated by legal experts. It also demands political commitment, support from stakeholders, and consistency across levels of governments (OECD, 2015[11]).

Box 2.1. Regulatory framework across levels of government

Mechanisms to coordinate regulatory policies across levels of government can help achieve coherence in the regulatory framework, ensuring that regulations are not divergent, overlapping, or contradictory. Such coordination mechanisms may include intergovernmental platforms for dialogue, mutual recognition policies among governments, regulatory harmonisation agreements, and strict regulatory uniformity agreements.

In the majority of OECD countries, formal coordination mechanisms between levels of government exist, or the national government is required to consult sub-national governments prior to issuance of regulations that concern them. National agencies may also provide technical support to local administrations to improve quality of regulations. For instance, in Mexico, the Federal Commission on Regulatory Improvement (COFEMER), an administrative body within the Mexican Federal Ministry of Economy, provides feedback on existing regulations and offers technical advice on regulatory reform to states and municipalities. This consists in promoting local regulatory reform, adjusting local regulations and establishing "Rapid Business Start-up Systems" and "Regulatory Improvement Councils". Local level implementation is thus a core part of the organisation's activities.

Source: OECD (2018[15]), *Rethinking Regional Development Policy-making*, https://dx.doi.org/10.1787/9789264293014-en.

Digital technologies hold the potential to strengthen consultation processes, including with small businesses, and widen the collection of evidence about costs and benefits of regulations. Also, in some OECD countries, the creation of an oversight unit for RIA, close to the centre of government, has served to signal commitment, favour increased co-ordination between the various phases of the policy cycle and whole-of-government approaches.

RIA can serve *ex post* evaluations of regulations by establishing criteria against which a regulation will be assessed after implementation. However, linking RIA to *ex post* evaluation is still not an established practice. Only about 40% of OECD countries identify a process for assessing progress in achieving a regulation's policy goals when developing new primary laws (OECD, 2017[14]).

More broadly, most OECD countries lack a comprehensive methodology for systematic *ex post* evaluation, which is still not mandatory in one-third of OECD countries. Some marginal progress was observed over 2014-17 in oversight and quality control to ensure effective implementation, but ex-post evaluation systems are still rudimentary in most OECD countries (OECD, 2018[10]).

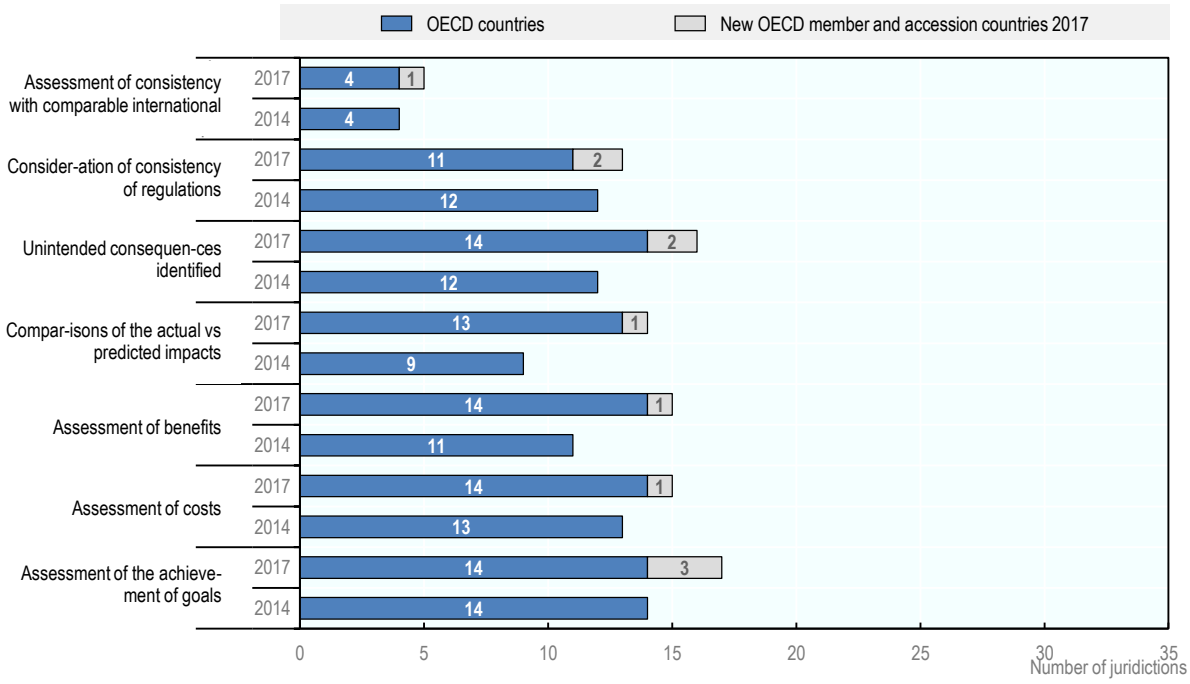
Restrictions to competition have been lifted across jurisdictions, but globalisation and digitalisation pose new challenges

Since the late 1990s, reforms in competition regimes have increasingly aimed to lowering legal barriers to entry and limiting antitrust exemptions. At the same time, significant cross-country variability remains in the enforcement of competition laws. This is the case of advocacy activities, such as the publication of guidelines by competition agencies,

which can help SMEs in particular to navigate the competition framework (Alemani et al., 2013[16]).

Figure 2.2. *Ex-post* evaluation systems remain underdeveloped

Systematic adoption of a methodology for *ex post* evaluations, 2014 and 2017



Note: Data for OECD countries is based on the 34 countries that were OECD members in 2014 and the European Union. Data on new OECD member and accession countries in 2017 includes Colombia, Costa Rica, Latvia and Lithuania.
Sources: OECD (2018[10]), *OECD Regulatory Policy Outlook 2018*, https://dx.doi.org/10.1787/9789264303072-en, based on OECD (2014[12]) and OECD (2017[13]), *Indicators of Regulatory Policy and Governance Surveys 2014 and 2017*, http://oe.cd/ireg.

StatLink http://dx.doi.org/10.1787/888933924305

The increased globalisation of economic activity raises challenges for competition authorities, as they must respond to anti-competitive conduct and mergers whose effects are increasingly cross-border, often requiring support from foreign enforcers. For instance, over 1990-2014, mergers and acquisitions with a cross-border dimension have increased by more than 250%, and most of these transactions are subject to competition law review by multiple competition authorities (OECD, 2014[17]). The multiplicity of competition regimes and authorities creates additional complexity for businesses that operate across borders or face anti-competitive practices by multinational players. As a consequence, multilateral coordination and cooperation has become increasingly important to ensure an open and level playing field in global markets.

The rapid digital transformation of economies and societies further increases the need for international cooperation on regulatory aspects, while raising questions about the suitability of traditional regulatory frameworks. Concerns exist about "winner take all" dynamics unleashed by digital technologies and the market power that some digital firms have developed, as well as the scope for using certain digital technologies to support anti-competitive practices (see also the chapter on market conditions). For instance, the

increasing use of pricing algorithms can potentially enhance competition but also, on occasion, increase the risks of collusion. At the same time, established frameworks, as well as the lobbying activity by traditional business models at risk of displacement by innovation, can prevent or slow down the development of new digital products and services, and the market entry of new players (OECD, 2018[18]).

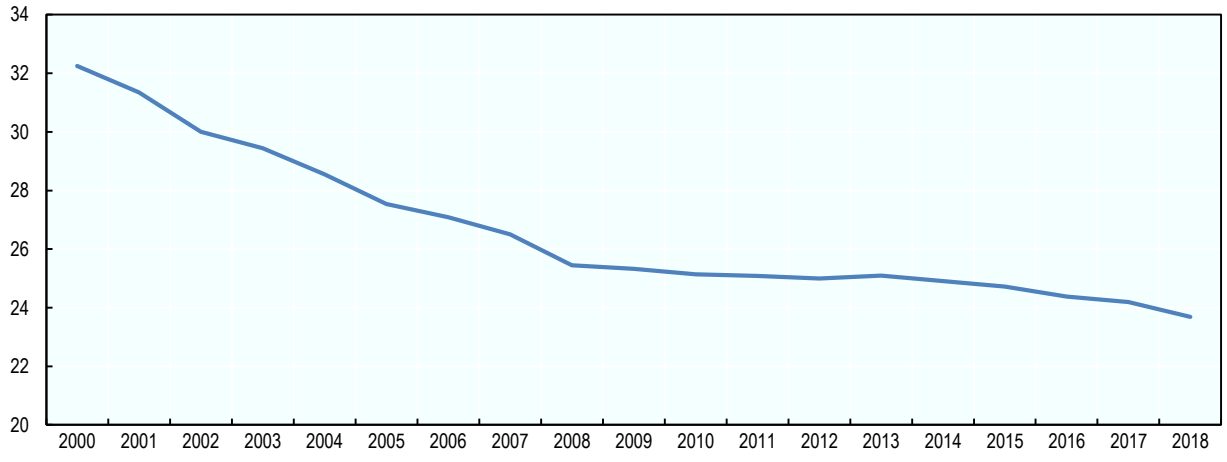
As the fast pace of technological change and globalisation increases complexity and uncertainty in terms of what and how to regulate, governments are experimenting a variety of approaches to sustain innovation and address emerging risks in an impartial and proportional fashion (OECD, 2018[10]). In particular, "regulatory sandboxes", which provide a limited regulatory waiver and flexibility, are gaining popularity as a model to enable business experimentation and testing, but also as a way for regulatory and competition authorities to improve understanding on the changing nature of business models and activities.

In many countries, tax reforms have been enacted in many countries to spur growth

With the aim to improve the investment climate, a large number of OECD governments have reduced corporate taxes on businesses in recent years. The OECD average Corporate Income Tax (CIT) rate declined from 32.2% in 2000 to 23.7% in 2018 (Figure 2.3). In 2017, eight countries, including Hungary, Israel, Italy, Japan, Luxembourg, Norway, the Slovak Republic and the United Kingdom, introduced standard CIT rate cuts averaging 2.7 percentage points. In 2018, eight countries, namely Argentina, Belgium, France, Japan, Luxembourg, Norway, Sweden and the United States, overhauled their tax system by cutting their statutory CIT rates, with an average decrease of around 4.8 percentage points (OECD, 2018[19]). As a result, pressures on national governments to keep up with intensified worldwide tax competition have increased. There is also evidence of increased cross-country competition to attract investments through new or enhanced tax incentives for R&D and intellectual property related activities (OECD, 2016[20]).

Figure 2.3. Taxation increasingly aims to stimulate an investment climate for business

Combined statutory corporate income tax rate (CIT), OECD average, percentage, 2000-18



Note: Basic combined central and sub-central (statutory) corporate income tax rate given by the central government rate (less deductions for sub-national taxes) plus the sub-central rate

Source: OECD (2018[21]), *OECD Tax Database - Corporate and Capital Income Taxes*, http://www.oecd.org/tax/tax-policy/tax-database.htm.

StatLink http://dx.doi.org/10.1787/888933924324

The trend towards reduced CIT rates concerns also SME specific regimes. Over 2000-18, across nine OECD countries that applied a special small business corporate tax rate (i.e. Belgium, Canada, France, Japan, Korea, Luxembourg, the Netherlands, Spain and the United States), the average rate decreased from 25.6% to 19.4%. Governments extended support to SMEs through other special tax rules, including tax deductions, credits or exemptions; and preferences that apply to the business owner or the investor of the SME, providing relief for initial investment, ongoing income or disposal of the SMEs' assets.

Furthermore, simplification measures for SMEs are widespread across OECD and non-OECD economies, including exemption on thresholds, special presumptive tax regimes and special replacement taxes (OECD, 2015[2]). Significant efforts have been placed on reducing tax compliance costs, through the introduction of electronic filing and payment systems. Advances in technology and greater data availability are enabling tax administrations to move from a system based on filing and post-assessment to a system that embeds compliance in commercial transactions and includes upfront verification, substantially reducing the administrative burden for taxpayers. Comprehensive electronic infrastructure for information exchange between the tax administration, public sector agencies, individuals and businesses has served as a fundamental enabler (OECD, 2017[22]).

If on the one hand the weight of CIT in the OECD average tax mix has declined, on the other tax wedges, i.e. the spread between total labour costs to the employer and the net income for employees, have increased in the post-crisis period (OECD, 2017[23]). High tax wedges negatively affect employment creation and competitiveness (Alesina and Perotti, 1994[24]); (Bassanini and Duval, 2006[25]), and slow down the rate at which SMEs are able to grow.

Social security systems impact entrepreneurship and self-employment through direct benefits and costs, including taxation, as well as opportunity costs incurred by individuals that set up a business. These include, for instance, benefits that are lost when entering into self-employment, since the self-employed are not eligible for the same social protection than employees (Davies, 2013[26]). To address these biases, reforms are being introduced that strengthen social insurance for self-employed from disadvantaged groups or individuals in the lower tiers of the income distribution (e.g. unemployed people, youth, women, migrants, indigenous groups), since these are more likely to receive welfare support and thus incur in higher opportunity costs when entering self-employment (OECD/EU, 2017[27]).

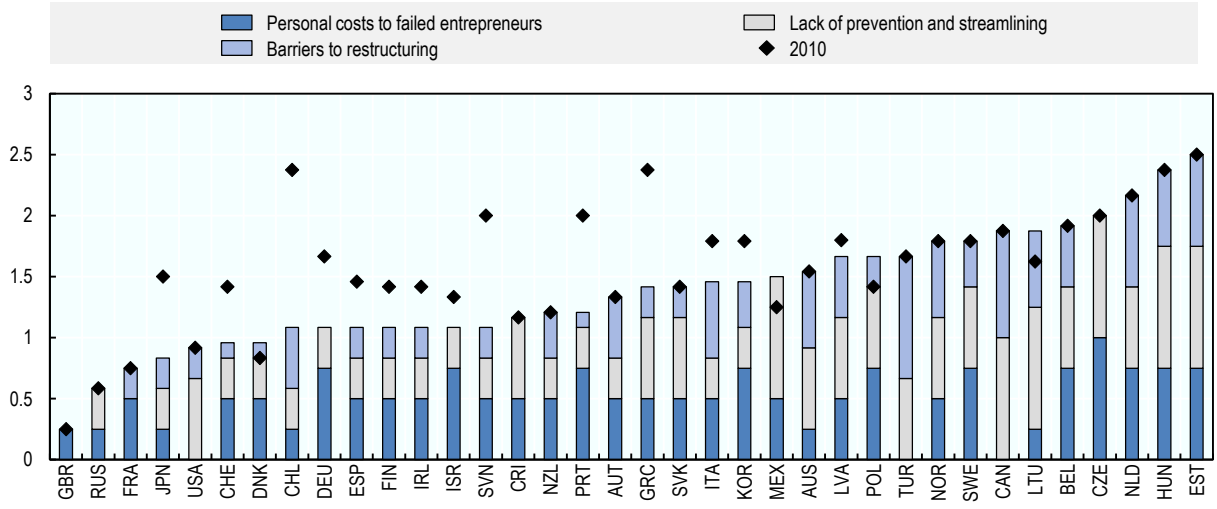
But the pace of structural reforms has slowed in recent years

While pro-growth structural reforms accelerated in the aftermath of the 2008-09 global financial crisis, their pace has slowed significantly since 2015-16, in advanced and emerging-market economies alike (OECD, 2018[7]). In particular, reforms to improve the efficiency of insolvency regimes have been slow in many countries (Figure 2.4). Efforts have focused mainly on prevention and streamlining (e.g. through pre-insolvency regimes), although early-warning systems and special insolvency procedures for SMEs are only available in about one-third of OECD countries. Over 2010-16, barriers to firm restructuring remained stable or declined only marginally in most countries. Substantial reforms were observed in Chile, Germany, Greece, Japan, Portugal and Slovenia, although reform efforts had a different focus across countries. For instance, Portugal exhibited the largest improvements in prevention and streamlining, while Chile and Greece are, together with Spain, the only countries that have introduced significant

reforms affecting personal costs to failed entrepreneurs. In fact, the time to discharge – and thus the personal costs associated with entrepreneurial failure – remains high in many OECD countries (Adalet-Mcgowan and Andrews, 2018[28]).

Figure 2.4. Insolvency regimes have improved unevenly across countries, if at all

Composite index of insolvency regimes, from 0 (least stringent) to 1 (most stringent), 2016



Note: The stacked bars correspond to three subcomponents of the insolvency indicator in 2016. The diamond corresponds to the value of the aggregate insolvency indicator based on these three subcomponents in 2010.
Source: Adalet-Mcgowan, M. and D. Andrews (2018[28]), "Design of insolvency regimes across countries", https://doi.org/10.1787/d44dc56f-en (accessed on 12 March 2019).

StatLink http://dx.doi.org/10.1787/888933924343

Strategies to enhance civil justice systems have been widely adopted but progress remains uneven

Improving the efficiency of court and legal frameworks represents another important priority of pro-growth reforms. Many governments have aimed to reduce the length of civil justice proceedings through simplification of procedures, increased digitalisation of courts and the promotion of alternative dispute mechanisms. However, lengthy trials remain a challenge to business activity in a number of OECD countries. In Europe, in 2016, the estimated length to resolve litigious civil and commercial cases at first instance varied from about 100 days in Lithuania and Luxembourg to more than 500 in Italy. Differences were even larger when considering all courts instances, ranging from less than 200 days in Estonia to more than 1,400 days in Italy (European Commission, 2018[29]).

E-government services are being strengthened to improve public governance and deliver better services

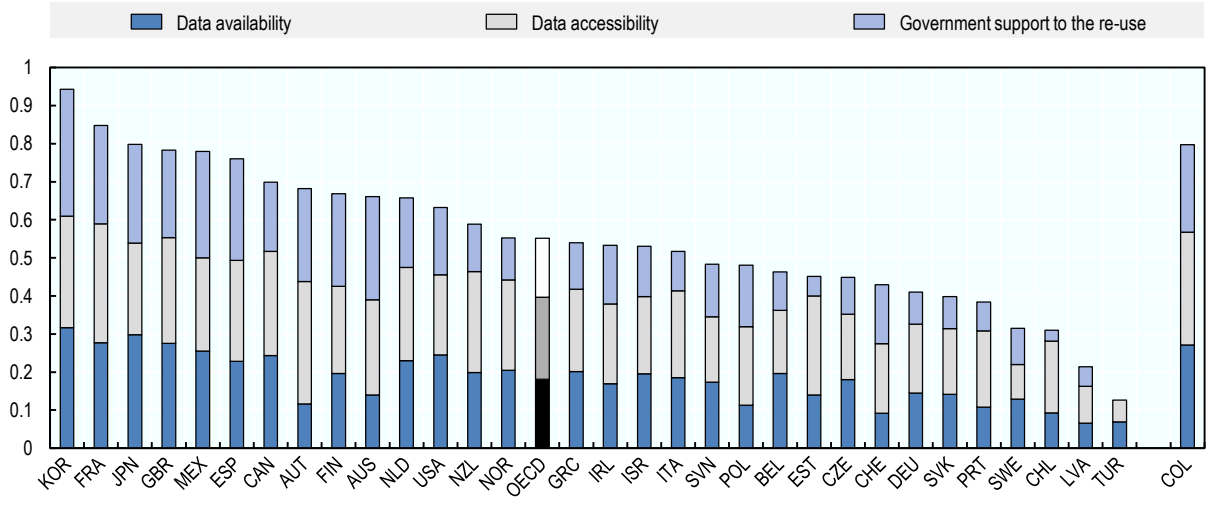
Digital instruments, such as government portals, are increasingly used to improve transparency in public measures, provide information and access to public services, and ease the interaction of citizens and businesses with the government and public

administration (OECD, 2017[1]). According to a 2017 survey of governments in OECD countries, strengthening e-government services, such as online handling of governmental administrative requirements, is the highest ranked policy objective for national digital strategies, representing also a lever to promote greater ICT usage among individuals and businesses (OECD, 2017[30]).

Furthermore, countries are increasingly institutionalising the open government principles of transparency, accountability and participation. About half of OECD countries have adopted a national strategy on open government data. Most countries set up formal requirements for disclosing a large quantity of datasets in open, unrestrictive and re-usable formats, but fewer actively encourage the re-use of data both by the public sector (e.g. via information sessions and regular trainings to civil servants) and by external stakeholders (e.g. through data awareness initiatives) (Figure 2.5). Also, only a few countries formally evaluate whether open government initiatives achieve the desired impacts (OECD, 2017[14]).

Figure 2.5. Countries are making uneven progress at opening government data

Open-Useful-Reusable Government Data index (OURdata), scale from 0 (lowest) to 1 (highest), 2016



Note: The OECD OURdata Index assesses governments' efforts to implement open data in three critical areas: i) "data availability" considers the open by default policy, stakeholder engagement for the prioritisation of data release, and the availability of strategic open government data (OGD) on national portals; ii) "data accessibility" refers to the availability of formal requirements, and the implementation of these, in regard to the publication of OGD with an open licence, in open formats (e.g. non-proprietary) and accompanied with the descriptive metadata, as well as on stakeholder engagement for data quality; iii) "government support to re-use" includes data promotion initiatives and partnerships, data literacy programmes and monitoring and evaluation. For more details on the methodology, see (Ubaldi, 2013[31]).
Sources: OECD (2017[14]), *Government at a Glance 2017*, https://dx.doi.org/10.1787/gov_glance-2017-en, based on OECD (2016[32]), *2016 OECD survey on Open Government Data*, OECD, Paris.

StatLink http://dx.doi.org/10.1787/888933924362

Recent policy developments

Implementing a user-centric approach to regulation and policy making

Regulatory authorities and government agencies are increasingly adopting approaches that aim to improve their capacity to identify and respond to diverse and evolving users' needs, such as by facilitating users' feedback and iterative improvement.

"Smart regulation" aims to ensure that regulatory settings are responsive to the diversity of actors and instances that are regulated, strengthening the evidence base to regulation and assessment tools, reducing burdens as to deliver the desired result in the most efficient and effective way, enhancing transparency, and engaging stakeholders throughout the policy cycle. To this aim, governments have been promoting the integration of SME-related considerations upstream in the policy making and along the whole policy cycle, from rationale to design, implementation, monitoring and ex post evaluation (Table 2.1).

- In particular, *public consultation* has become a pillar of "smart regulation" in many countries.
- As part of their smart regulation strategies, governments also increasingly consider *flexible regulatory options* that can reduce costs for small businesses.
- Another approach for reducing regulatory complexity is the adoption of 'stock-flow linkage' rules, such as the *One-for-One rule* (or one-in-one-out rule), which stipulates that regulators must remove a regulation each time they introduce a new one that imposes an administrative burden on business. In 2017, fourteen OECD countries had adopted such an approach, up from nine countries in 2014 (OECD, 2018[10]).

In addition, systematic ex-post regulatory evaluation is being established in a number of OECD countries, although the tendency is observed to focus on partial *ex post* assessment of regulatory burdens rather than on whether underlying policy goals have been achieved (OECD, 2018[10]), (OECD, 2015[11]).

The adoption of *behavioural insights* (BI) is gaining popularity for strengthening a user perspective in policy making, achieving regulatory goals and increasing compliance (OECD, 2018[10]). Experiments and observations aim to address the behavioural biases of governments' interventions, change the way policy is developed and public services are designed, and make government intervention more efficient and responsive to the needs and preferences of the public, factoring in behavioural barriers to compliance.

However, a 2017 OECD survey shows that while BI approaches have taken root across countries, they are still used primarily at the later design and implementation stages for new policies, rather than at the initial diagnostics stage (OECD, 2017[14]). This is often driven by the need to fill an implementation gap that may have been created by failing to properly consider implementation challenges in the early stages of policy design. Nonetheless, in a number of countries, governments are starting to use more BI to assess that behavioural barriers exist that prevent from achieving policy objectives, and update regulations and policies accordingly (OECD, 2018[10]) (Table 2.1).

Table 2.1. Designing "smart regulation" for SMEs: Selected country examples

		Public consultation
Denmark	Business Forum for Better Regulation (2012, mandate broadened and extended in 2019)	Identifies areas where companies experience the greatest burdens and proposes simplification through enhanced consultation with the private sector. The new mandate gives the Forum greater capacity for addressing a broader range of burdens, including adaptation costs, i.e. "one-off" costs related to adapting to new and changed regulation, and strengthening the "comply-or-explain" principle, by which government is requested to specify in more detail to what extent a proposal is complied with.
EU	Better Regulation Guidelines (2015)	Range of stakeholder engagement methods that aim to enable stakeholders to express their views over the entire lifecycle of a policy. Approaches include inception impact assessments at the initial stage of policy development, a consultation strategy under individual initiatives, and consultation mechanisms on Commission proposals and their impact assessments once they are put forward to the European Parliament and the Council.
		Flexible regulatory options
Austria	Impact thresholds in the RIA framework (2015)	Aims to improve proportionality in the RIA framework. The thresholds are based on various impact dimensions. If these thresholds are not exceeded, a simplified RIA may be conducted.
Korea	Tailored Regulatory Approach for SMEs (2016)	Aims to strengthen the principle of proportionality, whereby regulation is tailored in accordance to firm size and capabilities. In 2015, the government mandated the consideration of proportional regulatory alternatives in RIA on SMEs.
		'Stock-flow linkage' rules
France	"One-in, Two-out" approach (2017)	Regulatory offsetting approach, whereby regulators must remove two regulations each time they introduce a new one that imposes an administrative burden on business.
	Transposition of EU legislation.	The adoption of requirements going beyond those set by the EU measure is prohibited.
Germany	"One-in, One-out" rule (2015)	Introduced following recommendation by the National Regulatory Control Council. Under the rule, new burdens on businesses ('In') must be fully offset elsewhere ('Out'). Compensation must take place in the course of one year if possible, alternately by the end of the legislative term.
UK	"One-in, Three-out" system (2016)	Scales up former initiatives "One-in, One-out" and "One-in, Two-out" implemented in 2010 and 2012 respectively that imposed to assess the net cost of complying with any proposed regulation and find one/two or three deregulatory measure(s) which relieves business of the same net cost. The United Kingdom has pioneered policy developments in this area.
		Systematic ex-post regulatory evaluation
Australia	Post-implementation review (PIR)	Undertaken by government agencies when regulation has been introduced, removed, or significantly changed without an ex ante impact assessment, in order to ensure that regulations made in haste or without sufficient assessment can be re-assessed before they have been in place too long. This may ensure that distortionary effects or excessive burdens, which hit SMEs disproportionately, are removed in a short timeframe.
		Behavioural insights (BI)
Netherlands	Behavioural Insights Network Netherlands (BI NL) (2014)	Brings experts from all ministries together, in order to share knowledge about the application of BI to policy-making, implementation, supervision and communication. The network meets on a monthly basis and organises various activities, including a monthly series of lectures, a training module for civil service trainees and the Behaviour Day conference. Against this background, experimentation with the use of BI has been carried out in various policy areas. For instance, BI-driven modifications in e-mail communication by the Netherlands Enterprise Agency have more than tripled the proportion of companies with a relatively high energy consumption that download a feedback report on their energy consumption, intended to foster energy saving.
UK	Crown Commercial Service Behavioural Insights Framework (2018)	Aims to promote greater use of BI in the administration by allowing public bodies procuring BI services to a range of organisations, including SMEs.
	Behavioural Insights Team (BIT) (2010)	Aims to enhance public policies and services through the application of behavioural sciences (Box 2.2).

Box 2.2. Applying behavioural sciences to enhance public services: The UK Behavioural Insights Team (BIT)

In 2010, the UK government set up the Behavioural Insights Team (BIT), also known as "Nudge Unit", with a view to applying behavioural sciences to the reform of public services and policies. Originally attached to the Cabinet Office, the BIT was transformed in 2014 into a social purpose company that is jointly owned by the UK Government, Nesta (the innovation charity) and BIT's employees. Accordingly, the funding model has changed, individual departments paying directly for BIT advisory services and substituting original support by the government. Furthermore, over time, BIT, headquartered in London, has expanded in scale, up to about 150 employees, and in reach, with offices in Manchester, New York, Singapore and Sydney.

Composed by staff with strong academic grounding in economics, psychology and research methods or a background in government policymaking, BTI adopts a highly empirical approach to redesigning public services. Drawing on ideas from the behavioural sciences literature, tests and trials are conducted to understand what works and what does not work in public services design and delivery.

In this framework, BIT has launched *Predictiv,* an online testing platform (www.predictiv.co.uk) which can run tests from a representative sample of over hundreds of thousands of adults across the UK, in situations where it would take too long, be too complex, or too costly, to run a 'real world' experiment. In 2016, BIT created BI Ventures, in order to develop and scale-up products with a social impact. The first venture, Applied, is an online hiring platform that uses behavioural sciences to remove bias in recruitment processes (www.beapplied.com). The BIT has also developed tests for improving services for SMEs and entrepreneurs. A 2017 study assessed the impact of improved transparency in foreign money transfers on competition, consumers and SMEs. A controlled online experiment helped gather evidence on the types of fee disclosure that were the most helpful to small businesses for selecting suitable services. In 2017, BIT supported the Crown Commercial Service (CCS) to trial feedback on public procurement, allowing information on service quality to be shared across the public sector. Results indicated that feedback from public procurers can help highlight quality supply by smaller and less well-known businesses than larger businesses presenting more established brand and connections.

Source: BI (2018[33]), *The Behavioural Insights Team Homepage*, https://www.behaviouralinsights.co.uk.

Enhancing transparency and efficiency in public services and legal frameworks

Reforms have been enacted in many countries to *strengthen public sector integrity and transparency*, including as a response to declined confidence in national governments in the aftermath of the 2008-09 global financial crisis (Table 2.2).

Approaches include the establishment of codes of conduct and fraud risk mapping exercises, compliance with conflict of interest policies and asset declaration policies, improved transparency for lobbying activities, and anti-corruption guides for businesses, which are often developed in cooperation with business and industry associations.

Across OECD and non-OECD countries, governments have also taken steps to improve contract enforcement mechanisms. Greater efficiency in the court and legal framework is sought through *simplification of proceedings* and by *increasing expertise in courts* for commercial disputes. Over the last decade, specialised business or commercial courts were created or expanded, with the aim to improve the timeliness and effectiveness of commercial litigation. Some countries have invested significantly in *digitalisation of courts* in order to enhance their efficiency and ease information sharing, including with the public (Table 2.2).

Table 2.2. Strengthening public sector integrity and efficiency: Selected country examples

	Code of Conduct and fight against corruption	
Mexico	National Anti-corruption System (NACS) (2016)	Aims to address fragmentation in policies and develop a more coherent approach to integrity. The reform package includes a new governance structure for anticorruption policy consisting of a NACS Co-ordination Committee, a Citizen Participation Committee, and ethics committees in individual line ministries.
Netherlands	Code of Conduct for Integrity in the Central Public Administration (2006, updated in 2016)	Recognises the increased complexity of the arena in which civil servants operate, their more frequent and diverse contacts with citizens and social organisations, and the particular risks of online communications and social media.
EU	Anti-Corruption Toolkit for SMEs (ACTS)	A project funded by the European Commission and coordinated by the Italian Union of Chambers of Commerce with the participation of chambers in Belgium, Italy, Romania, and Serbia. In 2018, ACTS launched C-detector, a tool for self-assessment of corruption risk, created to support micro-SMEs operating in Europe in the implementation of appropriate measures to prevent and combat corruption.
	Digitalisation of courts	
Italy	Compulsory e-filing of documents and proceedings (2015 and 2017)	The electronic filing of documents for civil proceedings became mandatory in ordinary and appeal courts in 2015. In 2017, e-filing became compulsory also for administrative proceedings.
United States	Case Management/ Electronic Case Files (CM/ECF) system	Federal Judiciary's comprehensive case management system for all bankruptcy, district and appellate courts that enables to accept filings and provides access to filed documents online, offering expanded search and reporting capabilities. Over 2014-18, the federal system transitioned to a Next Generation infrastructure (NextGen CM/ECF), which simplifies access and use through an enhanced user interface and a single sign-on across federal courts.
	Improving contract enforcement	
India	Commercial Courts Act (2015)	Aims to enhance contract enforcement and the pace at which commercial disputes are resolved, and enacts the setting of separate Commercial Courts by State Governments at the District level. In states where the High Court exercises original civil jurisdiction, High Courts are expected to set up Commercial Divisions to deal with commercial disputes.
	Alternative dispute resolution (ADR) mechanisms	
UK	Small Business Commissioner (SBC) (2016)	Independent public body which provides general advice and information to small businesses on matters such as resolving disputes; signposts small businesses to existing support and dispute resolution services through its website; considers complaints about payment issues between small business suppliers and their larger customers, making (non-binding) recommendations on how the parties should resolve their disputes. The SBC was created by the Enterprise Act 2016.
EU	Online Dispute Resolution (ODR) platform (2016)	Aims to help EU consumers and traders solve disputes over both domestic and cross-border online purchases. The platform offers a single point of entry that channels the disputes to national Alternative Dispute Resolution (ADR) bodies which are connected to the platform and have been selected by the Member States according to quality criteria and notified to the Commission.
	Enhancing the insolvency regime	
Greece	Reform of the insolvency regime (2015-16)	Aims to speed up bankruptcies, enhance pre-bankruptcy rehabilitation plans and facilitate the discharge of entrepreneurs, thus favouring a second chance. In 2017, simplified procedures for bankruptcies of small enterprises were enacted, enabling expedite sales of movable and immovable property of bankrupt companies and faster termination of bankruptcies

Alternative dispute resolution (ADR) mechanisms are also increasingly supported to reduce litigation and backlog in courts and help SMEs resolve commercial disputes at lower costs. In some countries, dedicated digital platforms are in place to facilitate access to ADR services by businesses and consumers (Table 2.2).

Numerous countries have put in place measures to enhance efficiency in insolvency regimes. Measures are taken to improve timeliness in insolvency proceedings, while ensuring that the insolvency framework provides creditors with a range of opportunities to monitor the progress of an insolvency administration in which they have an interest. Approaches include simplified or accelerated insolvency procedures for SMEs, including through digitisation (G20/OECD, 2018[34]) (Table 2.2).

Leveraging digital technologies and Big Data for better public administration and regulation

Digitalisation opens up opportunities to simplify administrative procedures and improve public service quality and outreach (Table 2.3).

Dedicated platforms and infrastructure are set up to help SMEs and entrepreneurs liaise with the public administration and reduce administrative burdens. This includes digital "one-stop shops," i.e. single entry points providing e-government services and online platforms aiming to reduce redundancy in public administration requests.

Digital technologies also hold the potential to help governments tackle the complexity of *license systems*.

New technologies and analytical tools, coupled with a large increase in the scale and scope of digital tools, are being leveraged by governments to facilitate and encourage tax compliance by SMEs. Two main approaches are observed, which reflects a systemic perspective on the SME business environment and activities.

- The first, *"tax compliance by design"* uses technology associated with commercial transaction to create a seamless and secure flow of accurate tax information and payments.
- The second, "*advanced business analytics",* i.e. the application of statistical and machine learning techniques to uncover insights from data, is used to enable tax administrations to trace high risk taxpayers at an early stage and detect high risk tax returns. It also enables tax administrations to offer SMEs better targeted services and reduce the amount of information needed to comply. The focus by tax administrations on strengthening end-to-end processes has led to increased collaboration with other stakeholders and market players, including software developers (OECD, 2017[22]).

Table 2.3. The digital transformation of public administration: Selected country examples

	The rise of "one-stop" shops	
Switzerland	e-Government platform (EasyGov.swiss)	Offers a customer-centred and integrated approach to business-to-government interactions, overcoming silos between agencies and federal levels. The platform is exclusively dedicated to companies.
Portugal	Entrepreneur Desk (Balcão do Emprendedor)	On-line portal that allows access to a broad range of services and certificates to start and expand a business. In 2017, the services expanded, including a simulation tool to help entrepreneurs verify which legal and regulatory obligations are applicable to their activity and whether these are being complied with.
Chile	Escritorio Empresa	Aims to simplify business procedures. The platform is currently experimented by 40 municipalities.
	2020 Digital Agenda	As part of its 2020 Digital Agenda, Chile proposes an increased offer of e-procedures for households and firms.
Germany	Online Access Act (Onlinezugangsgesetz – OZG) (2017)	Aims to expand and improve e-government services and ease access to services by citizens and businesses. The OZG Act requires the federal government and the Länder to offer their administrative services online within five years and to link their respective portals in a portal network.
Spain	SME platform	Offers entrepreneurs and SMEs a one-stop shop for accessing information along their entire life cycle and disseminating Spain's SME Strategy. The SME platform is part of a range of measures taken within the Strategic Framework on SME policy 2030.
	Reducing license systems complexity	
Ireland	Integrated Licence Application Service (ILAS) (2017)	Online one stop shop for business licence, permit, certificate and registration needs that aims to simplify the licensing procedures to start a business.
Greece	Investment Licencing Law (2016)	Introduces the registration of new companies remotely through the e-one-stop shop and simplified licensing procedures, replacing ex ante licensing with simple notification.
	Improving tax compliance	
Chile	Electronic Invoicing System (2014)	Allows business taxpayers to issue and receive invoices that are immediately available to the revenue body. It also provides, free of charge a simplified and complete accounting system to business users. The Electronic Invoicing System is mandatory for all businesses. However, SMEs were granted a transition period to adjust. As of 2017, all businesses, including micro-enterprises, had been incorporated into the requirement.
Denmark	Tax-related guidance and functionality in accounting software (2017)	Embedding tax-related guidance and functionality in third-party accounting software solutions targeted to small businesses. The Danish Tax Administration (SKAT) collaborates with software developers for developing a user-friendly bookkeeping guide that was made accessible through third-party software in 2017.
Italy	Synthetic Reliability Index (2019)	Aims to promote tax compliance, transparency and dialogue between the administration and the tax payers. Based upon data of the companies and their respective sectors of operation, the Index determines acceptable levels of "tax reliability" as well as "anomaly" for a given economic activity. It allows the most reliable taxpayers to access a reward system, which offers several advantages, such as shorter deadlines for controls, exclusion from some tax controls and faster procedures for VAT reimbursements.

Other relevant aspects of institutional and regulatory framework for SMEs are related to:

- Market conditions: e.g. regulatory framework and instruments for enhancing SME access to public procurement; taxation of foreign direct investments, trade restrictions, international regulatory coordination etc.;
- Infrastructure: e.g. data privacy regulation, cybersecurity legal framework; energy and transport regulation etc.;
- Access to finance: e.g. financial market regulation, investors protection and taxation, regulation of new digital funding instruments such as initial coin offerings and crowdfunding etc.;
- Access to skills: e.g. labour market regulation (dismissals, hiring and firing, training); university laws and performance agreements; mandatory and compulsory curricula, skills and qualification frameworks etc.;
- Access to innovation assets: intellectual property rights and IPRs enforcement, open data, regulation of new technologies etc.

References

Adalet-Mcgowan, M. and D. Andrews (2018), "Design of insolvency regimes across countries", *Economics Department Working Papers*, No. 1504, OECD Publishing, Paris, https://doi.org/10.1787/d44dc56f-en (accessed on 12 March 2019). [28]

Alemani, E. et al. (2013), "New Indicators of Competition Law and Policy in 2013 for OECD and non-OECD Countries", *OECD Economics Department Working Papers*, No. 1104, OECD Publishing, Paris, https://dx.doi.org/10.1787/5k3ttg4r657h-en. [16]

Alesina, A. and R. Perotti (1994), *The Welfare State and Competitiveness*, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w4810. [24]

Bassanini, A. and R. Duval (2006), "Employment Patterns in OECD Countries: Reassessing the Role of Policies and Institutions", *OECD Social, Employment and Migration Working Papers*, No. 35, OECD Publishing, Paris, https://dx.doi.org/10.1787/702031136412. [25]

BI (n.d.), *The Behavioural Insights Team Homepage*, https://www.behaviouralinsights.co.uk. [33]

Davies, R. (2013), "Self-employment and social security: Effects on innovation and economic growth", http://www.europarl.europa.eu/RegData/bibliotheque/briefing/2013/130646/LDM_BRI(2013)130646_REV1_EN.pdf (accessed on 12 March 2019). [26]

European Commission (2018), *The 2018 EU Justice Scoreboard*, http://dx.doi.org/10.2838/72153. [29]

G20/OECD (2018), *G20/OECD Effective Approaches for Implementing the G20/OECD High-Level Principles on SME Financing*, http://www.oecd.org/g20/Effective-Approaches-for-Implementing-HL-Principles-on-SME-Financing-OECD.pdf (accessed on 12 March 2019). [34]

G20/OECD (2015), *G20/OECD Principles for Promoting Integrity in Public Procurement*, http://g20.org.tr/wp-content/uploads/2015/11/G20-PRINCIPLES-FOR-PROMOTING-INTEGRITY-IN-PUBLIC-PROCUREMENT.pdf (accessed on 12 March 2019). [8]

Johnson, S., J. McMillan and C. Woodruff (2001), "Courts and relational contracts", National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w8572. [5]

OECD (2018), *Economic Policy Reforms 2018: Going for Growth Interim Report*, OECD Publishing, Paris, https://dx.doi.org/10.1787/growth-2018-en. [7]

OECD (2018), *Going Digital in a Multilateral World - Meeting of the OECD Council at Ministerial Level*, OECD, Paris, https://www.oecd.org/going-digital/C-MIN-2018-6-EN.pdf (accessed on 12 March 2019). [18]

OECD (2018), *OECD Regulatory Policy Outlook 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264303072-en. [10]

OECD (2018), *Rethinking Regional Development Policy-making*, OECD Multi-level Governance Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264293014-en. [15]

OECD (2018), *Tax Policy Reforms 2018: OECD and Selected Partner Economies*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264304468-en. [19]

OECD (2017), *Government at a Glance 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/gov_glance-2017-en. [14]

OECD (2017), *Indicators of Regulatory Poliby and Governance Survey 2017*, OECD, Paris, http://oe.cd/ireg. [13]

OECD (2017), *OECD Business and Finance Outlook 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264274891-en. [4]

OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264276284-en. [30]

OECD (2017), *Small, Medium, Strong. Trends in SME Performance and Business Conditions*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264275683-en. [1]

OECD (2017), *Tax Administration 2017: Comparative Information on OECD and Other Advanced and Emerging Economies*, OECD Publishing, Paris, https://dx.doi.org/10.1787/tax_admin-2017-en. [22]

OECD (2017), *Tax Policy Reforms 2017: OECD and Selected Partner Economies*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264279919-en. [23]

OECD (2017), *The Governance of Land Use in OECD Countries: Policy Analysis and Recommendations*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264268609-en. [6]

OECD (2016), *2016 OECD survey on Open Government Data*, OECD, Paris. [32]

OECD (2016), *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sti_in_outlook-2016-en. [20]

OECD (2015), *OECD Regulatory Policy Outlook 2015*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264238770-en. [11]

OECD (2015), *Taxation of SMEs in OECD and G20 Countries*, OECD Tax Policy Studies, No. 23, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264243507-en. [2]

OECD (2014), *Challenges of International Co-operation in Competition Law Enforcement*, Competition Division, OECD, Paris, https://www.oecd.org/daf/competition/Challenges-Competition-Internat-Coop-2014.pdf (accessed on 12 March 2019). [17]

OECD (2014), *Indicators of Regulatory Policy and Governance Survey 2014*, OECD, Paris, http://oe.cd/ireg. [12]

OECD (2012), *Competitive Neutrality: Maintaining a Level Playing Field between Public and Private Business*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264178953-en. [3]

OECD (n.d.), *OECD Tax Database – Corporate and Capital Income Taxes*, OECD, Paris, http://www.oecd.org/tax/tax-policy/tax-database.htm. [21]

OECD/EU (2017), *The Missing Entrepreneurs 2017: Policies for Inclusive Entrepreneurship*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264283602-en. [27]

Ubaldi, B. (2013), "Open Government Data: Towards Empirical Analysis of Open Government Data Initiatives", *OECD Working Papers on Public Governance*, No. 22, OECD Publishing, Paris, https://dx.doi.org/10.1787/5k46bj4f03s7-en. [31]

UNIDO (2007), *Corruption Prevention to Foster Small and Medium-sized Enterprise Development*, United Nations Industrial Development Organization and Office on Drugs and Crime, https://www.unido.org/sites/default/files/2008-06/UNIDO-UNODC_Publication_on_Small_Business_Development_and_Corruption_0.pdf (accessed on 12 March 2019). [9]

Chapter 3. Market conditions

Prevailing and expected market conditions are important determinants that shape firms' decision making - whether they scale up or down – or whether new firms are able to enter the market. Firms adapt to market conditions through a range of strategies, e.g. innovation, competition, co-operation or collusion, which can alter market structure and the distribution of market power, with particular impacts on SMEs. This chapter presents recent developments in business conditions from a local, national and global perspective. It shows that although global market conditions for SMEs have improved in recent years, they are particularly exposed to slowing economic growth, trade tensions and retrenchments in global value chains (GVCs), and describes how digitalisation, specialisation and concentration are reconfiguring domestic markets. It also looks at the limited SME participation in public procurement. The chapter concludes with recent policy developments aiming to increase SME participation in GVCs and level the playing field in product markets, public procurement and lead markets, such as circular economy. The chapter gives a particular focus to subnational policy initiatives.

Highlights

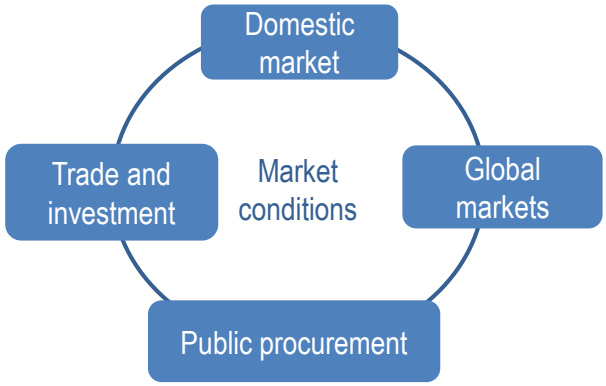
- Market conditions for SMEs have improved but there are signs that the global economic expansion has now peaked. Fragile economic prospects and inflation pressure may lead to abrupt shifts in market sentiment and higher interest rates and weigh down on SME business and financial capacity.
- Trade tensions may also darken the SME outlook as they weaken business confidence and investment. In the event of a new slowdown, SMEs are likely to be hard hit.
- Global value chains (GVCs), a major channel of SME internationalisation, have lost momentum since the crisis.
- Emerging technologies, such as robotics or 3D printing, may work to reduce the scale of fragmentation, and lead to reshoring, as multinationals aim to improve supply chain resilience and flexibility, but the consequences on the SME sector are uncertain.
- Global foreign direct investment (FDI) has slowed reaching its lowest levels since 2013. FDI is increasingly targeted towards the acquisition of digital assets, reinforcing the role of multinationals (MNEs) in building the global digital infrastructure, and the importance of MNE-SME linkages for SME upgrading.
- Digitalisation and GVCs allow product differentiation and specialisation, and have durably altered SME market conditions and reduced the efficient firm size. Yet, there are signs of market concentration across many industries.
- Governments are paying close attention to market conditions that have significant impacts on SMEs: competition (e.g. by removing anticompetitive regulations); public procurement (e.g. through targeted programmes for increasing SME capacities to bid); and lead markets (e.g. through innovative procurement or support for SME uptake of innovations).
- Governments are also helping SMEs overcome difficulties in accessing global markets. National approaches differ. Some incorporate SMEs into broader internationalisation strategies while others adopt more targeted policies. The local dimension appears key for policy implementation.

Why is it important?

Market conditions are of critical importance for SMEs to do business, innovate, compete, increase revenue and profitability and grow. Poor market conditions are a core factor of failure for SMEs, and SME surveys reveal that they are at the heart of their preoccupations (Facebook/OECD/World Bank, 2018[1]).

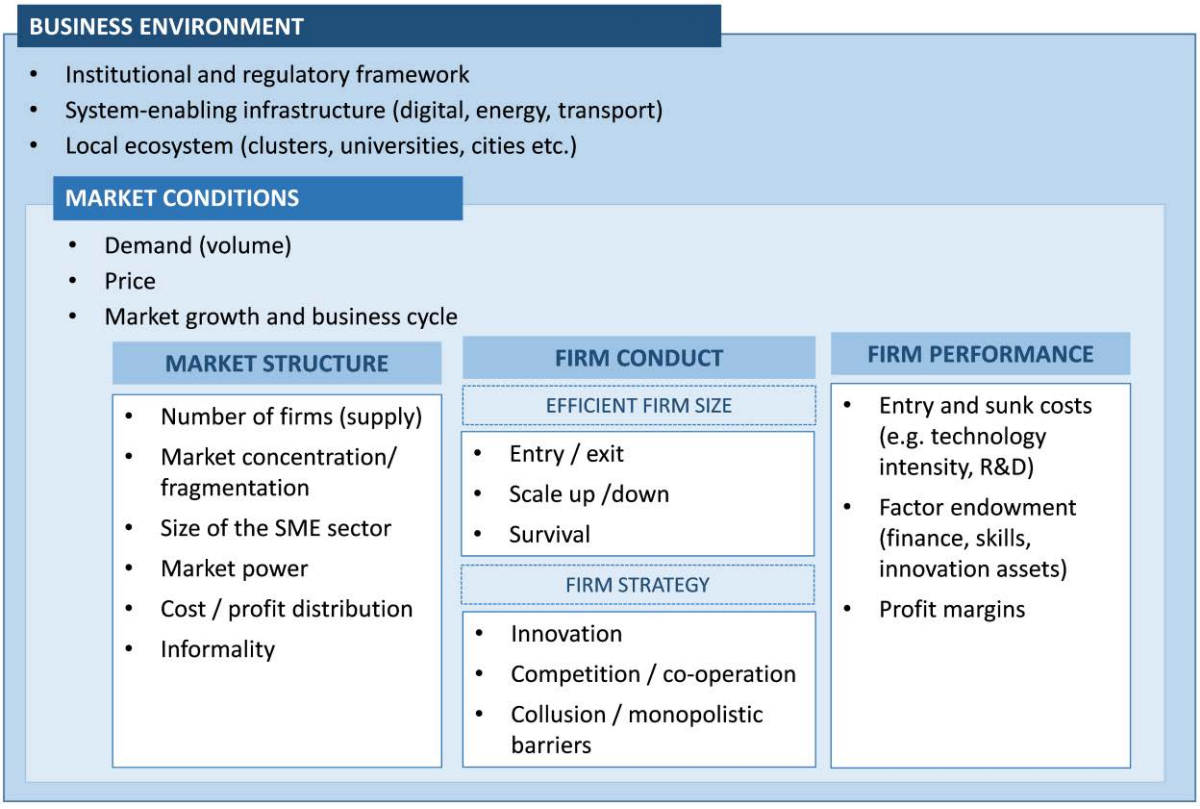
Market conditions and the optimal size of firms

Markets have a broad range of features, including their size, structure, degree of competition, specialisation, sophistication or digitalisation, their international openness or their informality, that all matter for SMEs.



Prevailing, and expectations of, market conditions determine the optimal size of firms and whether they scale up or down (Figure 3.1). Entry costs, factor endowment or sunk costs (e.g. advertising or R&D investment needed to remain at the frontier), for example, are important factors that determine the optimal size for a firm and its optimal profits (Annex Figure 3.B.1).

Figure 3.1. Market structure, firm conduct and performance



The broader business environment, whether local, national or international, is also an important determinant of optimal firm size. Stringent taxation and regulation can deter formalisation, firm entry and job creation (and firm growth) and poor network infrastructure can increase factor and transaction costs (and firm growth). The business environment can also change market demand: regulation by opening or closing markets

(e.g. certification), transport infrastructure by closing the gap with distant markets, or cities through land planning and agglomeration effects.

Firms adapt to market conditions through a range of strategies. However, those available to SMEs are generally more limited than those available to larger firms (for example, via economies of scale). As an example, profit-seeking firms will aim to increase turnover by raising volume and/or pricing, and reduce costs in a number of ways (external economies, economies of scale or scope, network effects etc.) (Annex 3.B). SMEs, due to their size constraints, mainly rely on product differentiation, network effects (e.g. standardisation, inter-firm co-operation) and agglomeration effects (spatial concentration) for scaling-up profits.

At the same time, the relationship between market conditions and firms is not one-way. Business strategies[1] can also alter market conditions and, in particular, market structures that reflect the distribution of market power and firm costs, and so the scope for innovating, profits and scaling up.[2]

Domestic market conditions

Domestic markets remain the prime space where SMEs do business as they are predominantly local actors embedded in nearby markets and ecosystems. Of many factors, two particular features of domestic and local markets that matter for SME operations, and that are covered in this report are public procurement and informality.

Public procurement offers significant opportunities for SMEs to innovate, boost competitiveness and create jobs. Public procurement equates to 30% of government expenditures in the OECD area, over 40% in Japan and the Netherlands (OECD, 2017[2]) and over 50% in developing countries (IBRD/World Bank, 2016[3]), and, in OECD countries, around half[3] is administered at the subnational level (by regions and cities that are often particularly engaged in supporting SME development and local employment (OECD, 2018[4]). Through their significant procurement of goods and services for intermediate consumption (equipment and supplies, maintenance and repairs, energy, ICT, consulting, etc.) and the commissioning of services provided directly to consumers, regional and local governments are key buyers for local suppliers. In small municipalities and rural areas in particular, SMEs can have high dependencies on local contracting authorities who may be their main or indeed only client, which, in turn, makes them vulnerable in times of austerity and budget tightening, as illustrated by the contraction of local public markets in 2010-11.

Public procurement, especially because of its diversity, provides scope for engagement with small scale specialist providers, while also offering the benefits of relative stability in demand, security of payment and spill-overs that might accrue through accreditation and recognition of being a supplier to government (e.g. for customer base expansion, or for negotiating other contracts and financing).

Despite these potential benefits however, SMEs' shares in public procurement markets are often lower than their overall market share (OECD, 2018[5]). In the EU for example, SMEs garner 45% of the value of public contracts above EU thresholds.[4]

There are factors on both the SME and government sides that explain the lower participation by SMEs to public markets. On the government side, administrative burdens, payment delays, unregulated bid security deposits or performance guarantees, ineffective complaint mechanisms and, in some instances bribery, raise transaction costs for smaller firms to operate on public markets and undermine the level playing field.

On the SME side, the complexity of bidding, pre-qualifications required from suppliers, the need to produce large quantities or a risk aversion to innovation failure all constitute strong entry deterrents. There are also transaction costs associated with the management of the procurement process itself, e.g. the hiring of a legal counsel in case of litigation, that add to capacity constraints of SMEs. The risks of trade secret disclosure also exist when companies interact with public authorities and provide confidential business information in the context of tender procedures (see chapter 7 on access to innovation assets).

Global market conditions

There is a large cross-country diversity in the opportunities and challenges SMEs face in accessing markets (OECD, 2017[6]). Conditions for entering international and domestic markets have generally improved for SMEs in recent years, as explicit barriers to trade and investments have been reduced; increased public attention has been given to levelling the playing field; and improved infrastructure, especially ICT, has helped SMEs reach scale without mass, and reduce transaction costs in their activities.

The global economy, beyond domestic and local market conditions, shapes conditions under which SMEs –and firms of all sizes- operate and perform. Sound macroeconomic and budgetary conditions raise business, investor and consumer confidence, drive corporate investment decisions, encourage risk-taking by both entrepreneurs and investors and stimulate consumer demand. Trends in international finance and labour markets are determinants for the access of domestic SMEs to finance and skills (see also Chapters 5 and 6). The globalisation of finance, education and labour markets has amplified the resonance of local shocks globally, and global shocks locally.

Trade and global value chains (GVCs) create opportunities for SMEs to absorb spill-overs of technology and managerial know-how, broaden and deepen skills sets, innovate, scale up and enhance productivity (OECD, 2018[7]); (Wagner, 2012[8]); (Lileeva and Trefler, 2010[9]); (Caliendo and Rossi-Hansberg, 2012[10]). But engaging in international markets can be expensive, a cost that usually only the most productive firms can afford (Melitz, 2003[11]) (Bernard et al., 2007[12]). Trading costs weigh disproportionately on SME profitability as smaller firms trade smaller volumes (see Chapter 4 on infrastructure).

However, the fragmentation of production worldwide has created significant opportunities for SMEs to enter global markets through a specialisation in parts of value chains where they have comparative advantages, and through specialisation in niche activities. In some niche international markets, SMEs dominate and have become key partners as upstream suppliers to larger multinationals. In Germany, SMEs hold between 70% and 90% of global market shares in some specialised manufacturing segments, and account for the bulk of the German international trade surplus. In 2015, across twelve OECD countries, the share of SME merchandise exports in textiles, apparel and wood manufacturing represented over 60% of the total (OECD, 2018[13]).

SMEs integrate into GVCs as direct exporters (trading), upstream suppliers of exporting firms (supplying) or importers of foreign inputs and technologies (sourcing). They can also partner[5] with multinationals (partnering) or become multinationals (investing). GVCs provide benefits for direct SME exporters who are able to capitalise on cheaper intermediate imports to boost their own international competitiveness (Bas and Strauss-Kahn, 2015[14]). The SME contribution to direct exports[6] is for most countries below their contribution to value added. This masks their overall level of integration in GVCs and

exposure to trade, via 'indirect channels' as upstream suppliers to larger domestic exporters (OECD, 2018[7]).

Indirect channels are especially important for independent SMEs (i.e. those that are not owned by a domestic or foreign firm), and in sectors where GVCs are important and where scale matters, e.g. in the transport equipment sector. Indeed indirect channels enable SMEs to access foreign markets and capitalise on spill-overs without incurring direct trade-related costs. In the United States, SMEs account for over 40% of the total domestic value-added exported by the transport equipment industry, with nearly all of that contribution reflecting upstream component and services supplies (Bas and Strauss-Kahn, 2015[14]).

Upstream and downward linkages with larger companies can be essential for SMEs. Multinationals through their international production networks have long served as 'internalised' cross-border transmission channels for goods and services, financial flows, and intellectual property. MNEs also increasingly serve as vehicles for the diffusion of digital technologies globally, as they contribute to build the digital infrastructure needed (Gestrin and Staudt, 2018[15]).

Yet, SME ability to engage in trade remains constrained by internal capacity (managerial skills, technology capital or innovation assets) as well as a range of external factors, including access to trade finance, the quality of logistics services and physical infrastructure, and intellectual property protection (see Chapters 5, 6 and 7 on access to strategic resources as well as Chapter 4 on infrastructure).

However, integrating into GVCs does not automatically translate into technological or economic upgrading (Gereffi, Humphrey and Sturgeon, 2005[16]) (Humphrey, 2004[17]) (OECD, 2013[18]). Success is determined in part by the way value is created or captured within the GVC and in part by its mode of governance (Box 3.1). And several factors, including physical distance, MNE size and the country of FDI origin, mediate the extent to which SMEs can translate collaboration with multinationals into productivity gains (OECD, 2017[19]).

Box 3.1. How can small firms gain knowledge and capacity within GVCs?

Value creation within GVC results from the low replicability of products and firms' capability to innovate and differentiate their output (Kaplinski and Morris, 2002[20]; OECD, 2013[18]).

The scope for SMEs to benefit from GVC participation depends on the nature of inter-firm linkages, especially between lead firms and suppliers, and the co-ordination within GVCs, i.e. the complexity versus the codification of transactions and overall capabilities of the supply base to meet buyers' requirements (Gereffi, Humphrey and Sturgeon, 2005[16]).

Lead firms can increase complexity by requesting just-in-time supply or high product differentiation. They can lower complexity by setting technical or process standards. If the supply base capabilities are low, the lead firm is likely to exert more direct control on suppliers and the value chain is likely to be vertically integrated and governed with a high degree of explicit coordination and large power asymmetry (in favour of the lead firm). In a vertically integrated value chain, functional upgrading, i.e. firms' capabilities to move

along the GVC and become competitive in upstream or downstream segments generating higher value-added (or rather profits), is heavily dependent on the lead firms willingness to transfer technology and knowledge to their suppliers.

Several factors mediate the extent to which SMEs can translate collaboration with MNEs into productivity gains (OECD, 2017[21]).

- *Physical distance*: Knowledge spillovers from MNEs are the strongest up to 10 km from the lead firm and progressively decay between 10 and 50 km, partly reflecting production linkages but also through other channels such as the mobility of managers. Much depends on the nature of the activity and increased digitalisation may be able to reduce the importance of distance.
- *Size:* Smaller MNEs may be more likely to buy from, or subcontract to, domestic SMEs, limiting the scope for knowledge spill-overs, whereas larger MNEs are more able to draw on internal resources.
- Finally, the country where FDI originate matters. FDI outflows from OECD countries have been found to generate more positive impacts on SME productivity through backward linkages and technology absorption. However, in the case of China, FDI from culturally similar places such as Hong Kong and Chinese Taipei have stronger impact on local SME productivity than FDI from Western countries.

Sources: Kaplinski, R. and M. Morris (2002[20]), *A Handbook for Value Chain Research*; OECD (2013[18]), *Interconnected Economies: Benefiting from Global Value Chains*, http://dx.doi.org/10.1787/9789264189560-en; Gereffi, G., J. Humphrey and T. Sturgeon (2005[16]), "The governance of global value chains", http://dx.doi.org/10.1080/09692290500049805; OECD (2017[21]), *Banking Sector Leverage*, https://data.oecd.org/corporate/banking-sector-leverage.htm.

Global and domestic market conditions: Recent trends

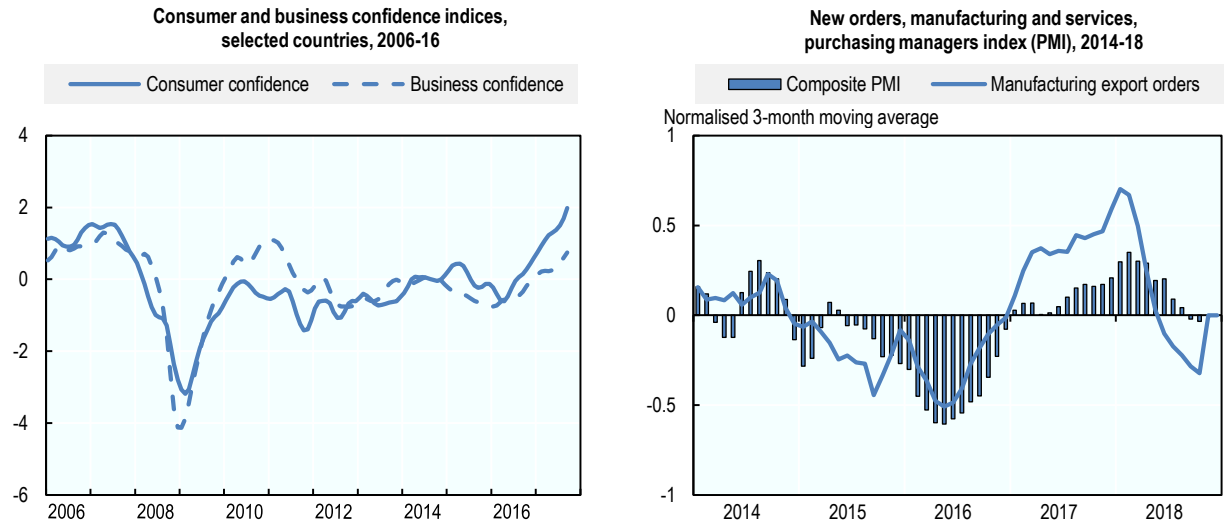
Global economy: The expansion has peaked, confidence and investments are at risk.

Market conditions for SMEs have improved in recent years but there are signs that the expansion has now peaked (Figure 3.1). Global GDP is projected to slow from 3.7% in 2018 to 3.5% in 2019-20, marginally below pre-crisis norms and the economic recovery remains fragile (OECD, 2018[22]) (OECD, 2018[23]).[7]

The upturn is less broad-based than in the latter part of 2017 as growing differences across countries and sectors have emerged. The growth outlook is weaker in some emerging economies, such as Brazil, South Africa and Argentina, which slipped into recession in 2018. There are also signs that domestic demand has been softening in China. In the United States, tax reductions and public spending have given a substantial short-term boost to domestic demand, but higher tariffs and uncertainty are likely to weigh on future investments and GDP growth is expected to ease in 2019. Japan's growth outlook remains low by international standards as slow wage progression weighs down on private consumption. In Europe growth started to slow in 2018 with wide intra-EU disparities and uncertainties caused by Brexit.

In addition, growing inflation pressures may lead to higher interest rate which may in turn increase debt burdens on households and firms that borrowed highly in recent years of cheap credit and raise asset prices (e.g. houses, equities). If inflation rises sharply and central banks are forced to raise rates at a faster pace, market sentiment could shift abruptly, leading to a sudden correction in asset prices. A swifter rise in interest rates in advanced economies might also lead to significant currency depreciation and volatility in emerging economies highly reliant on external financing.

Figure 3.2. After recent improvements, market conditions have tightened again



Notes: (left panel) Based on OECD member countries, Brazil, China, India, Indonesia, Russia and South Africa; (right panel) the PMI is a composite index based on surveys of some 10 000 purchasing executives worldwide. It enables a timely assessment of global growth conditions

Sources: (left panel) OECD (2017[24]), OECD Economic Outlook, Volume 2017 Issue 2, https://doi.org/10.1787/eco_outlook-v2017-2-en ;(right panel) OECD (2018[22]), OECD Economic Outlook, Volume 2018 Issue 2, https://doi.org/10.1787/eco_outlook-v2018-2-en.

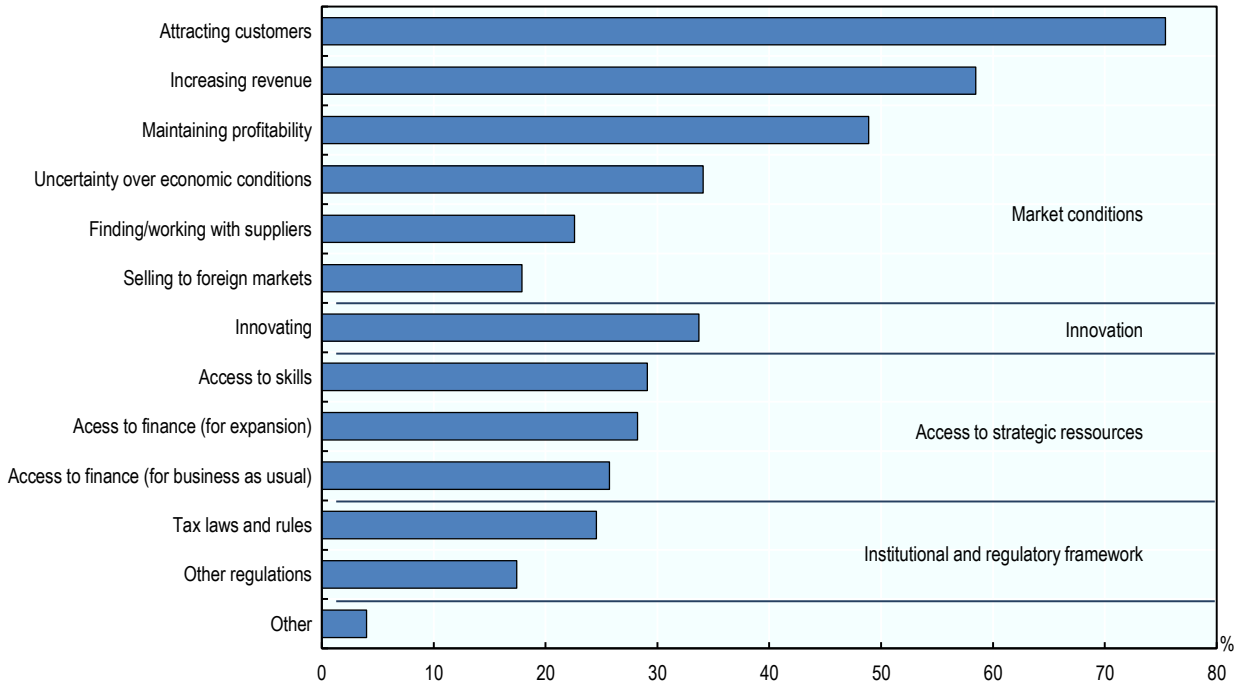
StatLink http://dx.doi.org/10.1787/888933924381

A deepening of trade tensions might exacerbate vulnerabilities. New restrictive trade measures are already having visible effects on import costs and trade volumes propagating through GVCs. In addition, geopolitical tensions might contribute to sudden market corrections or a further rise in oil prices. Investment, which has been a key driver of the recent economic upturn, is at risk. In the OECD area, business investment growth is projected to ease to just over 3% per annum over 2019-20, from over 4% during 2017-18.

Weakening long-term growth projections and narrowing market prospects, a lack of business dynamism in some economies, and uncertainty, especially around global trade policy, is likely to deter future investment. And a further rise in trade tensions would have significant adverse effects on global trade and investment. In a scenario of tightening growth conditions, SMEs are likely to be the first and most severely hit because of their high sensitivity to cyclical changes and deficient business environment (Figure 3.2).

Figure 3.3. Market conditions are the most pressing challenges for SMEs

Percentage of respondents to the Facebook business survey, average 2016-17



Note: Share of SMEs with a Facebook page reporting each challenge as one of the most important ones to the question: "What are the most important challenges your business currently faces?". Responses were collected online between Feb. 2016 and Dec. 2017.Percentage shares for each challenge are stable over time.
Source: Facebook/OECD/World Bank (2018[1]), *Future of Business Survey*, http://www.oecd.org/industry/business-stats/the-future-of-business-survey.htm.

StatLink http://dx.doi.org/10.1787/888933924400

GVCs have lost momentum

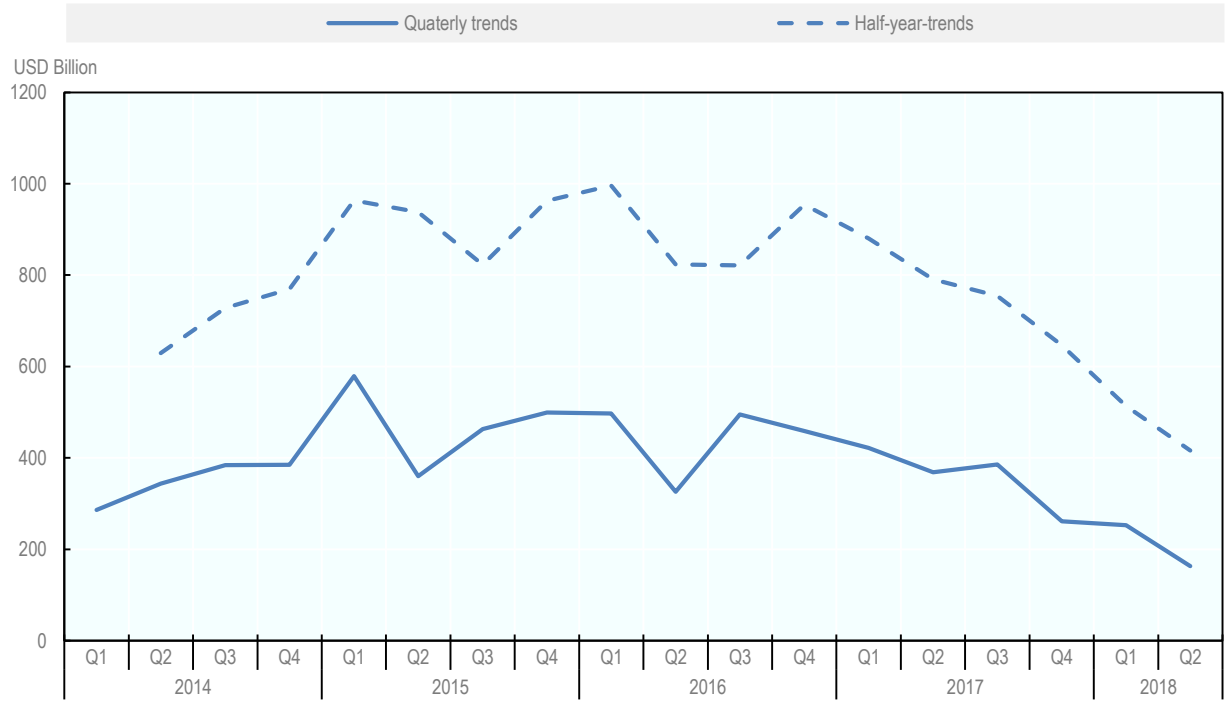
Global trade growth slowed in 2018 as trade tensions began to impact on confidence and investment plans (OECD, 2018[22]). Global trade volume growth eased to around 3.9% in 2018, from 5.2% in 2017 and appears set to remain at under 4% per annum over 2018-20. In recent years, trade expansion had been driven by recovery in Europe, a strong pick-up in electronics trade in Asia, and a shift in the composition of global demand towards more import-intensive investment (in line with the upsurge in investment). In particular, the strong infrastructure investment engaged by China in the framework of its "Belt and Road Initiative" has stimulated the growth of emerging markets, boosting external demand, especially in Asia, and contributing to the recovery underway in commodity-exporting economies.

Since 2018, however, a series of tariffs and retaliatory counter-measures have come into effect, and more may be implemented in the coming months. Uncertainty about future trade policies may be contributing to the sharper-than-expected trade slowdown, with some firms choosing to delay international orders or change their supply chains and production locations to minimise the effect of possible new trade barriers (OECD, 2018[22]).

Global foreign direct investment (FDI) is also slowing, reaching its lowest levels since 2013. Global FDI flows fell 35% in the first half of 2018 to USD 432 billion (from USD 632 billion in the second half of 2017), i.e. 44% lower than a year earlier (Figure 3.34) (OECD, 2018[24]), with recent decreases were driven by large repatriations of earnings by US parent companies following 2017 US tax reforms.[8]

Figure 3.4. Global investments are slowing, reaching their lowest levels since 2013

Global FDI flows, USD billion, Q1 2014-Q2 2018



Source: OECD (2018[25]), *OECD International Direct Investment Statistics Database*, https://data.oecd.org/fdi/fdi-flows.htm.

StatLink http://dx.doi.org/10.1787/888933924419

Overall GVCs have lost momentum since the 2008-2009 crisis. The global trade and FDI slowdown and the increasing need for improving supply chain resilience and production flexibility may have weakened the rationale[9] for maintaining long and complex GVCs (De Backer and Flaig, 2017[26]).

New business models may also become incompatible with long value chains as they require firms to improve responsiveness to end-user demand and reduce time to markets (see chapter 7 on access to innovation assets), leading to a remodelling of supply chains into 'demand chains' (Christopher and Ryals, 2014[27]). Likewise, the greater emphasis (and value) placed on protecting corporate data and innovation assets may discourage firms from offshoring high value added activities in countries and jurisdictions where the protection and enforcement of intellectual property rights are weaker or uncertain.

Nonetheless, it is difficult to foresee the trajectory of GVCs (Box 3.2), certainly rising trade tensions will, and are beginning to work to slow them. Digitalisation has helped increase the tradability of many services and reduce the hidden costs (additional management, logistics and operations) that fragmented chains raise (Contractor et al.,

2010[28]). But digitalisation may also work (especially if 3D printing is coupled with automation) to reverse and re-orientate some production back to OECD economies (De Backer and Flaig, 2017[26]).

Box 3.2. 3D printing, a game-changer for GVCs?

3D-printing provides both threats (particularly for low-skilled SMEs in exposed sectors) and opportunities for SMEs because it might transform the structure of GVCs, although it is hard to predict when and to which extent. It could in particular play a leading role in mass customisation (see Chapter 7 on access to innovation assets).

The potential for 3D printing to fully substitute traditional manufacturing methods remains uncertain. Currently, a major barrier to its expansion is the cost of switching away from mass manufacturing methods. Consequently rates and modes of adoption of 3D printing differ widely across industries and GVC segments (Wohlers, 2015[29]). 3D printing has been penetrating rapidly in high-cost low-volume industries (e.g. aerospace, medical and dental, defence, education and increasingly the automotive industry) and is expected to progress more slowly in moderate-cost moderate-volume industries or low-cost high-volume industries (OECD, 2017[30]). Similarly 3D printing has seen more applications in upstream activities, like prototyping, product development and R&D.

With 3-D printing, the source of a firm's competitive advantage shifts away from lowering unit costs through scale and mass production, towards reducing time and distance to end customers through enhanced business intelligence (Rehnberg and Ponte, 2016[31]). In turn 3D printing reduces opportunities for low-wage low-skills firms to enter value chains.

Sources: Wohlers (2015[29]), *3D Printing and Additive Manufacturing State of the Industry: Annual Worldwide Progress Report*; OECD (2017[30]), *The Next Production Revolution: Implications for Governments and Business*, https://dx.doi.org/10.1787/9789264271036-en; Rehnberg, M. and S. Ponte (2016[31]), "3D printing and global value chains: How a new technology may restructure global production", http://gpn.nus.edu.sg/file/Stefano%20Ponte_GPN2016_010.pdf (accessed on 31 October 2018).

Digitalisation has also become a key factor in the way multinationals organise their operations globally as it has weakened the market-seeking and efficiency-seeking rationales for investing abroad (Gestrin and Staudt, 2018[15]). MNEs can reach foreign markets in the downstream parts of value chains without physical presence. The same is true for born-global SMEs that can attain global reach with minimal cross-border investment. By contrast, FDI is likely to continue to underpin corporate internationalisation strategies in more traditional "bricks and mortar" industries (UNCTAD, 2017[32]).

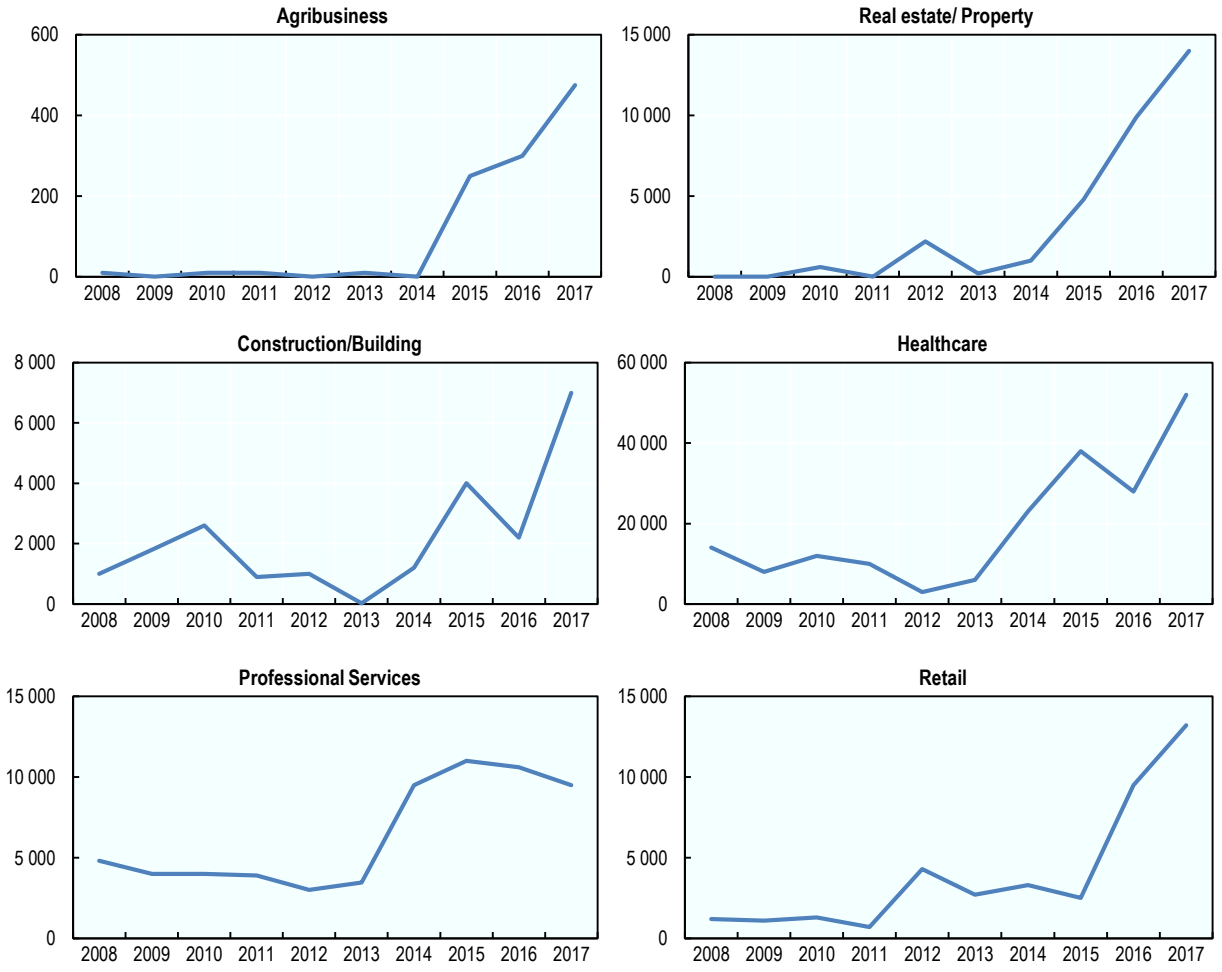
The FDI landscape is also likely to change as firms increasingly adopt knowledge-seeking FDI strategies (Figure 3.5). A large share of international investment is now going into digital infrastructure, especially intangible (Gestrin and Staudt, 2018[15]). Cross-border investment to acquire digital data storage assets reached USD 13.8 billion in 2016, the highest level on record. Cross-border acquisitions of software developers increased fifteen-fold since 2009 to USD 102 billion in 2017.

Non-digital firms have been a key driver of the rapid growth in mergers and acquisitions (M&A) directed at acquiring digital assets. MNEs in traditional sectors, such as agri-business, real estate, construction, healthcare, professional services, and retail, have

started building up in-house digital capacities since 2013-14. While acquisition of digital assets by digital and non-digital firms were roughly equal until 2014, acquisitions by the non-digital sector skyrocketed from USD 78 billion in 2013 to USD 591 billion in 2017, as compared to USD 158 billion by digital firms.

Figure 3.5. Non-digital firms are increasingly adopting knowledge-seeking FDI strategies

Non-digital sectors acquiring digital assets by M&A, USD million, 2008-17



Note: OECD calculations based on Dealogic M&A Analytics database. Digital sectors are defined along the North American Industry Classification System (NAICS) as semiconductor manufacturing (33441), navigational, measuring, electro-medical, and control instruments manufacturing (33451), electronic shopping and mail order houses (45411), business to business electronic markets (42511), software publishers (51121), internet publishing and broadcasting (51611), internet service providers (51811), data processing and hosting (51821), and computer systems design and related services (54151). Telecommunications service providers are excluded on the grounds that they represent a distinct segment related to digital infrastructure. Their inclusion does not significantly change the overall results.

Source: Gestrin, M. and J. Staudt (2018[15]), *The Digital Economy, Multinational Enterprises and International Investment Policy*, http://www.oecd.org/investment/investment-policy/The-digital-economy-multinational-enterprises-and-international-investment-policy.pdf.

StatLink http://dx.doi.org/10.1787/888933924438

The consequences of a slowdown in GVC expansion on the SME sector are uncertain but are likely to be country-, region- and sector-specific.

First, a slowdown in trade is likely to reduce the opportunities for small companies to engage in international activities, whether as direct or indirect exporters, which may also slow knowledge diffusion.

Lower FDI may also weigh on the productivity of local SMEs as it reduces channels to superior, technology, production processes and management techniques.[10]

The concentration of foreign investment on digital assets also stresses the growing role of multinationals in building digital infrastructure and diffusing technologies through their supply chains. SME integration into GVC can therefore be an enabler of their digital transformation (see chapter 7 on access to innovation assets).

On the other hand, foreign disinvestment may relax domestic competition for talent, resources and markets that tend to limit the market shares domestic firms can gain. Overall, SME productivity gains from exposure to foreign firms located in their region and in the same sector, are limited, at least on aggregate (Lembcke and Wildernova, 2019[33]), unless SMEs have similar technological capabilities (Fons-Rosen et al., 2017[34]). On the whole, spillovers from technology transfer seem to be offset by the pressure MNEs exert on competing domestic SMEs and their market shares. The benefits of FDI-driven cross-fertilisation are more evident if domestic firms and multinationals are in different sectors, especially if local firms are of medium size (Lembcke and Wildernova, 2019[33]).

Digitalisation and concentration are reshaping markets

Digitalisation has durably altered market conditions by reducing the efficient firm size (Figure 3.56) (Annex 3.A).

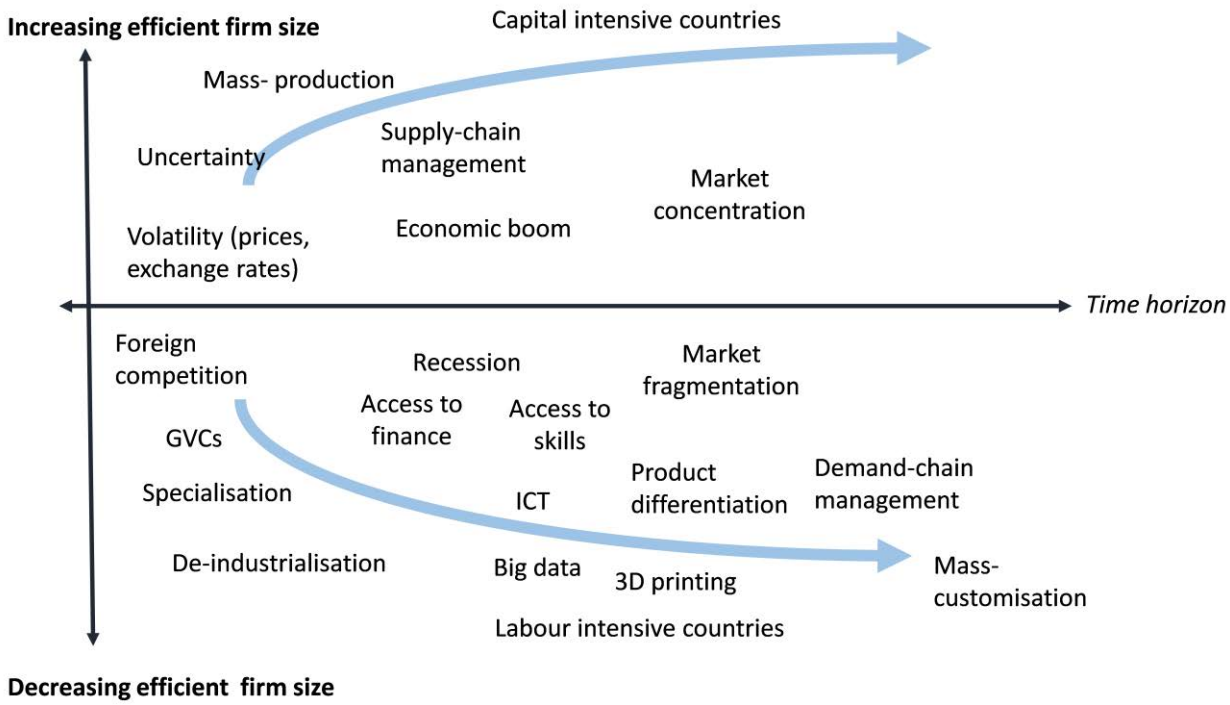
Digitalisation enables a reduction in transaction costs associated with market activities, i.e. access to information, communication and networking, reducing *de facto* incentives for firms to internalise such activities. Digitalisation also helps gain flexibility and reactivity in supply while at the same time creating a better informed and more differentiated demand that requires more flexibility and reactivity in supply (see chapter 7 on access to innovation assets).

Smaller firms due to their shorter operation lines and proximity to markets have a competitive advantage over larger firms as they can respond and adapt more rapidly to changing market conditions and new modes of production based on "just-in-time' and differentiation. Differentiation in turn increases the potential for economies of scope. And online platforms, such as Ebay or Amazon, enable SMEs engage in cross-border trade as they reduce the cost of reaching markets, connecting them to global production chains and end-customers and help them reach scale without mass and become micro multinationals.

Moreover, ***GVCs*** and the fragmentation of production have created conditions for a greater specialisation of domestic and local markets in search for better positioning within the value chain (and de facto conditions for reducing the efficient firm size). Specialisation patterns have deepened with an increasing global integration. OECD product mix has grown in complexity, while countries narrowed the range of goods produced to remain competitive. On the contrary, emerging markets, especially China,

have broadened the product portfolio they export, while they have moved up the quality ladder.

Figure 3.6. Cyclical trends, megatrends and efficient firm size



Market concentration is also a concern for SMEs, in particular, but not only, in digitally dependent sectors. Several recent studies[11] point to increasing market concentration in the United States with the top firms capturing growing shares of returns to capital, profit margins and market power across many industries (Furman and Orszag, 2015[35]) (Grullon, Larkin and Michaely, 2017[36]) , and suggesting a reallocation of business activity towards "superstar" firms that are large, highly productive and taking higher mark-up[12] (Autor et al., 2017[37]).

These signs of market concentration may also be driving increasing profit shares (as a % of GDP) and even larger increases in mark-ups, raising concerns that antitrust policies and competition enforcement may be failing to secure a level playing field and a supportive business environment for US firms.

Similar studies for Japan or Europe are less conclusive however. There seems to have been a gradual concentration of industrial markets -that were already highly concentrated- in Japan since 2000, but with no sufficient data for concluding on an economy-wide basis (Honjo, Doi and Kudo, 2014[38]). In Europe trends are mixed across countries and industries (Valetti et al., 2017[39]).

Bajgar et al. (2018) measure sales at the group level, so including subsidiaries and former competitors in case of buyout. Results show that concentration seems to have strongly increased both in Europe and North America between 2000-14, with similar increases in manufacturing and services industry within both regions and in digital-intensive and less-digital sectors since the mid-2000s.

However in the absence of complementary evidence on changes in output and price levels (that would be expected to decrease and increase respectively as competition conditions weaken), mark-ups and profits (that would be expected to increase), and churning rates in business demography (that would be expected to decrease), it is difficult to categorically conclude at this stage on whether there has been a change in competitive intensity or not (OECD, 2018[40]).

Spatial concentration remains, on the other hand, extremely prominent and seems to have further intensified in some countries (OECD, 2018[41]). In 2016, within countries, the richest regions were more than twice as rich as the poorest regions,[13] with wealth gap increasing faster in 15 out of the 30 OECD countries considered over 2011-16. The economic importance of capital regions in particular has increased, their contribution to national GDP growing by almost 12% between 2000 and 2016 to an average 26% of national total. Similar gaps persist in labour productivity. Spatial concentration is also intense for innovation activities. The top R&D performing region accounted for nearly 45% of the country's business R&D expenditure in 2013 (OECD, 2016[42]) and R&D expenditure in capital regions was higher than in the rest of the country in almost all OECD countries (OECD, 2018[41]). In addition, the top regions in Canada, France and the US host almost half venture capital investment (2014). And, more generally, metropolitan areas are the places where most inventions take place.

Environmental degradation and urban congestion provide however rationale for rethinking industrial systems and business models with a double objective of improving economic efficiency and reducing negative externalities. The circular economy for instance carries a high profit potential for a broad range of industries, including those where SMEs are majority (Box 3.3).

Box 3.3. New market conditions for SMEs: The business case of the circular economy

The green transition is creating new market conditions and opening up opportunities for SMEs. First, as important suppliers of green goods and services, SMEs are especially well positioned to operate in green supply chains in local markets that may be unattractive or impenetrable for large global firms, including in emerging economies and low-income countries. In Finland and the UK, SMEs represent over 90% and 70% of clean tech businesses respectively. A quarter of European SMEs is already producing green products and more is expected for the future (Guerrier, 2018[43]).

Climate change and environmental degradation, combined with economic and demographic prospects, are putting natural resources under strong pressure, offering a business case for the circular economy. 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 value terms, Europe recycled and recovered only 5% of the original raw material value of discarded goods (Ellen MacArthur Foundation, 2015[44]). 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 (European Commission, 2015[45]), has emerged as a new paradigm for further decoupling economic growth from resource use. The circular economy aims to improve the preservation of natural resources, optimise resource yields (and increase the productivity

of resources) and reduce negative environmental externalities (McKinsey Center for Business and Environment, 2016[46]).

Circular industrial systems encourage the creation of 'local value loops', based on more local production and more diverse exchanges of value in local economies, with large potential impact on consumption patterns. There is therefore a key spatial dimension in circular economy models that require both minimum geographical proximity and enough agglomeration effects to be scalable. The circular economy also encourages a shift in business strategies towards more customer-focused design thinking (Ellen MacArthur Foundation, 2015[44]) for which smaller firms may have a comparative advantage (chapter 7 on innovation assets).

Digital technologies will be particularly instrumental for the development of the circular business as they enable better monitoring product life-cycle and consumption (e.g. automation, remote sensing, big data), brokering goods, materials and related services (e.g. online marketplaces), peer-to-peer sharing (e.g. private car and home sharing), delivering utility virtually (e.g. books) or reducing the use of old materials (e.g. 3D printing).

Shifting from a linear approach to a circular system is estimated to add as much as USD 4.5 trillion for economic growth by 2030 (Accenture, 2015[47]). Projections show that resource productivity in Europe can improve by 3% and generate a GDP increase of up to 7% by 2030 (McKinsey Center for Business and Environment, 2016[46]). Business surveys results are convergent, with over 41% of European SMEs reporting that investing in resource efficiency paid off and helped decrease production costs (European Commission, 2018[48]). Yet, this potential still needs to be unlocked: today, less than 10% of the global economy is circular (Circle Economy, 2019[49]), and there are large differences between industries such as pulp and paper or steel where recycling waste is well established and the market penetration of circular models reaches 30-40% of the physical output, and most other sectors where it is no more than 5-10%.

The circular economy carries a transformational and high profit potential for a broad range of industries, including those where SMEs are in the majority (Ellen MacArthur Foundation, 2015[44]). 'Share' models can help cut costs and improve performance in distributive trades (i.e. wholesale and retail trade) or accommodation and food services; 'virtualise' models in administrative and support services, legal and accounting and head-office consulting, as well as in a range of knowledge-intensive services; 'loop' models in construction, transportation and storage. The building sector, for example, could halve construction costs with industrial and modular processes. The European Executive Agency for SMEs (EASME) strongly believe that there is an economic case for SMEs to transition from linear to circular models.

Sources: Guerrier, J. (2018[43]), *World Circular Economy Forum*, https://www.sitra.fi/en/projects/world-circular-economy-forum-2018/#programme; Ellen MacArthur Foundation (2015[44]), *Growth Within: A Circular Economy Vision For A Competitive Europe*, https://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf (accessed on 19 March 2019); European Commission (2015[45]), *Closing the Loop - An EU Action Plan for the Circular Economy*, https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF (accessed on 19 March 2019); McKinsey Center for Business and Environment (2016[46]), *The Circular Economy: Moving from Theory to Practice*, https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/The%20circular%20economy%20Moving%20from%20theory%20to%20practice/The%20circular%20economy%20Moving%20from%20theory%20to%20practice.ashx (accessed on 19 March 2019); Accenture (2015[47]) (2015), *Creating Advantage in a Circular Economy - Waste to Wealth*; European Commission (2018[48]), *SMEs, Resource Efficiency and Green Markets*, https://publications.europa.eu/en/publication-detail/-/publication/3e0eeaef-0259-11e8-b8f5-01aa75ed71a1/language-en/format-PDF/source-63762994 (accessed on 19 March 2019); Circle Economy (2019[49]), *Circularity Gap Report*.

Little progress has been made in increasing SME participation in public procurement

The average level of public procurement spending in the OECD countries has remained rather constant over time (OECD, 2017[2]). However, there is currently no consensus among the policy community on the active use of public procurement to foster SME growth, nor on the share or amount of contracts that should go to SMEs. Also, despite the potential benefits of SME participation, their share in public contracts have remained lower than their market share (OECD, 2018[5]).

Governments have increasingly recognised the strategic dimension of public procurement (OECD, 2018[5]). Given its magnitude in public spending, public procurement have become a tool for governments to achieving key policy goals and delivering green, socially responsible and innovative policies (OECD, 2016[50]). Yet, the European Commission estimates that 55% of public procurement procedures still use the lowest price as the award criterion at the exclusion of other qualitative and grand challenges-oriented criteria, such as energy consumption, life-cycle costs, environmental impact etc. (European Parliament, 2018[51]).

Many of the challenges SMEs faced in participating in public procurement in the 1980s and 1990s persist today. Public procurers have increasingly been asked to aggregate needs and generate economies of scale, making access to public markets more complex. Between 2006 and 2016 the number of tenders with only one bid increased from 17% to 30% (Makgill, 2018[52]). In the same period, the number of offers per tender fell from five to three. SMEs won only 45% of the total value of public contracts above the EU thresholds. And little progress has been made in recent years (OECD, 2018[5]). In most countries for which data are available, the share of SME-awarded contracts, being in terms of number or in terms of contract value, has remained stable or even decreased.

Complexity of bidding, the need to produce large quantities and risk aversion have constituted strong entry deterrents for smaller firms. In addition, payment delays, unregulated bid security deposits, excessive performance guarantees, ineffective complaint mechanisms or bribery, have undermined the level playing field in public tenders.

Despite governments' efforts to remove administrative barriers and facilitate access, discussions still focus on how to remedy the situation (OECD, 2018[5]). In fact, a recent OECD survey to public procurement revealed that policy makers and practitioners remain inconclusive on the extent to which constraints on SMEs pose burden on their participation and its evolution over time (OECD, 2018[5]). But the complexity of public procurement systems seem to persist as one of the main impediments for SME participation. In addition, these constraints and limitations arise at every stage of the process, from access to information, to pre-qualification, to tendering, to the contract administration and the management of the relationship.

Market conditions for SMEs and entrepreneurship: recent national policy trends

Thinking global, acting local

Governments in the OECD area and abroad have been paying high policy attention to increasing participation in trade and GVCs, including or especially for SMEs. Indeed national approaches differ as some governments include the SME rationale into broader

internationalisation strategies while others adopt more targeted policies. Nevertheless, the local dimension appears key for policy implementation.

While not their core objective, helping SMEs overcome their difficulties in accessing global markets is a key dimension of a number of national export strategies (Table 3.1). In some other cases, SME export support is framed within new industrial-innovation policies.

Countries have also revisited their governance arrangements in order to improve efficiency in their export support system (Table 3.2). National export and investment promotion agencies have gone through restructuring. Export hubs have sprouted worldwide, transferring SME export support to the local level.

In addition, more targeted efforts have been aimed both at SMEs, in order to mitigate the costs inherent to internationalisation and trading across borders, and at multinationals, in order to attract more and better quality FDI (Table 3.3).

SMEs are provided with financial support (in the form of grants, loans or credit or export guarantees) and non-financial support (such as information, mentorship, networking or marketing services) for expanding markets abroad. In some cases, public support is targeted to certain populations of entrepreneurs and certain types of SMEs.

On the other hand, multinationals receive particular attention with attractive financial packages and simplified investment procedures. And governments have also played a role in connecting multinationals with domestic actors.

Table 3.1. Helping SMEs go global: Selected examples of mainstreamed approaches

	National export strategies	
Norway	Strategy for Export and Internationalisation (launched in 2017)	Increasing the export potential of small businesses and diversifying trade towards emerging economies. The government is in parallel negotiating trade agreements with Argentina, Brazil, China, India, Indonesia and Russia.
Spain	Internationalisation Strategy of the Spanish Economy (2017-27)	Supporting SME exports and investments abroad and plans financial support accordingly.
Slovenia	Programme for Internationalisation (2015-20)	Includes several measures for SME internationalisation. Support is given for developing new business models, establishing partnerships within GVCs, creating one-stop-shops for exporters and investors, undertaking feasibility studies, establishing export plans and exploring new international market opportunities.
UK	Export Strategy (launched in 2018)	Includes specific measures aimed at encouraging SMEs to consider exporting at key points in their business lifecycle and informing SMEs about exporting via access to specialist advice and support.
	New industrial policies	
Hungary	Digital Export Development Strategy (2016-20).	Promoting the digital economy, through a strong modernisation, especially of the SME sector, that could serve as a pilot industry for the export and SME development plans of other industries. Given the size of the domestic market, the long-term growth of domestic ICT SMEs requires enhancing their export sales.
Italy	"Special plan" - Piano Straordinario	Promoting the "Made in Italy" abroad and lifting up low inward FDI. Includes support to innovative promotion strategies, e-commerce and investment in fixed capital assets and technologies.
	Industry 4.0 National Plan (2017)	Systematic tax credit on R&D and hyper-depreciation allowances for high-tech investments.

Table 3.2. Helping SMEs go global: Selected examples of governance improvement

		Revising the export support system
Australia	Small and Medium Enterprises export hubs (since 2018)	Providing local authorities and non-profit organisations with grants from AUD 150 000 to AUD 1.5 million for facilitating SME export opportunities in the six Growth Centre sectors (i.e. advanced manufacturing, cyber security, food and agribusiness, medical technologies and pharmaceuticals, mining equipment, technology and services and oil, gas and energy resources). AUD 20 million were earmarked in 2018 over a four-year period for the creation or operation of SME export hubs.
France	Trade Strategy (since early 2018)	Re-organising the export support system in order to make it simpler and more attractive. Business France (the national export and investment promotion agency since 2015) is to disengage from some countries as private structures such as international chambers of commerce take over. Conversely the reform plans to make Bpifrance the contact point for SMEs to access export guarantees and funding. The range of instruments has also been enlarged while the procedures have been streamlined.
UK	UK Export Finance partnerships	Introducing new partnerships between UK Export Finance, the UK's export credit agency, with five retail banks to help smaller exporters and companies that supply exporters easily access Government-backed trade finance.

Table 3.3. Helping SMEs go global: Selected examples of targeted approaches

		SME-targeted support
Australia	Market Development Grant (EMDG)	Financial assistance programme for aspiring and current exporters. The EMDG scheme encourages Australian SMEs to develop export markets by reimbursing up to 50 per cent of eligible export promotion expenses above AUD 5 000 provided that the total expenses are at least AUS 15 000. Up to eight grants can be awarded to each eligible applicant.
Canada	CanExport programme (launched in 2016, budget increased in 2018)	Provides financial support to SMEs (from CAD 20 000 to 100 000 by project) for a wide range of export marketing activities, especially towards high-growth emerging markets. The 2018 Fall Economic Statement committed an additional CAD 100 million over six years to the initial budget of CAD 50 million over 5 years.
Czech Republic	NOVUMM, NOVUMM KET & DESIGN (launched in 2016)	Supporting SME participation in exhibitions and fairs abroad in priority sectors, including key enabling technologies and design.
Germany	Mittelstand Global (launched in 2016)	Cross-industry SME market development programme that supports export initiatives in key areas of the future such as energy, environmental technology, civil security technology and services, and healthcare.
Hungary	Mentorship programme (since 2016)	Incentives for SMEs to hire or buy expertise through mentor networks.
Korea	SME Export Support Centre and online /offline support platforms	Expanding assistance to SME exporters and facilitating contacts between SMEs and overseas buyers.
	K-Gobal Accelerator programme (2017)	Providing SMEs with support in adapting products to global demand, setting a business model and liaising with foreign investors.
Lithuania	Export credit guarantee (2018)	Introduced a short-term export credit guarantee scheme.
Netherlands	Brexit desks (since 2016)	Online and physical desks for helping SMEs calculate the impact of Brexit on their business Taking account of their deep trade and investment linkages with the UK,
		Population-targeted support
Belgium	First-time exporters	Targets first-time exporters of innovative goods by reimbursing 80% to 100% of the costs incurred under certain conditions. The programme is administrated by Finexpo, the federal SME export agency
Canada	Women Entrepreneurship Strategy (WES)	Foresees nearly CAD 2 billion to help women start and grow their businesses and reach new markets with an aim to doubling the number of women-owned businesses by 2025. Key export-related investments under the whole-of-government WES include connecting women with expanded export services and opportunities and providing financing and insurance solutions, on commercial terms, to women-owned and women-led businesses.
Korea	Tech Incubator Programme for	Targets start-up by attracting initial investment from private accelerators and, starting from

	Start-ups	2016, supporting mentoring, funding, and overseas networking, such as the establishment of overseas subsidiaries.
Poland	Polish Tech Bridges (2018)	Funded by the European Regional Development Fund, to support foreign expansion of start-ups and SMEs with high potential.
		Multinationals and foreign investment
Estonia	Startup Estonia	Number of measures, as part of the programme in support of start-ups and scale-ups, for attracting foreign investors.
	"E-residency" status	Easing access of foreign entrepreneurs to the domestic market and public services.
Netherlands	Reduced corporate income tax rate (2018)	Stimulating FDI with a more competitive statutory corporate income tax. The basic rate is reduced from 25% to 21% for profits above the threshold of EUR 200 000, and from 20% to 16% for profits below.
Poland	Revised tax relief for foreign investments	Re-organising tax relief for foreign investments with a view to granting support on investment quality rather than location. The support criteria have been adapted to increase investment coming from small businesses.
Indonesia	Investment One-Shop service (since 2015)	Facilitating inward FDI processes. In addition, the Indonesia Investment Co-ordinating Board can grant tax breaks of up to 30% of strategic foreign investments, including large investments, investments on high local content or export-oriented investments.
	Tax breaks on strategic foreign investments	The Indonesia Investment Co-ordinating Board can grant tax breaks of up to 30% of strategic foreign investments, including large investments, investments on high local content or export-oriented investments.
		Connecting MNEs and SMEs
Ireland	Ireland Global Sourcing (since 2017)	Providing SMEs with opportunities to become suppliers to multinationals, and stimulating MNE-SME collaboration more generally. During a two-day workshop IDA Ireland that has overall responsibility for promoting and facilitating FDI and Enterprise Ireland that promotes joint ventures and strategic alliances between indigenous and foreign companies organised 455 meetings between Irish exporters and multinationals.

Levelling the playing field…

… In product markets…

Competition policy has two pillars: i) pro-competition market regulation for enabling contestability, firm entry and rivalry in the market; and ii) the enforcement of antitrust laws (i.e. rules against abuse of dominance and anticompetitive agreements, as well as merger control) and state aid control (World Bank/OECD, 2017[53]). While the former pillar involves the improvement of regulations and administrative procedures, including the removal of anticompetitive sectoral regulations, the second focuses on business behaviours (e.g. anticompetitive cartel agreements) and requires enacting a Competition Law and a Competition Enforcement Authority.

Competition authorities typically support pro-competition market regulation (pillar 1) with advocacy efforts, conducting research on the effect of public interventions on competition, and providing evidence and recommendations on how to minimize market distortions (Table 3.4).

In Europe, the **European Commission** (EC) has been playing a key role in fighting abuses of dominant position, which have negative effects on smaller competitors, and defending consumer interests.

- The EC fined Google USD 5 billion in 2018 for favouring its own applications on Android devices and abusing its mobile operating systems for ensuring the popularity of its search engine. This sanction came after the USD 2.7 billion fine Google was requested to pay in 2017 for taking illegal advantage of its search engine to propose its shopping service. Examples of record sanctions against large

IT companies infringing anti-competition laws have multiplied over the past decade.

- In 2019, the EC fined Mastercard EUR 570 million for obstructing access to cross-border card payment services and limiting the possibility for merchants to benefit from better conditions offered by banks established elsewhere in the Single Market.

The EC fight against cartels has also intensified in the 2000s and remains at historical highs, as per the amount of fines imposed:

- In 2016, the EC condemned the 'truck cartel' to a USD 2.5 billion fine, the largest cartel fine ever, for years of collusion in delaying the diffusion of low-carbon technologies and agreeing on prices and delivery terms.
- The EC established an anonymous whistleblower tool in 2017 in order to encourage individuals to report inside knowledge and uncover cartels and anti-competitive practices, including in procurement bids.
- In 2018, the EC antitrust authority opened a series of cartel investigations across various sectors (e.g. carmakers, airline services, metal packing, etc.).

Table 3.4. Levelling the playing field in product markets: Selected country examples

	Pro-competition market regulation	
Austria	Revision of regulations and administrative rules in retail and professional services sectors (2015)	Exempts small facilities, especially for the retail sector, from authorisation procedures. This is part of a broader range of regulatory and administrative reforms aiming to address a lack of competition in some professional services and retail trade (see also below).
	Recognition and Evaluation Act (2016	Eases the procedures for recognising professional qualifications obtained abroad and opens up the professions to foreigners.
	Amendment of the Industrial Code (2017)	Abolishes fees and bureaucratic requirements for business license registration.
Australia	Reform of the Competition Law (2017)	Limits the misuse of market power and provides greater protection to small businesses as well as broader choice to consumers. Due to the large distances, the remoteness of global markets and the concentration of business activities in a small number of urban areas, SMEs operate in environments that may be less conducive to competition and innovation diffusion.
	Australian Competition and Consumer Commission	Includes a new internal working group in charge of tracking disruption in markets and assessing the impact of new business models and products on competition.
	Mainstreaming competition policy objectives in other policy domains	
Switzerland	Free Trade Agreement (FTA) Network	New FTAs were concluded in 2016 and negotiations are ongoing with India, South-East Asian countries and Mercosur States, in order to facilitate cross-border flows and limit the inflation on domestic mark-ups.

… In public procurement…

SMEs have been at the centre of the public procurement policy agenda. In fact, the 2013 survey carried out by the United Nations Environment Programme (UNEP) identified employment and SME development as top priority areas for governments' sustainable public procurement policies (UNEP, 2013[54]). Policy intervention in the field is polymorph.

A first policy approach consists in developing framework strategies for increasing the number of SMEs in public markets. The legal and regulatory frameworks that govern public procurement include provisions that aim to give SMEs a fair chance of participating in bidding and ensure equal and fair treatment of bidders and suppliers (e.g. simplified procedures, less size-related selection criteria, smaller contract lots, shorter payment delays etc.) (Table 3.5). In Europe, the 2014 EU Directives on public procurement include new rules that aim to simplify procedures and make them more flexible, with SMEs expected to benefit in particular. These rules have been subsequently transposed into the national laws of Member Countries. The 2017 EU Procurement Strategy also puts priority in making procurement markets more accessible for SMEs.

Another policy approach consists in implementing targeted programmes for increasing SME capacity to bid in public markets. Acknowledging that resource constraints are a particular obstacle to SME participation in public procurement, some governments have adopted explicit measures in support of SMEs, such as dedicated financial instruments and preferential programmes.

Only a few OECD countries have legislative provisions for bid preference and set-asides. Under such programmes, only bidders that are eligible to participate in procurement set-asides compete against each other. Such measures have proven to positively impact social cohesion and employment by providing opportunities to groups of workers and entrepreneurs that are generally excluded from the labour market.

Finally, governments have designed public procurement policies that have the secondary objective of fostering innovation in SMEs. In fact, public procurement policies and strategies are increasingly incorporating broader socio-economic objectives. Increasingly, strategic public procurement initiatives aims to use government's contracts for promoting innovation, protecting the environment, strengthening social cohesion and addressing issues related to gender and social inclusiveness. These strategic initiatives often also pay special attention to SMEs. In the 2017 OECD survey on the strategic use of public procurement to support SMEs, 44% of OECD countries reviewed declared that national strategies for green public procurement and public procurement for innovation commonly reflect the secondary objective of supporting SMEs (OECD, 2018[5]). In particular, while the level of innovative SME participation in public procurement markets is still relatively low, it is higher than that of general SME population.

With the large amounts of money and interests at stake, public procurement is the government activity most vulnerable to corruption and fraud (IBRD/World Bank, 2016[3]). Promoting transparency could help reduce the opportunity for opaque decisions and encourage participation.

There is a clear move toward the use of electronic means in conducting public procurement. Electronic platforms range from a website that does not support interactions but allows users to merely access tendering information, to sophisticated platforms for conducting the entire procurement process online. The benefits of digital procurement include equal market access and competition, enhanced transparency and integrity and lower transaction costs. It can inter alia reduce in-person interactions that create opportunities for corruption.

Table 3.5. Levelling the playing field in public procurement: Selected country examples

	Framework strategies	
Australia	Commonwealth Procurement Rules (2019)	Includes the principle of fair competition and commit non-corporate Commonwealth entities to source at least 10% of procurement by value from SMEs.
Denmark	Public Procurement Act (2016)	Increases the flexibility of requirements for bidding companies and incentivise the splitting of public contracts into smaller lots that are more accessible to SMEs.
Mexico	Public Procurement legal framework	Includes specific provisions for SME participation in public procurement, e.g. 10%-50% of advance payment if the supplier is a manufacturing SME, and preferential treatment of SMEs using innovative technology to produce goods.
Portugal	Code of Public Contracts (2017)	Simplifies and increases flexibility in procedures.
Spain	Public Sector Contracts Act (2017)	Simplifies opened procedure, shortens payment terms and makes contract lots smaller.
Sweden	National Procurement Strategy (2017)	Aims to improve trust in public markets, raise the multiplicity of suppliers and ensure well-functioning competition. The government encourages contracting authorities to give a real chance to small enterprises by dividing public contracts into smaller lots and removing excessive capacity criteria.
	Targeted initiatives for increasing SME capacity to bid	
Hungary	Training and consulting services (since 2016)	Aim to raise awareness and capacity among SMEs to foster their participation in public markets. The programme is based on a co-operation between the Public Procurement Authority and the Young Entrepreneurs Association Hungary (FIVOSZ).
Switzerland	Information events	Regularly organised by central purchasing bodies to increase awareness of opportunities to bid for government purchases, the types of procedures and the types of purchases (goods/services/construction).
UK	Supply chain focused approach	Aims to level the playing field and increase the visibility of supply chain opportunities. Assists suppliers, including SMEs, in bidding for work in its supply chains.
	Contracts Finder Platform	Enables suppliers to Government to advertise subcontracting opportunities. In addition, the Government wants to have greater visibility of spend with SMEs in its supply chains.
	Population-targeted set-asides provisions	
Canada	Procurement Strategy for Aboriginal Business	Helps fulfill the Government of Canada's priority to strength Aboriginal entrepreneurship (mostly SMEs) as outlined in the Federal Framework for Aboriginal Economic Development since 2009. Canada has a set-aside programme for Aboriginal businesses since 1996.
United States	Range of set-asides legislative provisions	Targets different categories of small businesses – including women-owned, disadvantaged, service-disabled veterans - and businesses from historically under-utilised business zones.
	Strategic public procurement for innovation	
Austria	Action Plan on Public Procurement Promoting Innovation	Stipulates that public authorities should tender/procure in lots and define qualification and award criteria in a way that gives SMEs a chance to participate in competitions.
Canada	Innovative Solutions Canada (ISC) (2017)	New innovation procurement programme designed to scale-up Canadian small businesses. Consolidates the previous Build in Canada Innovation Programme that provided procurement opportunities for SMEs with innovations ready for testing or commercialisation by making the government their first client.
Estonia	Support for Innovative Public Procurement programme (2016)	Aims to increase SME capacity to meet the innovation demand of the public sector.
	Improving the administration of public procurement	
Canada	Innovation Canada Platform	Interactive digital platform which helps businesses find federal programmes and services to grow their business (innovation.canada.ca). The platform provides businesses with a tailored list of results, selected from more than 1 000 federal, provincial and territorial supports, including the Innovative Solutions Canada procurement programme.
Slovak Republic	Training	Training of contracting authorities on SME facilitation.
UK	Supplier Registration Service	Provides suppliers and buyers with a single place to create and share commercial information. Contracting authorities can access a bank of questions to assess the suitability of a supplier. This saves time and resources in the bidding process.

… In lead markets

Governments are also active in encouraging SME access to "lead" markets where demand for innovative products is still insufficiently developed (e.g. certain renewable energy technologies) but where technology or products have high potential for increasing economic benefits, including competitiveness and job creation, and meeting societal needs (Edler, 2007[55]).

The circular economy, through the development of innovative business models, financial innovations and new organisational and logistical innovations, and for its transformational and high profit potential, as well as its local dimension, provides an example of lead market.

Box 3.4. Lead markets: Principles and key policy instruments

A lead market is a "new" market with the potential to expand geographically and create above-average rents for firms. The term "lead market" has been defined as: regional markets with specific attributes that increase the probability that a locally preferred innovation design becomes internationally successful as well (Beise and Cleff, 2004[56]) (Edler, 2007[55]). Once an innovation or technology has taken hold of a market, it can be characterised as operating in a "lead market".

A key characteristic of a lead market is that uptake is not due solely to the technological superiority of an innovation, but also to the ability of market players – competitors, consumers and government regulations – to influence its adoption (e.g. via pricing) and adoption in other markets, including in other countries.

Lead markets are defined around broad market segments and typically cover six major areas: eHealth, recycling, renewable energy, sustainable construction, protective textiles and bio-based products.

The development of lead markets can help innovating firms achieve the critical mass and competitiveness needed to bring prices down and encourage further diffusion and adoption of the innovation. The promotion of lead markets has therefore received increased attention from OECD governments in recent years.

Innovation-oriented public procurement is one the instrument commonly used to target SME – and firms of all sizes – demand but it is not the only one. Regulations and standards, as well as tax policies, are also key policy instruments.

Demand-side innovation policies are often sector-specific. For instance, in the energy sector, guaranteed tariffs (for renewables), specific power purchase agreements with local utilities or eco labelling aim to improve the uptake of energy efficient technologies. In the pharmaceuticals sector, regulation has been used to promote the development of orphan drugs.

Sources: Abridged from OECD (2011[57]), *Demand-side Innovation Policies*, https://dx.doi.org/10.1787/9789264098886-en; (Beise and Cleff, 2004[56]); Edler, J. (2007[55]), "Demand-based innovation policy", *Manchester Business School Working Paper*, Vol. 529.

Several national, regional and local circular economy strategies recognise the role of SMEs in the transition towards a circular economy (OECD, 2018[58]) (Table 3.6). The European Commission has been especially active in this area, including through initiatives that aim to stimulate the demand by SMEs for circular solutions (Box 3.5).

Box 3.5. Engaging SMEs in the transition towards a circular economy: The European approach

In 2015, the European Commission adopted an ambitious Circular Economy Action Plan for stimulating Europe's transition towards a circular economy. Measures cover the whole cycle from production to consumption to waste management, as well as the market for secondary raw materials. In July 2018, a revised legislative framework on waste entered into force, setting clear targets for waste reduction and a long-term path for waste management and recycling.

In 2017, a total of EUR 218 million was earmarked to circular economy projects through the Programmes Horizon 2020 (H2020) and LIFE. After 2021, the HEurope will replace H2020 and is likely to further increase the budget dedicated to promoting the circular economy and to widen its geographical scope (Guerrier, 2018[43]).

In 2019, the EC launched the European Strategy for Plastics in a Circular Economy in order to reduce the leakage of plastics into the environment. Measures aim to transform the way plastics and plastics products are designed, produced, used and recycled. By 2030, all plastics packaging should be recyclable. Special attention is given to boosting a weak demand for recycled plastics that remains a major obstacle to transforming the plastics value chain.

Against this backdrop, accounting for SME difficulties in adopting circular strategies and practices - due to more limited organisational, technological and financial capacity and lesser access to eco-financing-, the EC implemented a range of initiatives in order to boost the demand of circular solutions within the SME sector, including capacity building in SME support organisations (e.g. associations, networks, chambers of commerce etc.), policy advice for regional authorities, and support for providers of circular solutions to match with SMEs.

Sources: EC (2018[59]), A European Strategy for Plastics in a Circular Economy, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN, (accessed on 28 January 2019); EC (2017[60]), Boosting the Circular Economy Amongst SMEs in Europe, https://ec.europa.eu/regional_policy/en/newsroom/news/2017/07/27-07-2017-boosting-the-circular-economy-amongst-smes-in-europe (accessed on 28 January 2019); Guerrier, J. (2018[43]), *World Circular Economy Forum*, https://www.sitra.fi/en/projects/world-circular-economy-forum-2018/#programme.

Table 3.6. Levelling the playing field in lead markets: Selected initiatives for a circular economy

		National strategies and plans for a circular economy
Denmark	Strategy for Circular Economy (2018)	Its first pillar aims to promote circular business development and upscale circular business models in SMEs. Enterprises are to be offered 50% co-financing for the procurement of consultancy and, if needed, the procurement of machinery and equipment.
Greece	Action Plan on Circular Economy	Aims to lift bureaucratic constraints, increase incentives for businesses, enhance knowledge and awareness, and establish conducive governance structures. It plans the establishment of a permanent 'Circular Economy' Dialogue Forum with SMEs, industry and civil society.
Slovenia	Roadmap towards the Circular Economy (2018)	Considers SMEs as important actors in the transition. In the wood chain in particular, SMEs are seen are those who need assistance and support for developing projects and participating in European tenders.
Spain	National Strategy of Circular Economy (2019)	Series of short-term action plans aiming to support the ecological transition by 2030. Identifies five priority sectors in SME-dominated industries: construction, agri-food, industry, consumer goods and tourism.
		Subnational strategies or plans for a circular economy
Scotland	Making Things Last (2016)	Particular support earmarked to SMEs in meeting the new Scottish food waste reduction target of 33% by 2025 or delivering scalable and reproducible building projects in the construction sector.
City of Glasgow	Circular Glasgow Initiative (2017)	Aims to inspire businesses of all sizes to look at their business models differently and adopt new circular design-based strategies. The current phase of work targets SMEs and provide them support, tools and expert knowledge. The Circular Glasgow Initiative is supported by the Chamber of Commerce.
		Horizontal and vertical coordination for a circular economy
Greece	Growth Strategy (2018)	Identifies the circular economy as a priority sector for growth.
Finland	Coordination across the board	Finland ambitions to move towards a regenerative and collaborative economy. Different levels of government actively support SMEs by offering them an environment conducive to development (SITRA, 2016).

Other relevant aspects of market conditions for SMEs and entrepreneurship are related to:

- Institutional and regulatory framework conditions, e.g. administrative burden and stringent regulations, high corporate income and/or labour taxation and high tax compliance costs, (dis)trust in public governance etc. that may increase factor and transaction costs and alter business dynamics and market structure etc.
- Infrastructure, e.g. affordable and quality transport, energy and digital infrastructure that can help reduce factor costs and distance to markets, including foreign markets, create new business segments, increase the scope for product differentiation, network effects and agglomeration economies and help smaller firms achieve scale without mass, etc.
- Access to finance, e.g. broader range of financing options that better fit the heterogeneous needs of the SME population and can help reduce factor costs, or scale-up activities.
- Access to skills, e.g. labour shortages that increase factor costs, especially for smaller firms, and may increase the optimal firm size; new platform-based jobs that may both lower labour costs and raise informality and transaction costs etc.
- Access to innovation assets, e.g. technology diffusion such cloud computing that help lower operation costs and achieve technology leapfrog, open data and open innovation models that bring network benefits and support the rise of new products and niche markets.

Notes

[1] E.g. organisational innovation by reducing transaction costs, competition by lowering factor costs and dissuading predatory pricing of small producers' output, research co-operation by reducing sunk costs or collusion, by raising entry costs.

[2] Although there is not a clear consensus on the nature of this relationship (Symeonidis, 1996[69]).

[3] 62% in federal states and 38% in unitary countries. Subnational governments' contribution can even be significantly higher in federal and decentralised systems such as Canada, Spain, Italy, Switzerland and Sweden. Or lower in more centralised countries such as Greece, Ireland, New Zealand or Slovak Republic where local public procurements are quite limited (less than 20%).

[4] EU law sets minimum harmonised rules for tenders whose monetary value exceeds a certain amount and which are presumed to be of cross-border interest. The European rules ensure that the award of contracts of higher value must be fair, equitable, transparent and non-discriminatory. For tenders of lower value, national rules apply, which nevertheless have to respect general principles of EU law. See thresholds at https://ec.europa.eu/growth/single-market/public-procurement/rules-implementation/thresholds_en (accessed on 18 March 2019).

[5] Partnerships are repeated transactions involving joint business objectives and some degree of knowledge flow (irrespective of equity or contracts). They often take the form of joint ventures or contract manufacturing agreements and they prevail in food processing, chemicals, plastic, metals, machinery and transport equipment (OECD/UNIDO, 2019[67]).

[6] The SME share of total exports varies largely across OECD countries, from less than 10% in Mexico to more than 80% in Latvia. This partly reflects their different weight in tradable sectors and presence in capital-intensive (and exporting) manufacturing and mining industries (see Chapter 1 on SME sector trends and performance).

[7] Abridged from OECD (2018[22]) and (2018[23]), unless specified differently.

[8] The 2017 US Tax Cut and Jobs Act (TCJA) enabled cash held overseas in US foreign affiliates to be repatriated with no additional tax.

[9] The main reason for offshoring production and distribution activities is greater efficiency and lower costs. A second important driver is access to foreign markets as local presence often helps firms better understand and exploit markets abroad. A third driver, which has gained in importance in recent years, is access to knowledge and tapping into foreign knowledge has become an important factor in the internationalisation of R&D activities (OECD, 2013[18]).

[10] A recent OECD study on the impact of FDI on firm-level productivity conducted across 13 countries shows that delocalisation, as measured by a drop in FDI in one region, has a negative impact on local firms' productivity (Lembcke and Wildernova, 2019[33]).

[11] See OECD (2018[40]) for a more comprehensive overview.

[12] Mark-ups are defined as the ratio of unit price over marginal cost. Mark-ups are different from 1 when markets are not perfectly competitive, e.g. when products are differentiated or there are barriers to entry. Other features of production, such as large fixed costs, a high degree of innovation or a high value of embedded intangibles may also rise mark-up pricing (Calligaris, Criscuolo and Marcolin, 2018[68]).

[13] Measured by the average GDP per capita of the richest regions that account for 10% of total population, as compared to the average GDP per capita of the poorest regions that account for another 10% of total population.

References

Accenture (2015), *Creating Advantage in a Circular Economy - Waste to Wealth*. [47]

Autor, D. et al. (2017), "The fall of the labor share and the rise of superstar firms", *NBER Working Paper*, Vol. 23396, http://dx.doi.org/10.3386/w23396. [37]

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. [14]

Beise, M. and T. Cleff (2004), "Assessing the lead market potential of countries for innovation projects", *Journal of International Management*, Vol. 10/4, pp. 453-477, http://www.sciencedirect.com/science/article/pii/S1075425304000547. [56]

Bernard, A. et al. (2007), "Firms in international trade", *Journal of Economic Perspectives*, Vol. 21/3, p. 26, http://www.princeton.edu/~reddings/pubpapers/FirmsTradeJEP2007.pdf (accessed on 29 October 2018). [12]

Caliendo, L. and E. Rossi-Hansberg (2012), "The impact of trade on organization and productivity", *The Quarterly Journal of Economics*, Vol. 127/3, pp. 1393-1467, http://dx.doi.org/10.1093/qje/qjs016. [10]

Calligaris, S., C. Criscuolo and L. Marcolin (2018), "Mark-ups in the digital era", *OECD Science, Technology and Industry Working Papers*, No. 2018/10, OECD Publishing, Paris, https://dx.doi.org/10.1787/4efe2d25-en. [68]

Christopher, M. and L. Ryals (2014), "The supply chain becomes the demand chain", *Journal of Business Logistics*, Vol. 35/1, pp. 29-35, https://doi.org/10.1111/jbl.12037. [27]

Circle Economy (2019), *Circularity Gap Report, https://www.circularity-gap.world/* [49]

Coase, R. (1937), "The nature of the firm", Vol. 4, pp. 386-405. [63]

Contractor, F. et al. (2010), "Reconceptualizing the firm in a world of outsourcing and offshoring: The organizational and geographical relocation of high-value company functions", *Journal of Management Studies*, Vol. 47/8, pp. 1417-1433, http://dx.doi.org/10.1111/j.1467-6486.2010.00945.x. [28]

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://dx.doi.org/10.1787/d8da8760-en. [26]

EC (2018), *A European Strategy for Plastics in a Circular Economy*, European Commission, https://eur-lex.europa.eu/legal-content/EN/TXT/?qid=1516265440535&uri=COM:2018:28:FIN (accessed on 28 January 2019). [59]

EC (2017), *Boosting the Circular Economy Amongst SMEs in Europe*, European Commission, https://ec.europa.eu/regional_policy/en/newsroom/news/2017/07/27-07-2017-boosting-the-circular-economy-amongst-smes-in-europe (accessed on 28 January 2019). [60]

Edler, J. (2007), "Demand-based innovation policy", *Manchester Business School Working Paper*, Vol. 529. [55]

Ellen MacArthur Foundation (2015), *Growth Within: A Circular Economy Vision For A Competitive Europe*, https://www.ellenmacarthurfoundation.org/assets/downloads/publications/EllenMacArthurFoundation_Growth-Within_July15.pdf (accessed on 19 March 2019). [44]

European Commission (2018), *SMEs, Resource Efficiency and Green Markets*, https://publications.europa.eu/en/publication-detail/-/publication/3e0eeaef-0259-11e8-b8f5-01aa75ed71a1/language-en/format-PDF/source-63762994 (accessed on 19 March 2019). [48]

European Commission (2015), *Closing the Loop - An EU Action Plan for the Circular Economy*, https://eur-lex.europa.eu/resource.html?uri=cellar:8a8ef5e8-99a0-11e5-b3b7-01aa75ed71a1.0012.02/DOC_1&format=PDF (accessed on 19 March 2019). [45]

European Parliament (2018), *Public Procurement: MEPs Call for Better Implementation and Use of Quality Criteria*, http://www.europarl.europa.eu/news/en/press-room/20180618IPR06022/public-procurement-call-for-better-implementation-and-use-of-quality-criteria (accessed on 29 January 2019). [51]

Facebook/OECD/World Bank (2018), *Future of Business Survey*, http://www.oecd.org/industry/business-stats/the-future-of-business-survey.htm. [1]

Fons-Rosen, C. et al. (2017), "Foreign investment and domestic productivity: Identifying knowledge spillovers and competition effects", *NBER Working Paper*, No. 23643, National Bureau of Economic Research, http://dx.doi.org/10.3386/w23643. [34]

Furman, J. and P. Orszag (2015), *A Firm-Level Perspective on the Role of Rents in the Rise in Inequality*. [35]

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, http://dx.doi.org/10.1080/09692290500049805. [16]

Gestrin, M. and J. Staudt (2018), *The Digital Economy, Multinational Enterprises and International Investment Policy*, OECD, Paris, http://www.oecd.org/investment/investment-policy/The-digital-economy-multinational-enterprises-and-international-investment-policy.pdf. [15]

Grullon, G., Y. Larkin and R. Michaely (2017), *Are U.S. Industries Becoming More Concentrated?*. [36]

Guerrier, J. (2018), *World Circular Economy Forum*, Yokohama, 22-24 October, https://www.sitra.fi/en/projects/world-circular-economy-forum-2018/#programme. [43]

Hallberg, K. (2000), "A market-oriented strategy for small and medium-scale enterprises", p. 30, http://documents.worldbank.org/curated/en/652031468741329732/585559324_200409289103649/additional/multi-page.pdf (accessed on 5 November 2018). [65]

Honjo, Y., Y. Doi and Y. Kudo (2014), *Consideration on Changes of Market Structure of Major Industries in Japan by the Use of Mobility Index, and the Applicability to the Competition Policy: An Analysis Based on the Degree of Concentration of Production and Shipment*, Competition Policy Research Center Report, Japan Fair Trade Commission. [38]

Humphrey, J. (2004), "Upgrading in global value chain", *ILO Working Paper*, Vol. 28. [17]

IBRD/World Bank (2016), *Benchmarking Public Procurement 2016: Assessing Public Procurement Systems in 77 Economies*, World Bank, Washington, DC, http://dx.doi.org/10.1596/978-1-4648-0276-8. [3]

Kaplinski, R. and M. Morris (2002), *A Handbook for Value Chain Research,* Institute of Developments Studies. [20]

Lembcke, A. and L. Wildernova (2019), "Does FDI Benefit Incumbent SMEs? FDI Spillovers and Competition Effects at the Local Level", *OECD Regional Development Working Papers*, OECD Publishing, Paris. [33]

Lileeva, A. and D. Trefler (2010), "Improved access to foreign markets raises plant-level productivity\idots for some plants", *The Quaterly Journal of Economics*, Vol. 125/3, pp. 1051–99. [9]

Makgill, I. (2018), *How Can the UK Prevent Another Carillion Crisis?*, https://www.open-contracting.org/2018/01/26/can-uk-prevent-another-carillion-crisis/ (accessed on 29 January 2019). [52]

McKinsey Center for Business and Environment (2016), *The Circular Economy: Moving from Theory to Practice*, https://www.mckinsey.com/~/media/McKinsey/Business%20Functions/Sustainability/Our%20Insights/The%20circular%20economy%20Moving%20from%20theory%20to%20practice/The%20circular%20economy%20Moving%20from%20theory%20to%20practice.ashx (accessed on 19 March 2019). [46]

Melitz, M. (2003), *The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity*, https://web.stanford.edu/~klenow/Melitz.pdf (accessed on 29 October 2018). [11]

OECD (2018), *FDI in Figures*, OECD, Paris, http://www.oecd.org/investment/FDI-in-Figures-October-2018.pdf (accessed on 31 October 2018). [24]

OECD (2018), "Fostering greater SME participation in a globally integrated economy", *SME Ministerial Conference Discussion Paper*, http://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Plenary-Session-3.pdf (accessed on 29 October 2018). [7]

OECD (2018), *Market Concentration: Issues paper*, OECD, Paris, http://www.oecd.org/daf/competition/market-concentration.htm (accessed on 2 November 2018). [40]

OECD (2018), *OECD Economic Outlook, Volume 2018 Issue 1*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_outlook-v2018-1-en. [23]

OECD (2018), *OECD Economic Outlook, Volume 2018 Issue 2*, OECD Publishing, Paris, https://doi.org/10.1787/eco_outlook-v2018-2-en. [22]

OECD (2018), *OECD International Direct Investment Statistics Database*, OECD, Paris, https://data.oecd.org/fdi/fdi-flows.htm. [25]

OECD (2018), *OECD Regions and Cities at a Glance 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/reg_cit_glance-2018-en. [41]

OECD (2018), *SMEs in Public Procurement: Practices and Strategies for Shared Benefits*, OECD Public Governance Reviews, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264307476-en. [5]

OECD (2018), *Subnational Governments in OECD Countries: Key Data*, OECD, Paris, http://dx.doi.org/10.1787/region-data-en. [4]

OECD (2018), "The economics and governance of circular economy in cities", Internal Document, CFE/RDPC/URB(2018)4, OECD, Paris. [58]

OECD (2018), *Trade by Enterprise Characteristics Database*, https://stats.oecd.org/index.aspx?DatasetCode=TEC1_REV4 (accessed on 29 October 2018). [13]

OECD (2017), *Banking Sector Leverage*, OECD, Paris, https://data.oecd.org/corporate/banking-sector-leverage.htm. [21]

OECD (2017), "Enhancing productivity in SMEs", Centre for Entrepreneurship, SMEs, Regions and Cities, Internal Document, CFE/SME(2017)14/REV1. [19]

OECD (2017), *Government at a Glance 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/gov_glance-2017-en. [2]

OECD (2017), *OECD Economic Outlook, Volume 2017 Issue 2*, OECD Publishing, Paris, https://doi.org/10.1787/eco_outlook-v2017-2-en. [70]

OECD (2017), *Small, Medium, Strong. Trends in SME Performance and Business Conditions*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264275683-en. [6]

OECD (2017), *The Next Production Revolution: Implications for Governments and Business*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264271036-en. [30]

OECD (2016), *OECD Regions at a Glance 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/reg_glance-2016-en. [42]

OECD (2016), *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, https://dx.doi.org/10.1787/sti_in_outlook-2016-en. [50]

OECD (2015), *The Metropolitan Century: Understanding Urbanisation and its Consequences*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264228733-en. [64]

OECD (2013), *Interconnected Economies: Benefiting from Global Value Chains*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264189560-en. [18]

OECD (2011), *Demand-side Innovation Policies*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264098886-en. [57]

OECD/UNIDO (2019), *Multinational-SME Linkages - Final Report*. [67]

Oliveira Martins, J. and T. Price (2004), "How Market Imperfections and Trade Barriers Shape Specialisation: South-America vs. OECD", *OECD Economics Department Working Papers*, No. 395, OECD Publishing, Paris, https://dx.doi.org/10.1787/236045248654. [66]

Panzar, J. (1989), "Technological determinants of firm and industry structure", in Schmalensee, R. and R. Willig (eds.), *Handbook of Industrial Organization*, Elsevier, https://ac.els-cdn.com/S1573448X89010046/1-s2.0-S1573448X89010046-main.pdf?_tid=50dfe81a-0a68-409f-9d55-e06acd1d53bc&acdnat=1542286198_cdf8acc0699f83816ae4518ad7b4f44b. [62]

Rehnberg, M. and S. Ponte (2016), "3D printing and global value chains: How a new technology may restructure global production", *GPN Working Paper Series*, No. 2016/10, Global Production Networks Centre, National University of Singapore, http://gpn.nus.edu.sg/file/Stefano%20Ponte_GPN2016_010.pdf (accessed on 31 October 2018). [31]

Symeonidis, G. (1996), "Innovation, firm size and market structure: Schumpeterian hypotheses and some new themes", *OECD Economics Department Working Papers*, No. 161, OECD Publishing, Paris, https://doi.org/10.1787/18151973. [69]

UNCTAD (2017), *World Investment Report 2017: Investment and Digital Economy*, United Nations, https://unctad.org/en/PublicationsLibrary/wir2017_en.pdf (accessed on 19 November 2018). [32]

UNEP (2013), *Sustainable Public Procurement: A Global Review*, https://www.globalecolabelling.net/assets/Documents/unep-spp-report.pdf (accessed on 25 January 2019). [54]

Valetti, T. et al. (2017), "Concentration trends in Europe", https://ecp.crai.com/wp-content/uploads/2017/12/Valletti-Concentration_Trends_TV_CRA-002.pdf (accessed on 2 November 2018). [39]

Wagner, J. (2012), "International trade and firm performance: A survey of empirical studies since 2006", *Review of World Economics*, Vol. 148/2, pp. 235-267, http://dx.doi.org/10.1007/s10290-011-0116-8. [8]

Wohlers (2015), *3D Printing and Additive Manufacturing State of the Industry: Annual Worldwide Progress Report*. [29]

World Bank/OECD (2017), *A Step Ahead: Competition Policy for Shared Prosperity and Inclusive Growth*, https://doi.org/10.1596/978-1-4648-0945-3. [53]

You, J. (1995), "Critical survey: Small firms in economic theory", *Cambridge Journal of Economics*, Vol. 19/3, pp. 441-462, https://doi.org/10.1093/oxfordjournals.cje.a035323. [61]

Annex 3.A. Market conditions, efficient firm size and market structure

Market conditions determine the optimal size of firms within the market, i.e. its accessibility to new (and most likely small) entrants, the opportunities and rationale for firms to scale-up - or down – or, in last resort, to exit the market. There are several economic drivers behind firm size evolution and several economic theories that intend to explain shifts in firm size distribution and cross-country and cross-industry differences (see (You, 1995[61]) for a more detailed overview). In fact the great diversity of theories reflects (and accounts for) the large heterogeneity of the SME sector.

Firm size and firm size distribution within an industry or within a country is determined by several factors:

- *First are the **economies of scale**.* Economies of scale are often technology-based and contribute to reduce long-term average unit cost of production, which determines the efficient scale of production. Firms grow up to the minimum efficient size as they achieve increasing economies of scale. The number of active firms within the industry is thereafter given by the market size, i.e. market demand, that sets the total volume of industry output required (Panzar, 1989[62]). External economies of scale are generated by the industry's growth while internal economies of scale are generated by the firm's growth. Likewise the ***economies of scope*** allow firms lowering the average cost of production by diversifying the range of products and services that could be produced with the same asset portfolio.

  Technologies that generate the largest economies of scale tend to be more **capital-intensive.** This explains cross-industry and cross-country variations in average firm size. Typically manufacturing that is more capital-intensive counts larger firms whereas services that are less capital-intensive count more SMEs. The same stands for high-income high-capital versus low-income low-capital countries. However small-scale technologies may have cost advantages due to their greater adaptability to fluctuating demand, by offsetting the disadvantages of achieving lower economies of scale. As an example, the technological change that took place from the industrial Revolution up to the early XXth century contributed to increase the minimum efficient scale of manufacturing plants while the introduction of new materials (like plastics)[1] and ICT in the decades after had the opposite effects in reducing the minimum efficient scale.

  Firm size distribution then varies across countries and industries due to an uneven access to **technology** (or to the **finance** needed for constant upgrading) and to the **skills** needed for managing the change. In this approach, the number of small firms increases during recessions, as wages fall, unemployment rise and out-of-job wage-earners switch to setting up their own businesses.

  Nevertheless firm size expansion through economies of scale remains limited, first by entrepreneur's willingness to take risks and second by inefficiencies

arising from a certain loss of control and growing organisation costs that reduce firm's effectiveness in decision-making and implementation.

- *Second are the **market transaction costs**.* Transaction costs arise from the process of resource allocation (e.g. information, bargaining, contracting etc.) and tend to increase with asset specificity and the difficulty of measuring all aspects of the good/service exchanged. If transaction costs are high, or if the market (e.g. through outsourcing) offers a too costly form of governance for these activities, firms may seek an alternative solution to the market and internalise their governance (Coase, 1937[63]). Firms enlarge as they integrate new functions, up to the point that increasing intrafirm governance costs offset the benefits of **vertical integration** and limit the efficient firm size. The transaction cost theory implies that the efficient firm size can also increase when **organisational innovation** reduce internal bureaucratic costs.

  The transaction and governance costs, and consequently the efficient **governance structure** and firm size, are characteristics of the available technology. The more specific the assets, the larger the firm is likely to become. By contrast flexible manufacturing technologies and technical standards can drive firm disintegration.

  Firm size distribution varies across countries and industries due to differences in technology endowment, the **institutions** in place (e.g. laws, history, power structure, culture, norms and values) and consequently the behavioural standards that can influence technological change.

  Inter-firm **cooperation** provides an alternative to integration as well. A well-functioning cooperation network of small firms can have a competitive advantage over large integrated firms owing to the benefits of flexibility and specialisation (Piore and Sabel, 1984) and informational efficiency (Aoki, 1988). So, if inter-firm co-operation is more widespread, there might be more room for small firms to flourish. The subcontracting system that links Japanese small suppliers to their prime manufacturer within long-term co-operation relationships provides an example of such form of governance of transaction costs. Another example is the industrial districts of Northern Italy where geographical proximity ensures cohesiveness among local institutions and eases co-operation.

- *Third is the **market structure**.* The market structure reflects the distribution of market power and the distribution of firm costs. A firm's market share increases if the costs incurred by the firm are lower (and the firm gets larger). Dominant firms can fix **price** or coordinate pricing, especially when products are homogeneous. Smaller firms are pushed out of business when oligopolists cut prices, e.g. during recessions for adapting to excess capacity. Hence SMEs serve as a buffer to cyclical fluctuations in industrial output.

  Pricing over marginal costs (i.e. **mark-ups)**[2] and the existence of profits as long run equilibrium signal imperfect competition in product markets and monopolistic positions. The entry flow of new firms is insufficient for bringing prices down to average costs. Long-term cost differentials between small and large firms arise from a differential in factor prices and a gap in smaller firms' capacity to access production factors (e.g. finance, skills or innovation assets).

  However, product **differentiation** enables price-setting and market competition. The size of firms serving different market segments may differ. Larger firms tend to produce mass-consumption goods and gain competitiveness through economies

of scale while smaller firms address more specialised and fragmented demand and generate economies of scope. As a consequence, the firm size distribution shifts towards small firms if **flexibility** becomes an important source of competitiveness.

Cross-industry and cross-country differences in firm size distribution reflects disparities in entry conditions (fixed **sunk costs**), the scope for product differentiation (e.g. through R&D and advertising) as well as regulatory and policy framework conditions.

- *Fourth are the **network effects***. Network effects increase as the firm increases its user base. Any additional user adds to the value of the product that can attract an even broader community of users. Beyond a certain threshold of users (critical mass), the revenues cover the production costs and the unit cost decreases. Network effects differ from economies of scale as the production capacity remains unchanged while the demand increases. Therefore network effects can drive firm growth (in terms of revenues, profit or product portfolio) while the firm size (in terms of number of employees or capital investment) remain unchanged. Considerations around the impact of network externalities have become prominent with the rise of the platform economy, the success of online social networks and digital marketplaces.

  Network effects are reinforced by the **interoperability** of systems that improve the connections within and between networks and increase utility and value for internal and external users. Interoperability is in turn reinforced by **standardisation** and/or **co-operation**. **Intellectual property right** (IPRs) can also be instrumental to the diffusion of the technology (e.g. software, protocols), brand, design etc. that gives sense to networking.

  Conversely, firms with a technological leadership can choose to enter the market first, sometimes with a still immature product (beta version), with a view to taking control of resources and growing fast enough to set the market standards. The **first-mover advantage** contribute to create monopolistic positions, if not for the first mover, for the second-mover who would have gained efficiency and competitiveness in the meantime.

  Limitations of network effects are related to risks of **congestion** when the network has reached a volume of users that is detrimental to its efficiency. Other limitations included risks of technology **lock-ins** and, increasingly, **security** concerns (see chapter 4 on infrastructure).

- *Fifth are **agglomeration externalities***. Positive agglomeration economies occur when the spatial proximity of firms, workers and customers allows reducing production costs through both external economies of scale and network effects.

  Knowledge spillovers and agglomeration economies help explain the **spatial concentration** of firms and the increasing attractiveness of urban areas. Different mechanisms underpin agglomeration economies. First, when more firms locate in the area the variety of goods and services increases and greater specialisation is possible as demand for (specialised) local inputs increases. Second, a larger pool of workers allows SMEs accessing a wider spectrum of skills and better filing vacant positions. And third, positive **knowledge spillovers** through staff mobility, trade or foreign investments can increase productivity. Combined together, these

effect can help SMEs reduce costs in accessing resources, infrastructure and markets, and therefore increase their productivity.

Agglomeration costs balance positive agglomeration economies. They arise from the inevitable upward pressure on local natural resources (land, environment, water etc.) and exacerbated competitive behaviours that will tend to increase factor costs and reduce mark-ups. Risks also arise that are associated with economies of scale, e.g. growing **transaction costs** and corruption, and with network effects, including **congestion** and **security** (OECD, 2015[64]).

Overall there is no ideal firm size but an equilibrium size distribution that is determined by resource endowment, technology, markets and institutions (Hallberg, 2000[65]). In addition the firm size distribution evolves over time with changing production terms (factor endowment and economies of scale), disruptive technology and innovation, and changing cost structure, e.g. transportation costs (that can affect the spatial concentration of production and market size) or transaction costs (that can affect business demographics).

Notes

[1] Owing to their low cost, ease of manufacture, and flexibility of use as well as the availability of raw materials, plastics have displaced conventional materials such as wood, paper, metal, ceramic, leather and glass in many industrial applications.

[2] With perfect competition, price equals marginal cost. When prices exceed marginal cost, mark-ups increase. Consequently the greater the mark-ups, the greater the degree of monopoly power.

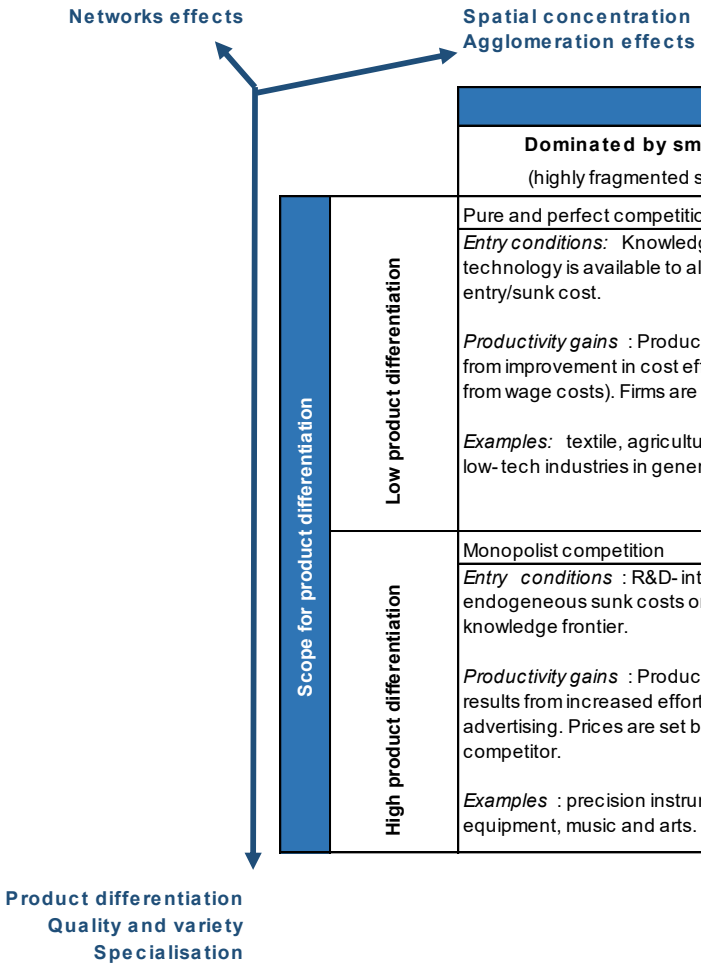
Annex 3.B. SME scale-up dynamics

Annex Figure 3.B.1. What are the drivers behind SME scale-up? A profit-based approach

Increasing turnover		
Channels	**Drivers**	**SME**
↗ Production volume	Internationalisation	
	Product differentiation	*
	Mergers and acquisitions	
	Spatial concentration	*
↗ Price	Product differentiation (vertical)	*
	Quality	*
	Customisation	*
	Sophistication	*
	Specialisation	*

Decreasing costs		
Channels	**Drivers**	**SME**
↗ Economies of scale	Mass production	
	Mergers and acquisitions	
↗ Economies of scope	Product differentiation (horizontal)	*
	Mergers and acquisitions	
↘ Transaction costs	Vertical firm integration	
	Standardisation	*
	Inter-firm co-operation	*
↘ Sunk costs	Inter-firm co-operation	*
	Open data, open innovation	*
↗ Network effects	Inter-firm co-operation	*
	Intellectual property rights	
	Standardisation	*
↗ External economies	Agglomeration	*
	Inter-firm co-operation	*

Annex Figure 3.B.2. How are market structure and scale-up dynamics interrelated? The example of product differentiation



Scope for product differentiation	Market structure: Dominated by small firms (highly fragmented structure)	Market structure: Dominated by large firms (highly concentrated structure)
Low product differentiation	Pure and perfect competition	Cournot's oligopoly
	Entry conditions: Knowledge and technology is available to all. No (or low) entry/sunk cost. *Productivity gains* : Productivity gains result from improvement in cost efficiency (mainly from wage costs). Firms are price takers. *Examples:* textile, agricultural markets, and low-tech industries in general.	*Entry conditions* : Capital-intensive market. Knowledge and technology is known by all. Large entry/sunk costs but exogeneous (i.e. given at the entry in the market). *Productivity gains* : Productivity gains result from an increase in production (quantities) and economies of scale. Firms are price takers. *Examples* : steel, basic chemicals and low- to medium-low-tech industries.
High product differentiation	Monopolist competition	Oligopoly
	Entry conditions : R&D-intensive. High endogeneous sunk costs on R&D at the knowledge frontier. *Productivity gains* : Productivity gains results from increased efforts on R&D and advertising. Prices are set by each competitor. *Examples* : precision instruments, machine equipment, music and arts.	*Entry conditions* : R&D-intensive. Asset-specific. High endogeneous sunk costs on R&D at the knowledge frontier. *Productivity gains* : Productivity gains result from increased efforts on R&D and vertical integration (and lower transaction costs). Prices are set by dominant firms. *Examples* : automotives and low- to medium-low-tech industries.

Source: Oliveira Martins, J. and T. Price (2004[66]), "How Market Imperfections and Trade Barriers Shape Specialisation: South-America vs. OECD", https://dx.doi.org/10.1787/236045248654.

Chapter 4. Infrastructure

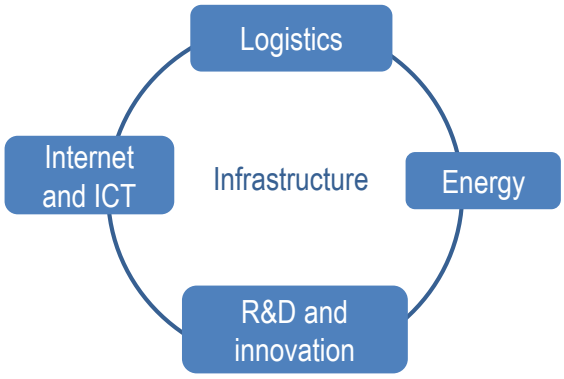
Efficient network and innovation infrastructure are key pillars of business environment. Their accessibility, reliability and affordability are particularly critical for SMEs to compete in just-in-time and knowledge-intensive production systems, to raise their business profile and to scale up internal capacity. Yet, smaller firms are at disadvantage in accessing this infrastructure. They also weather infrastructure deficiencies less well than larger firms. This chapter presents recent developments in transport, energy, digital and R&D infrastructure across the OECD and emerging economies. It explains how network infrastructure has gained in reach, speed and sophistication, how global R&D capacity has grown, more concentrated but more open, and how these changes can affect future SME performance. The report also examines issues relevant to SME business, including increased network interdependency and cybersecurity, 5G deployment and technology adoption, micro-grids and energy decentralisation, shared mobility and the automation of transport systems. The chapter concludes with the main policy approaches adopted in countries to upgrade infrastructure, e.g. by addressing the investment gap, better co-ordinating multi-level government efforts, building smart cities and strategic public-private partnerships, or strengthening international co-operation, and to promote SME access to tomorrow's infrastructure.

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.

Highlights

- ICT are the primary area of infrastructure investment in many countries. ICT infrastructure has been gaining reach and speed. Mobile broadband connections expand exponentially as prices decrease. A new generation of 5G mobile networks is emerging with optimised capabilities for data transfer. SMEs are gradually moving towards high-speed broadband that is critical for their transition towards the next production revolution.
- R&D infrastructure is highly concentrated but increasingly open. Although a massive deployment of new facilities is not expected in the near future, the digitalisation of science will facilitate greater access to scientific data and to more interdisciplinary and open platforms and premises, at the benefit of smaller R&D actors.
- Transport infrastructure has grown in capacity, speed and sophistication. New technologies are likely to make freight transport more affordable for SMEs, as competition and innovation drive prices down and enable more tailored and diversified transport services. At the same time, the shipping crisis is likely to raise additional barriers to SMEs in needs for long distance freight.
- Energy infrastructure is increasingly decentralised and low-carbon. The consolidation of renewable markets give SMEs alternatives for diversifying their energy portfolio. 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.
- Hyper-connectivity increases the vulnerability of the digital infrastructure. Security incidents have grown in sophistication, frequency and magnitude. Personal data breaches have also increased in scale. SMEs that process significant volumes of personal data are likely to adopt new digital security risk management principles.
- Digitalisation also dramatically increases the interconnectedness of network infrastructure which in turn raises the risk of system failure. As a consequence governments adopt a whole-of-government approach in dealing with the complexity and interconnectedness of network infrastructure issues, the smart city being a common model and framework for policy making.
- Efforts are made to pool resources through strategic public-private partnerships or to consolidate infrastructure through roadmaps and system-enabling interfaces. In some countries, SMEs receive targeted policy support aiming to raise their awareness on business opportunities or security issues or to involve them in collaborative research.
- International co-operation on network infrastructure deployment and security is a key area of policy intervention.

Why is it important?



Network (logistics, energy, Internet) and knowledge infrastructure is the foundation of a dynamic business ecosystem. A well-functioning infrastructure ensures secure and cost-efficient access to strategic resources, including data and networks. Quality infrastructure is also critical for firms' entry into distant markets and engagement in global value chains (GVCs). A recent study of the World Trade Organisation shows that logistics and infrastructure costs remain among the major challenges SMEs face in joining GVCs and lead firms within GVC face in finding suppliers (World Trade Organisation, 2016[2]).

Infrastructure is particularly critical for firms to compete in just-in-time production systems in which response time between suppliers and customers has substantially reduced (see the chapter 7 on access to innovation assets). And in increasingly knowledge-based economies, the digital, research and development (R&D) and innovation capacity that is developed at national and subnational levels has become a key driver of global competitiveness (OECD, 2015[1]).

However, as this chapter illustrates, smaller firms are at disadvantage in using the infrastructure that could enable them to raise their business profile and scale up internal capacity. They also weather deficiencies in infrastructure less well than larger firms (see the chapters 3 and 7 on market conditions and access to innovation assets).

Transport infrastructure is a key enabler of agglomeration and connectivity and can influence the decision of where to locate new enterprises. Past OECD work has shown that location choices and firm creation are positively affected by the connectivity of a neighbourhood to the expressway network (OECD, 2016[2]). In the case of the West Coast expressway in Korea, for example, micro manufacturing establishments with less than 10 employees are those who benefited the most from proximity. Likewise air connectivity can help attract foreign direct investment (FDI) and the most talented individuals who also tend to be the most internationally mobile (Oxford Economic Forecasting, 2006[4]) (OECD, 2018[3]). Transport infrastructure is an important issue for domestic connectivity, especially in large countries, and it is critical for reducing geographical inequalities.

However, logistics tend to cost more to SMEs than large enterprises. SMEs trade smaller cargos and at a more irregular frequency, which contributes to increase the fixed costs they incur for trading within and across borders. Logistics constraints are particularly acute in industries characterised by fast technological obsolescence, "no stock" supply chains, the transportation or transformation of perishable commodities, or seasonal or fashionable demand. And geographical distance tends to further accentuate cross-firm distortions in transport and logistics costs.

In addition to the relative extra costs they incur for logistics purposes, SMEs face difficulties in accessing efficient transport and storage services. Beyond roads, ports and airports, trade logistics include a wide range of services, from pick-up and collection to storage to transport to distribution, for which SMEs often rely on logistics providers as they lack information, experience and scale to handle the full process on their own.

Cross-country evidence shows that, for manufacturing firms, logistics costs as a share of revenues are on average more than twice higher for firms with less than 250 employees than for large firms with more than 1 000 employees (Handfield et al., 2013[4]). In Latin America, domestic logistics costs can add up to more than 42% of total sales for SMEs, as compared to 15-18% for large firms (WTO, 2016[5]).

Energy infrastructure matters for SME operations although smaller firms are typically less energy intensive and incur relatively lower energy costs in proportion of their overall costs. Improving energy efficiency could bring multiple benefits to SMEs, including reducing intermediary consumptions and costs, raising product quality and visibility, improving operations and workplace environment, gaining access to new markets, reducing vulnerability to energy price volatility or ensuing compliance with environmental standards (UNEP, 2010[6]; IEA, 2014[7]). Gains from energy efficiency improvements for SMEs are estimated from 10% to 30% of their energy demand (IFC, 2012[8]; Eurochambres, 2014[9]; Thollander and Palm, 2013[10]).

SME greening is likely to bring broader benefits in terms of environmental sustainability. The introduction of renewable energy technologies in the SME sector can contribute to reduce overall dependency on fossil fuels. Substitution could be all the more facilitated as SME lower energy intensity allows them using a greater range of technology mixes. It is estimated that, for several industrial applications, more than 50% of energy consumption can be provided through a portfolio of renewable sources, such as biomass, solar thermal system, geothermal or heat pumps. (IRENA, 2014[11]). Among the smart solutions suitable for SMEs are micro-grids that incorporate renewable sources of energy into conventional electricity grids with the help of information and communication technologies (ICT) for management and control purposes and enable small-scale energy production and management. The benefits of energy efficiency improvement differ across industries and value chain configurations (IEA, 2014[7]).

Yet, few SMEs engage efforts towards greater energy efficiency or low-carbon solutions. Less than 40% of SMEs in the EU adopt efficiency measures, while only 4% have a comprehensive and coherent approach to energy efficiency (EC, 2014[12]). Barriers to energy efficiency improvements and the deployment of renewable technologies in SMEs are manifolds. Energy savings are often not a top investment priority for small firms. 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, are frequent obstacles (IEA, 2015[13]; IRENA, 2014[11]). A lack of standardisation and regulation also limits the deployment of micro-grids (Wouters, 2014[14]).

ICT infrastructure is critical for sustaining digital diffusion among SMEs and SME participation in the next production revolution (see chapter 7 on access to innovation assets). Results of a sample survey of UK firms with low-speed and high-speed internet connection show that greater ICT intensity[1] is positively related to firm level productivity (OECD, 2015[15]). Other studies on German and Irish firms pointed out that the use of broadband connections has a positive and significant impact on their innovation activity (Bertschek, Cerquera and Klein, 2013[16]; Haller and Lyons, 2015[17]). Recent OECD

analysis also shows that catching up with the best performing countries in terms of high-speed internet could substantially increase productivity (Sorbe et al., 2019[18]).

Accessing high speed networks allows SMEs and entrepreneurs connecting to suppliers and customers, obtaining real-time information and providing real-time responses to fast-evolving markets and supply chains. High speed digital networks also enable smaller-scale businesses building digital capacity (e.g. through cloud computing services) without the upfront and maintenance investments they used to incur (Box 4.1). At a time when data access is more than ever strategic to the firm, the combined application of the Internet of Things (IoT), machine-to-machine communication and big data analytics open tremendous market opportunities (OECD, 2017[19]), (OECD, 2016[20]), that require high SME digital connectivity in order to provide their full benefits (see chapter 7 on access to innovation assets).

Fears of loss of control on data and mistrust around data integrity and security remain however major obstacles to CC adoption, SMEs showing more reluctance than large firms (OECD, 2017[21]).

Firms of all size classes tend to purchase more cloud computing services when they also have access to enhanced broadband infrastructure (Figure 4.2), highlighting the importance of quality broadband networks for digital service accessibility and adoption. Whereas the digital gap, i.e. lower ICT access and use, increases as firms get smaller, the relation between CC diffusion and high-speed broadband penetration remains constant across all firm size classes.

Yet, SMEs lag in their high-speed broadband connections as compared to large firms (Figure 4.2). Despite wide variations across countries, business surveys on ICT use show a universal and growing connectivity gap as firms get smaller. The poorest penetration rates were observed in 2018 in Greece, Colombia[2] and Italy where less than 10% of all firms with more than 10 employees were connected to fixed high-speed[3] broadband in particular small firms. Small firms were however ten times more likely to be connected to fixed high-speed broadband in Sweden (41%%), Denmark (40%) or in Portugal (36%) than in Greece (3%). The digital gap between small and large firms was of over 1 to 5 in Iceland and over 1 to 4 in Estonia, Italy and the United Kingdom.

In addition to the barriers they face in terms of awareness, skills and finance for connecting to ICT infrastructure, SMEs often do not have the resources or expertise for effectively assessing cyber-risks and implementing appropriate prevention and management measures. As a consequence SMEs offer "smaller target" for cyber-attacks, with risks of a systemic contamination of complex digital systems. In addition, smaller firms may weather less well temporary losses of reputation, consumer trust or revenues they could incur following a digital security incident. On the positive side, SMEs that can demonstrate robust digital security and privacy practices may have a competitive edge in setting partnerships and business relationships with larger corporations.

R&D infrastructure is a key constituent of innovation ecosystems. It serves as a catalyst for attracting world-class researchers, business R&D centres, start-ups and international foreign direct investment (FDI) (OECD, 2016[20]). World-scale research infrastructure acts as platforms of international scientific co-operation and could become nodes within global innovation networks (OECD, 2015[1]). For instance a determinant criteria for European firms to invest in bio-based R&D is the availability of knowledge infrastructure (Suurs and Roelofs, 2014[22]).

Box 4.1. Cloud computing: which opportunities for SMEs?

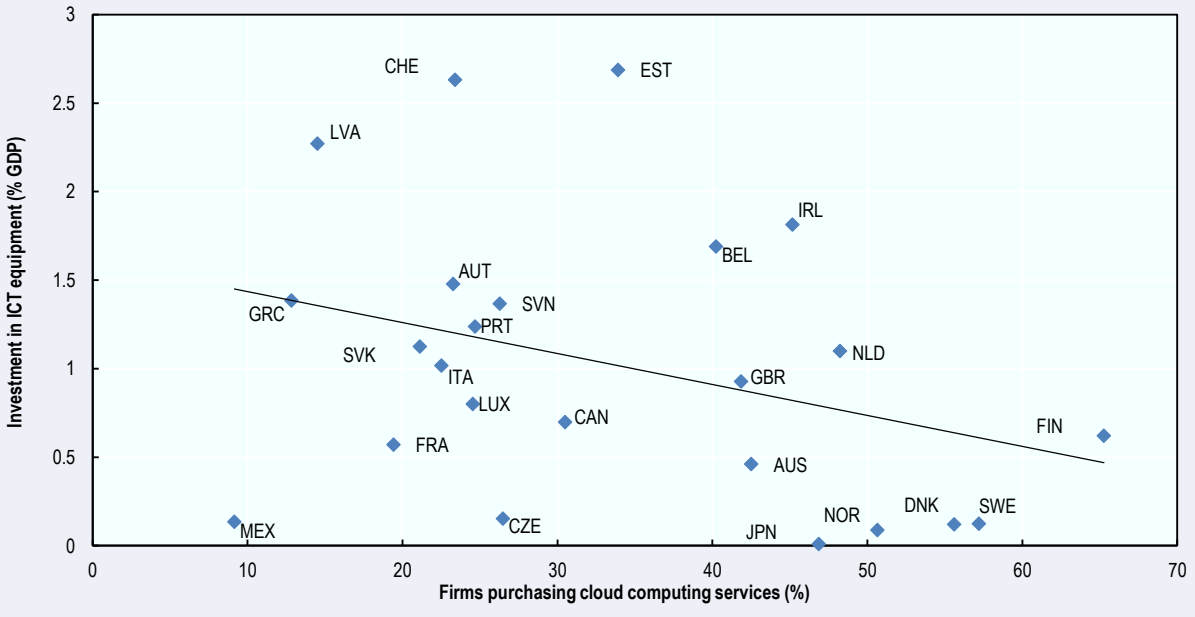
Cloud computing (CC) offers new opportunities for SMEs to access online extra processing power or storage capacity, as well as databases and software, in quantities that suit and follow their needs. Overall, the first uses for which firms turn towards CC are email services and storage capacity, then accessing office software and hosting databases (OECD, 2017[23]). Consequently, CC also supports the diffusion of other technologies as well as new organisational or marketing practices (see chapter 7).

In addition to its flexibility and scalability, CC reduces costs of technology upgrading by exempting firms of upfront investments in hardware and regular expenses on maintenance, IT team and certification. In fact higher adoption rates of cloud computing are associated with lower intensities of ICT investment in equipment (Figure 4.1), firms moving towards an ICT management model that is more based on software acquisition and digital connectivity.

Source: OECD (2017[23]), *OECD ICT Access and Usage by Businesses Database*, https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 18 July 2018).

Figure 4.1. Cloud computing allows firms reducing investment on ICT equipment

Intensity of ICT investment in ICT material and cloud computing diffusion rates, 2017 or latest year available



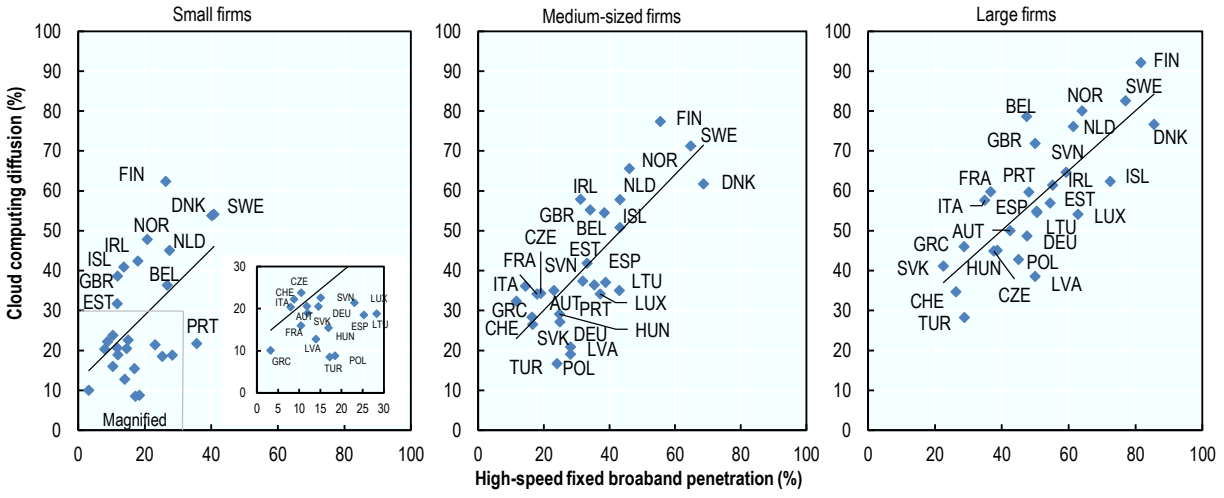
StatLink http://dx.doi.org/10.1787/888933924457

Note: Investment in ICT material are gross fixed capital formation (GFCF) in computer hardware and telecommunications equipment, expressed as a % of GDP. Cloud computing data cover firms with 10 and more employees.

Sources: OECD (2019[24]), *OECD National Account Database 2019,* http://www.oecd.org/sdd/na/ (accessed on 12 February 2019); OECD (2019[25]), *OECD ICT Access and Usage by Businesses Database 2019*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed 12 February 2019).

Figure 4.2. SMEs lag in connecting to high-speed broadband can jeopardize their digital transformation

High-speed fixed broadband and cloud computing penetration rates by firm size class, 2018



Note: High-speed fixed broadband penetration rate is the percentage of businesses with a broadband download speed of at least 100Mbit/s. Cloud computing diffusion rate is the percentage of businesses that purchased cloud computing services in 2018. Firm size classes are defined by employment size. Small firms employ 10-49 employees; medium firms 50-249 employees and large firms more than 250 employees. Data for Japan are collected following a different methodology and exclude firms with less than 100 employees. Data for Switzerland are for 2015. Data for Iceland are for 2014 (CC) and 2013 (broadband).
Source: OECD (2019[25]), *OECD ICT Access and Usage by Businesses Database 2019*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed 12 February 2019).

StatLink http://dx.doi.org/10.1787/888933924476

Whereas most SMEs lack both financial resources and skills for establishing and maintaining internal R&D capacity, nearby R&D facilities may be a gateway towards cutting-edge technologies and premises, and a medium for acquiring new data and scaling up scientific networks. Public research facilities in particular play a key role in bringing together public and private interests, resources and talents. E-infrastructure including e-libraries and databases can also assist in making R&D outcomes accessible to SMEs. Beyond facilities, labs and technology platforms, formal and informal R&D networks that bring together actors across disciplines, sectors and borders also contribute to consolidate R&D infrastructure, which may benefit SMEs.

Infrastructure capacity and performance: Recent trends

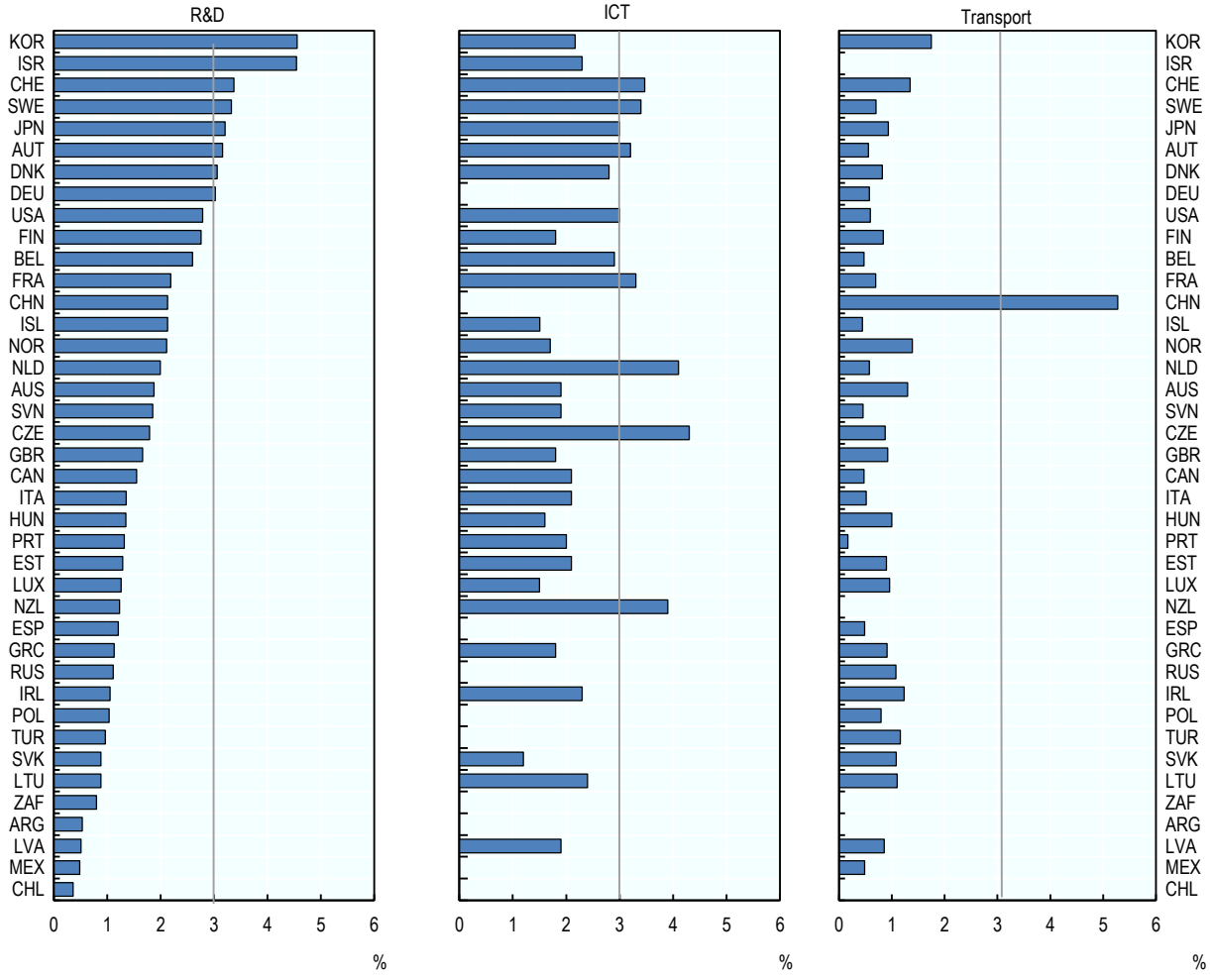
ICT are the primary area of infrastructure investments in most countries as per their intensity of expenditure on computer hardware, telecommunications equipment, and software and databases (Figure 4.3). The Czech Republic and the Netherlands invested more than 4% of their GDP in developing and expanding their ICT capacity in 2017. The intensity of ICT investments ranges from 1.2% (Slovak Republic) to 4.3% (Czech Republic) of GDP in the countries for which data are available.

Financial efforts on R&D were also significant, especially in top R&D performers such as Korea and Israel that spent more than 4.5% of GDP on R&D in 2017. But the intensity of R&D varies significantly across countries reflecting cross-country gap in R&D capacity. Apart from Israel and Korea, only Switzerland, Sweden, Japan, Austria, Denmark and

Germany spent more than 3% of GDP on R&D in 2017. Most countries remain below a 2% threshold.

Figure 4.3. ICT are the primary area of infrastructure investment in most countries

R&D, ICT and transport infrastructure investment, as a percentage of GDP, 2017 or latest year available.



Notes: R&D investments are gross R&D expenditure (GERD). R&D data refer to 2017 except for Argentina Chile and Mexico (2016), Australia, New Zealand, Switzerland and South Africa (2015), and Austria (2018).

Transport investments are total inland transport investment, i.e. investment and maintenance expenditures on rail, road and inland waterways infrastructure, including expenditure on new construction and extension of existing infrastructure, reconstruction, renewal and major repairs. Transport data refer to 2016, except for the United States (2015), Switzerland (2014), Netherlands (2011) and Ireland (2007).

ICT investments are gross fixed capital formation in ICT material, including computer hardware and telecommunications equipment, and computer software and databases. Data for Iceland correspond to business investment in office machinery and computers. Data for Korea are OECD calculations based on detailed national Input-Output Tables supplied by the Bank of Korea and OECD Annual National Accounts SNA08. ICT data refer to 2016 except for Latvia, Norway and Spain (2014) and Iceland and Korea (2015).

Sources: OECD (2019[26]), *OECD Main Science and Technology Indicators Database 2019*, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB; OECD (2019[27]), *OECD International Transport Forum Database 2019*, OECD, Paris; OECD (2019[24]), *OECD National Account Database 2019,* http://www.oecd.org/sdd/na/ (accessed on 12 February 2019).

StatLink http://dx.doi.org/10.1787/888933924495

The intensity of transport investments is more homogeneous across countries, ranging on average from 0.5% to 1.75% of GDP in 2016. China stands out as an exception with 5.27% of its GDP invested in inland transport development. Conversely, Slovenia (0.47%) and Iceland (0.44%) rank comparatively low.

If ICT followed by R&D remain the largest infrastructure investments in most countries, investment profiles vary across countries. Switzerland show high profiles on R&D (3.37%), ICT (3.47%) and transport (1.34%). Sweden combine high ICT and R&D investments. Denmark, Finland, Germany and Japan invest slightly more on R&D than ICT, whereas Israel and Korea invest 2% more of their GDP on R&D than ICT. In addition Korea has high investment profile on transport. Likewise, Australia and Norway spent over 1.3% of GDP on transport extension and construction.

ICT infrastructure is gaining reach and speed, but not without risk

Fixed and mobile broadband subscriptions have continued to increase in the OECD, reflecting their complementarity (Annex 4.1). But mobile broadband has expanded much faster (by a factor of more than 5 in seven years), worldwide subscriptions increasing from 824.5 million in 2010 to 4.8 billion end 2017 (ITU, 2018[28]). In parallel, fixed broadband subscriptions have increased by a factor of less than 2, reaching 1 billion end 2017 up to 532 million in 2010 (ITU, 2018[29]). In 2017, the OECD average penetration rate was 30%, with Switzerland (47%), Denmark (43%), France (43%) and the Netherlands (42%) heading the ranking (OECD, 2018[30]). But a clear slowdown in fixed subscriptions was noticeable as compared to previous years, especially in countries that had already achieved the highest penetration rates.

Prices in both fixed and mobile broadband have decreased and mobile plans are increasingly being priced based on data usage rather than telephony, mirroring the rapid increase in the demand for mobile data in the market (OECD, 2017[21]).

Speed has also improved. Mobile networks are upgrading to the 4th Generation (4G) and former 2G networks are progressively switched off (e.g. Telstra and AT&T in Australia and the United States in 2016; all 2G networks in Singapore in 2017; Canada and Switzerland between 2018 and 2021). The popularity of smartphones has prompted consumers to move gradually to 3G and 4G, the number of towers providing a 4G coverage continuing to increase.

In the meantime a new generation of 5G mobile networks is emerging with optimised capabilities for data transfer. The 5G technology has the potential to bring the IoT and data analytics developments to a new scale. Business applications are potentially significant as 5G provides a management and operational architecture for supporting the implementation of smart factories, the design of digital twins or fleet management (e.g. through enhanced real-time data exchange between several billion smart devices, remote control and automation, data analytics and predictive intelligence) (see chapter 7 on access to innovation assets).

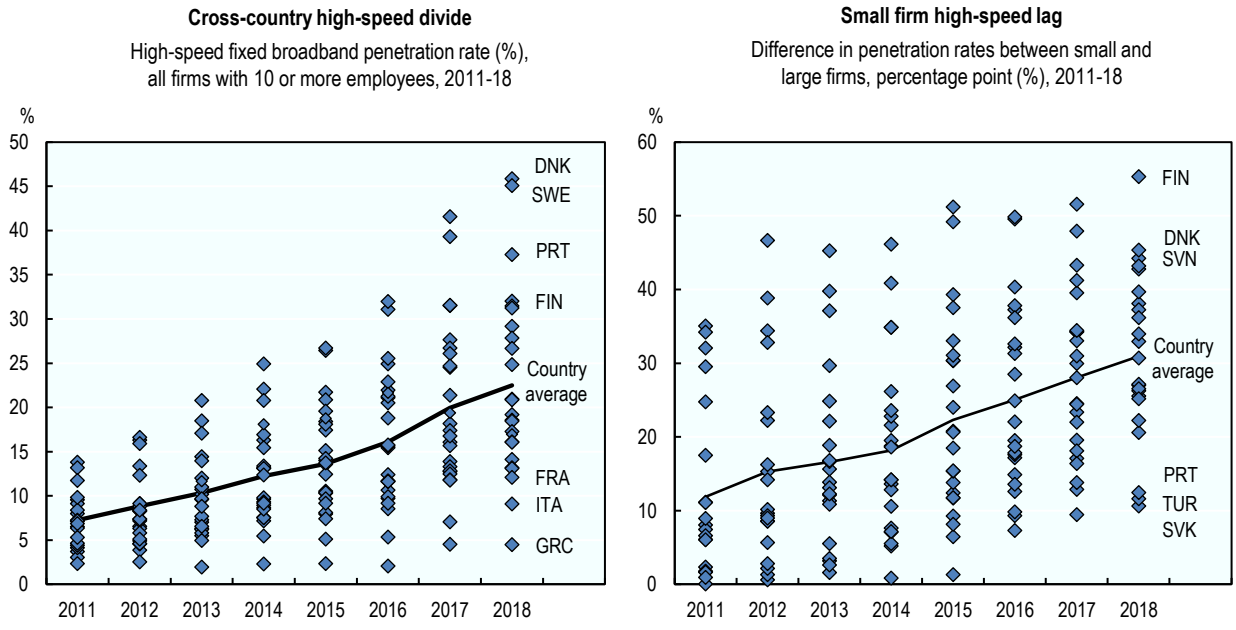
The adoption of non-standalone 5G standards end 2017 gave the signal to the industry for a full-scale and cost-effective development of 5G networks, carriers worldwide announcing new deployment plans. Although the time when 5G will deliver its full benefits remains a way ahead (the hardware, infrastructure, chips, modems, phones, and antennas being still to be built)[4] a new upgrading cycle has started. In July 2018 Nokia and T-Mobile (Deutsche Telekom) signed a landmark 5G deal for USD 3.5 billion with the ambition to supplying America with the hardware and end-user 5G technology,

software, and services.[5] Ericsson signed up a similar deal with T-Mobile in September, foreshadowing that the 5G battle has kicked off between the big names in telecoms.[6]

Offers of fixed broadband at 1 Gigabit/sec are also increasingly common across OECD countries, particularly where the fibre or upgraded cable broadband networks are available (OECD, 2017[21]). Drivers of the fast deployment of high-speed infrastructure include population density (e.g. in high density countries or urban areas) and high competition between operators. In fact, Internet service providers are increasingly diversifying their offers beyond the usual cable-TV set-top box, for instance by proposing new video and gaming contents. Shifting business models are however likely to severely challenge municipal and publicly-owned networks that use to bridge the digital gaps in remote regions, cities or smaller towns and which business model is more oriented towards providing utility-like infrastructure than services.

Firms are increasingly moving towards high-speed fixed broadband (Figure 4.4). Business demand for high-speed infrastructure has been stimulated by more affordable access prices and the market prospects of a vibrant Apps economy. Business surveys on ICT access and usage show that on average 23% of European firms with 10 or more employees had high-speed connection in 2018, up from 7% in 2011. However these numbers hide wide and growing disparities.

Figure 4.4. Firms are moving towards high-speed broadband but digital divides are widening



Note: High-speed fixed broadband penetration rate is the percentage of businesses with a broadband download speed of at least 100Mbit/s.
Source: OECD (2019[25]), *OECD ICT Access and Usage by Businesses Database 2019*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed 12 February 2019).

StatLink http://dx.doi.org/10.1787/888933924514

The cross-country digital divide in terms of high-speed broadband adoption has enlarged in the current decade. While high-speed infrastructure remains in the infancy in Greece

and Italy with little new deployment over the period, Denmark, Sweden and Finland have consolidated their advance, Spain, Portugal and the Netherlands have caught-up and Austria, the Czech Republic and France have lost pace in digital developments.

In the same period, cross-firm digital divide has also enlarged, with smaller firms loosing ground in the transition. Fixed high-speed broadband penetration rates have increased faster among large firms than among smaller firms in all European countries for which data are available. The largest gaps were recorded in Finland, Denmark and Slovenia where 82%, 86%, 59% of large firms have high-speed connection in 2018 as compared to 26%, 40% and 15% of small firms respectively.

In addition, hyper-connectivity makes digital infrastructure more vulnerable. The increasing connectivity of data-intensive activities adds layers of complexity, volatility and dependence on existing infrastructures and processes (OECD, 2017[21]). In particular, as digital services are increasingly connected and extending beyond the reach of a single jurisdiction and control institution, the risks of systemic failures are likely to grow and new governance challenges for businesses and governments to emerge.

Digital security incidents appear to be increasing in terms of sophistication, frequency and magnitude of influence. Incidents, including viruses (malware), phishing[7] and social engineering,[8] or denial of service (DoS)[9] attacks, can disrupt the availability, integrity or confidentiality of information and information systems. Malicious attacks may be initiated by criminal organisations that have become increasingly active in the domain, or for the purposes of industrial digital espionage or government offensive intelligence. If viruses remain the most common type of cyberattacks, the DoS attacks are growing rapidly both in terms of the number of incidents and their sophistication.

All incidents are however not malicious and unintentional breaches in privacy could also result from misuses of personal data, e.g. due to an employee's inadvertence, or accidental losses of data. Personal data breaches have increased in terms of scale and profile in recent years (OECD, 2017[21]).

Although large and small organisations have been subject to more frequent and severe cyberattacks, converging evidence indicates that the risk and frequency of the incidents increases with firm size (and the intensity of ICT use). UK survey data of 2015 showed that the most common security incidents faced by SMEs were infection from viruses or malware (63% of SMEs surveyed), attacks by an unauthorised outsider (35%) and staff-related breach (27%). Major risks relate to processing payment and confidential data. Also, in some sectors such as health, law or finance, SMEs will tend to process significant volumes of personal data (OECD, 2016[31]).

With the IoT, the risk of security incidents is likely to increase, the IoT components becoming both targets of attacks and channels for disrupting physical systems. As the IoT bridges the digital and the physical world, cyberattacks could increasingly alter the functioning of control and monitoring systems (e.g. self-driving cars, medical devices etc.) or defence and security systems and disrupt the supply of essential services (e.g. electricity, heating, water, finance, transport), with lethal consequences.

Similarly the risk of online fraud is poised to grow with the rise of e-commerce practices; and privacy risks are to amplify with the proliferation of big data and the use of data analytics for mining data.

As a consequence, SME ability to include digital security risk management in their operational protocols will become increasingly important for their integration into the

global economy. In addition, SMEs that are well-aware of the risks incurred and prompt to implement appropriate solutions would contribute to strengthen resilience to systemic failure.

R&D capacity is increasing worldwide but in more concentrated and open infrastructure

Scientific research depends on latest technological developments and increasingly expansive research infrastructure. While this has long been the case in physics, the situation is new in other research areas, such as the social sciences and humanities. These expenses cover the deployment and maintenance of large international infrastructure and experimental facilities, such as telescopes or synchrotrons, biobanks and high performance computer centres, but also smaller-scale technology platforms, libraries and information archives.

Global R&D capacity has doubled in the last 15 years (OECD, 2016[20]). Two main factors are behind this remarkable expansion. First is a continuous increase in business R&D expenditure, especially during times of economic growth. Second is rising capacity in new geographical areas, especially China that roughly doubled its share of world R&D every ten years since early 1990s.

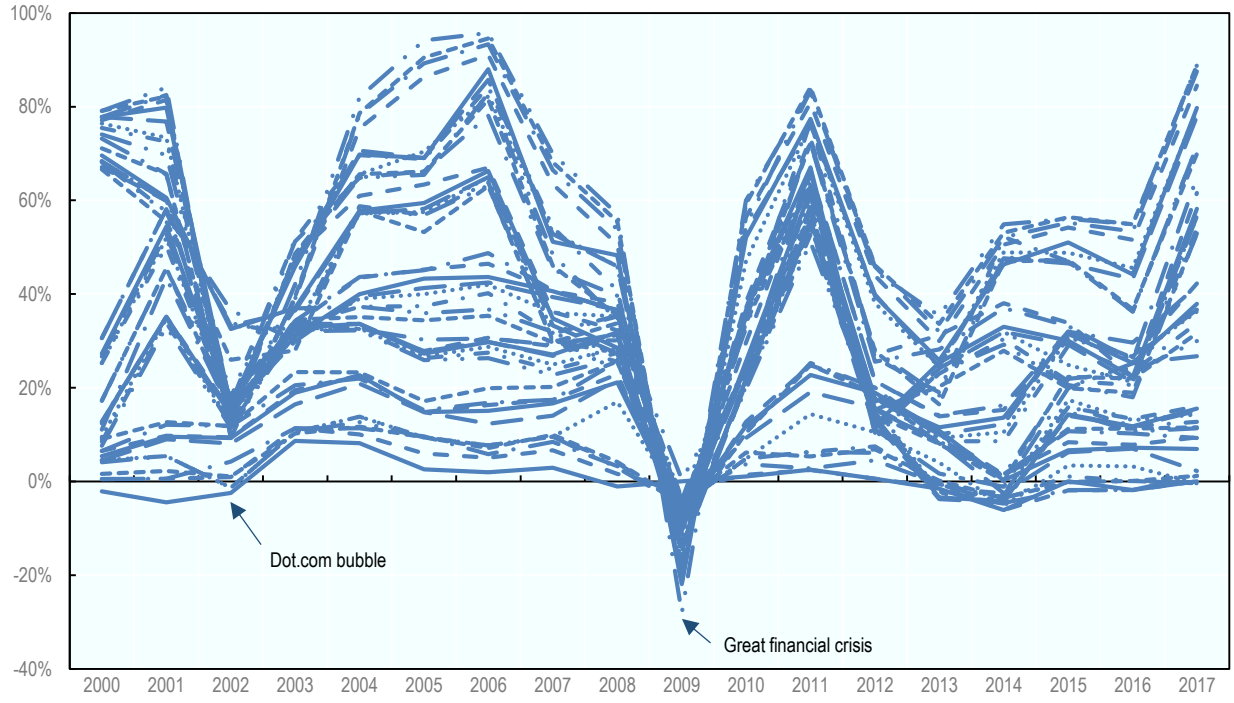
Global R&D capacity keeps expanding driven by a sharp rebound in business investment in 2017 (Figure 4.5). World business R&D has experienced a seventh consecutive year of growth as economic conditions and market prospects improved. Business R&D is now 28% higher than before the great crisis and firms accounted for the first time in 2017 for more than 70% of all the R&D performed in OECD countries (OECD, 2019[26]). Some high-performing countries have however showed weaker performance with decreasing business expenditure on R&D (BERD), including Australia (-5.2% annually between 2013 to 2015), and Canada (-4.9% and -0.1% in 2016 and 2017 after several years of decline). At +10.4% (2016) and +8.1% (2017), R&D expenditure by Chinese companies remains extremely dynamic albeit subdue as per historical standards (+16.9% before the great financial crisis).

However the share of BERD that is dedicated to finance capital investment is decreasing in many countries (OECD, 2019[26]). In fact, most of BERD serves to cover salary expenses and labour costs and a small share of the total is used for capital investment (Figure 4.6). This share varies significantly across countries. In catching-up economies, firms tend to earmark a larger share of BERD to capital investment. Yet in most countries and at various stages of R&D development, R&D capital costs have been increasing more slowly than labour costs between 2007 and 2016, reflecting the influence of several factors on salaries, including higher demand for research skills globally and a closing wage gap in emerging economies.

Business R&D capacity remains highly concentrated in a few firms, a few sectors and a few regions. 2 500 large companies invested in 2017-18 for a total of EUR 734.6 billion in R&D, i.e. about 90% of world's business-funded R&D. 36% of total industrial R&D is performed by the top 50 companies and 48% by the top 100. A few sectors, ICT, health and automotive industries account for 75% of total spending (EC, 2018[32]) (OECD, 2019[26]). And R&D resources are also highly spatially concentrated, often in capital city regions (OECD, 2018[33]).

Figure 4.5. Global business R&D investment rebounded in 2017

Business R&D expenditure (BERD), compound annual growth rate (%), OECD countries and selected emerging economies, 2000-17



Source: OECD (2019[26]), *Main Science and Technology Indicators*, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (accessed on 03 October 2018).

StatLink http://dx.doi.org/10.1787/888933924533

A massive deployment of new R&D infrastructure is not expected in the near future. There are several factors that limit future private and public investments on R&D. First mitigated growth prospects are likely to weigh on BERD and future investment will increasingly be absorbed into labour costs rather than capital expansion as R&D systems become more sophisticated; all the most as rising competition for talents puts an upward pressure on research wages. Second, public R&D budgets are likely to plateau around current levels (OECD, 2016[20]).

A new use of research infrastructure is however possible, at the benefits of smaller actors. The digitalisation of science will facilitate greater access to scientific data. Open data has the potential to make research system more effective by reducing duplication and enabling the same data to be used and re-used by different actors and generate more research. Under the combined effects of open science, digital technologies and greater accessibility of data and knowledge, citizen science or "do-it-yourself science" initiatives are to keep multiplying, citizens conducting their own experiments or even maintaining their own facilities or sharing publicly-accessible facilities (OECD, 2016[20]).

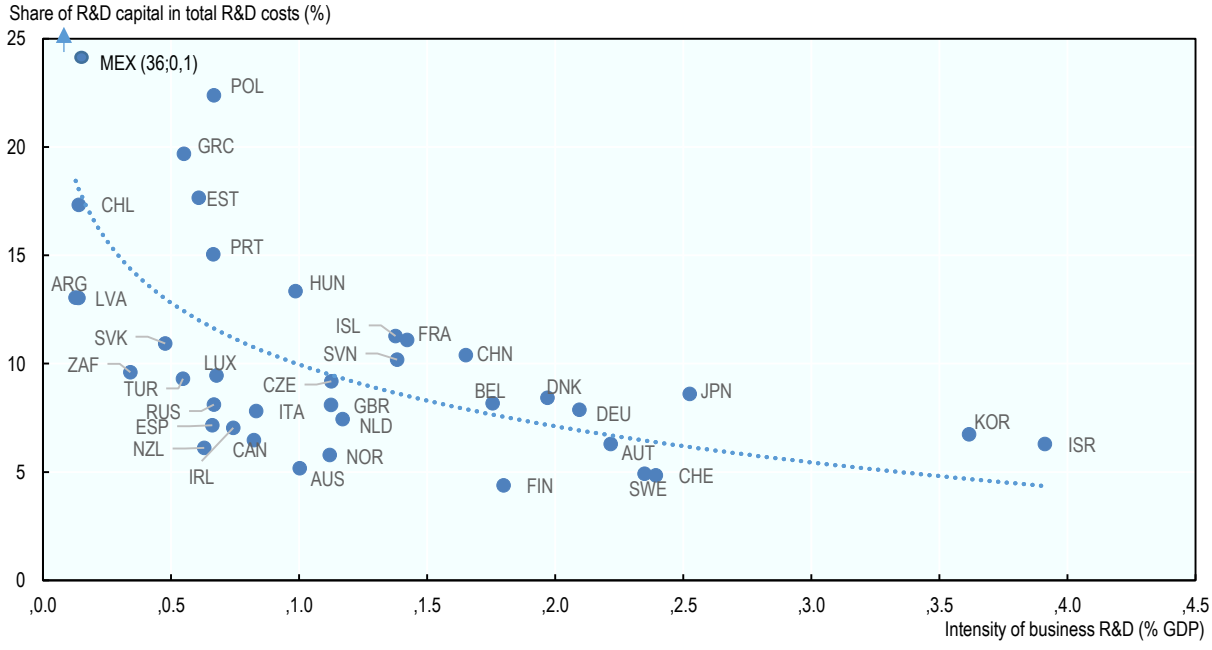
Transport networks have grown in density, speed and sophistication.

The transport sector is in constant evolution (Box 4.2). Developments remain closely related to economic activity and international trade, oil price fluctuations playing also a

role. Preference between different modes of freight is also determined by the type of commodities transported and the distance to cover.

Figure 4.6. R&D capital investment grows at a slower pace than research salaries

BERD intensity as a % of GDP and share of BERD spent on R&D capital, 2017 or latest year available.



Note: R&D capital costs include land and buildings, machinery and equipment, capitalised computer software and other intellectual property products. Data refer to 2015 except for Canada (2017), Argentina, Chile, China, the Czech Republic, Iceland, Japan, Korea, Mexico, Norway, the Russian Federation and Spain (2016), France (2014) and South Africa (2013). Data for business R&D intensity refer to 2017 except for Argentina, Chile and Mexico (2016) and Australia, New Zealand, South Africa and Switzerland (2015).
Source: OECD (2019[34]), *OECD Research and Development Statistics Database*, www.oecd.org/sti/rds (accessed on 08 March 2019).

StatLink http://dx.doi.org/10.1787/888933924552

Transport infrastructure has spread and densified, as roads and rails reached new areas and airports grew in size or scope. A representation of international freight routes including roads, rail, sea and air (Main policy approaches and recent policy developments

Typically, market and system failures discourage large-scale investments and partnerships that would be needed for strengthening and maintaining quality infrastructure.

Governments play a key role as coordinator, helping the various stakeholders adopt a common vision and design a comprehensive strategy. They serve as facilitator in building public-private partnerships, implementing system-enabling instruments (e.g. interfaces, platforms) or setting standards, etc. They encourage and steer international cooperation. Some of these initiatives particularly target SMEs.

Adopting a whole-of-government approach…

Infrastructures conjure an association of physical networks for transportation, communication and utilities. These diverse networks are becoming more and more interconnected, as they facilitate the flow of people, goods, resources and information deeply influencing the structure of cities and metropolitan regions as well as of nation states. In a broader sense today's "infrastructure space" extends from the grids of pipes and wires to the pools of microwaves beaming from satellites and the shared global standards that allow them to be connected to each other (Easterling, 2014[35]).

For instance, logistics beyond transportation or trade facilitation is now part of a broader agenda that includes services, the development of facilities, infrastructure, and spatial planning. As they increasingly look at logistics not only from the perspective of reducing trade costs at the border, but for the many positive externalities this large sector can bring to the economy and environment, governments are confronted to a complex set of reforms and measures to implement. As a result, many countries have engaged in comprehensive strategy exercises, with a strong focus on strengthening public-private dialogue and private sector participation in infrastructure development (OECD, 2017[36]; ITF, 2017[37]).

Special challenges also affect geographically distributed infrastructures that are often decentralised administratively and financially.

In such a vast and complex space, a whole-of-government approach including ministries, departments and agencies across different levels of jurisdiction becomes necessary in order to take account of interrelated effects and cross-cutting and diverging interests (Table 4.1). Governments also adopt more participative forms of governance, with small businesses increasingly involved in policy debate and policy making process, e.g. through public consultations or multi-stakeholders discussion mechanisms.

Table 4.1. A whole-government and multi-level approach to infrastructure: Selected country examples

A whole-of-government approach		
Australia	Infrastructure Australia	Independent statutory body with a mandate to prioritise and progress nationally significant infrastructure. Infrastructure Australia provides independent research and advice to all levels of government as well as investors and owners of infrastructure. It is responsible for strategically auditing nationally significant infrastructure, and developing 15-year rolling Infrastructure Plans that specify national and state level priorities.
Mexico	Comprehensive Vision of National Infrastructure (CVNI)	Project Hub is working with BANOBRAS to develop a CVNI based on available information of the fundamental infrastructure needs and opportunities in the coming year, as well as on the sectorial programmes on the matter
Italy	National Energy Strategy (2017)	Comprehensive approach to make the national energy system more competitive, more sustainable and more secure. The government puts emphasis on decarbonisation, energy efficiency and energy conservation, first by incentivising investments until 2020, then by going toward a more neutral approach enabling policies and regulatory simplification.
UK	National Infrastructure Assessment (2018)	First-ever comprehensive National Infrastructure Assessment aiming to identify infrastructure needs and priorities for the country up to 2050. The assessment includes recommendations on new transport, low carbon energy, digital networks, recycling and waste management.
Building smart cities and capacity to build smart cities		
Canada	Smart City Challenge	Invites communities of all sizes, including municipalities, regional governments and indigenous communities, to adopt a smart city approach in order to improve the lives of residents through innovation, data and connected technology. A total of 130 communities applied by April 2018, and 20 of them were selected for the final stage, at the end of which a series of prizes will be assigned to implement the policy proposal:

		one prize of up to CAD 50 million regardless of the population, two prizes of up to CAD 10 million for communities below 500,000 people, and 1 prize of up to CAD 5 million to communities below 30,000 people.
EU	Smart Cities initiative	Spreading best practices of sustainable energy and transport concepts at local level, with the objective of reaching 5% of the European population and ensuring progress towards the Union's energy and climate objectives.
Singapore	Smart Nation initiative	Aims to "transform Singapore through technology". The umbrella project includes work areas ranging from health, mobility, living, services with dedicated websites, app and opportunities for co-creation. It is open to companies and citizens alike.
Germany	Smart Performance Cluster (2018)	High performance computing system adapting the energy grid to the energy transition by better simulating and optimising the power flows. It was developed by the Jülich Supercomputing Centre (JSC) in cooperation with TenneT TSO, responsible for the cross-regional power grid in Northern and a part of Southern Germany.

… Working at subnational level…

Subnational governments, cities, towns, and regions, play a vital role in the infrastructure landscape and regional and municipal infrastructural policies are likely to grow in relevance. Subnational governments (SNGs) investment represents on average 57% of total public infrastructure investment in OECD countries and 40% at a global level. While strengthening quality infrastructure is a joint challenge and responsibility of all levels of government, subnational governments are actually responsible for policy design and implementation in key areas for SMEs, such as transport, energy, water and sanitation, or broadband etc.

Public investment is on the decline in the OECD area since the 1980s (Allain-Dupré, Hulbert and Vincent, 2017[38]). In many OECD countries, this long-run downward trend is related to the increased focus of public investment on operation and maintenance as infrastructure itself was already well-developed. This also reflects a change in investment, from infrastructure to intangibles, and the fact that public-private partnerships (PPPs) are not counted as public investment. Hence, despite a temporary increase during the 2008-09 crisis, public investment has reached historically low levels in many OECD countries, and particularly in the EU. Likewise, subnational governments have decreased their capital expenditures after 2010 as subnational budgets served as adjustment variable for more general fiscal consolidation. Results of a 2015 OECD survey to 255 SNGs shows that road transport was the sector most impacted by resource gap, particularly for small municipalities (85%), and public transport for large SNGs (i.e. large cities and regions).

The room for increasing subnational infrastructure investment remains limited due to ongoing changes in SNG expense structure (Figure 4.7). Expenditures related to social benefits and intermediate consumption have been growing fast over the past decade, while revenues have maintained, reducing the fiscal space for SNGs to invest.

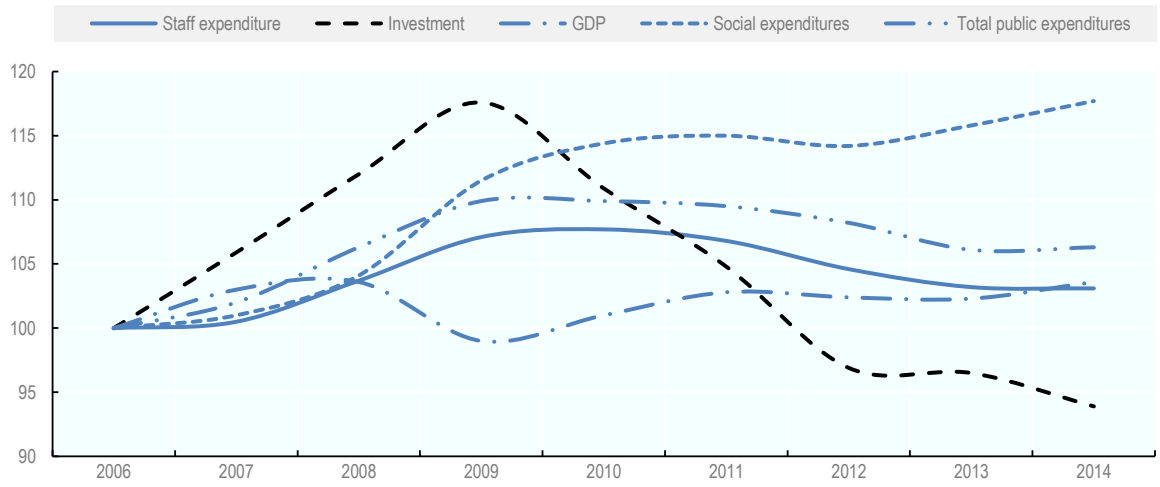
Given their changing cost structure, SNGs would need to diversify their traditional sources of financing if they are to support future investment in infrastructure. Yet, such diversification, through private funding, PPPs or financial markets (e.g. via inter-municipal borrowing agencies) remains very limited at the subnational level. Among the various reasons that can explain this deficit of private funding are the complexity of, and technical and legal capacities required for, using PPPs, as well as a lack of knowledge within SNGs of the variety of financial mechanisms available, and a lack of coordination across SNGs to pool financial resources and engage in innovative financing mechanisms.

In 2014, the OECD adopted a 'Recommendation of the Council on Effective Public Investment across Levels of Government', which focuses on multilevel governance

challenges and ways to overcome them (Box 4.2). Major areas for improving SNG practices included long-term planning for infrastructure investment, multi-level governance and co-ordination, co-ordination of investments across sectors (e.g. transport, broadband, water, spatial planning etc.) and monitoring and evaluation. Regulatory frameworks and procurement procedures were also identified among the hurdles facing SNGs when implementing infrastructure projects.

Figure 4.7. Infrastructure investment of subnational governments keeps receding

SNG expenditure and revenues, OECD countries, index (2006=100)



Note: OECD countries except Australia and Chile. Turkey: 2011 instead of 2012 and 2013. Based on OECD National Accounts 2015.

Source: Allain-Dupré, D., C. Hulbert and M. Vincent (2017[38]), "Subnational Infrastructure Investment in OECD Countries: Trends and Key Governance Levers", https://dx.doi.org/10.1787/e9077df7-en.

StatLink http://dx.doi.org/10.1787/888933924571

Box 4.2. The OECD Recommendation of the Council on Effective Public Investment across Levels of Government

Since inception in 2014, 39 countries have officially adhered to the OECD Recommendation of the Council on Effective Public Investment across Levels of Government (OECD, 2014[39]).

Five years after its adoption, a majority of countries have adopted integrated investment strategies and implemented mechanisms to co-ordinate public investments across levels of governments. A number of countries have adopted policies to promote a result-oriented investment strategies. However, only few countries have implemented mechanisms to assess upfront the long-term impacts of public investments.

Further efforts are needed to minimise future detrimental social and environmental impacts that infrastructure investments may have. Countries also need to further strengthen their fiscal frameworks to ensure they are better adapted to the objectives pursued. More efforts are also needed to improve the regulatory framework – reducing regulatory burden and ensuring greater regulatory coherence – to foster both public and private investments.

Source: OECD (2014[39]), *Recommendation of the Council on Effective Public Investment Across Levels of Government*, http://www.oecd.org/regional/regional-policy/Principles-Public-Investment.pdf.

… Building smart cities

In the last decade the concept of Smart Cities has taken ground in the policy debate. Smart cities use digital technologies to support real-time data production, automated utility systems and digital communication tools, with the objective of making critical urban infrastructure components and services more efficient and interconnected (OECD, 2016[40]). Smart cities function as complex systems (Fu and Peng, 2013[41]) designed around six 'smart' dimensions: economy, government, mobility, environment, living and people. Therefore many smart city policy interventions are cross-cutting (e.g. introducing e-bikes reduces energy consumption and pollution, improves mobility, and sustains healthier lives).

The potential of smart cities for fostering entrepreneurship is increasingly recognised, with evidence of higher degrees of entrepreneurship in smart cities and the positive impact of high quality ICT infrastructure on attracting entrepreneurs. While the presence of ICT infrastructure is still the basic requirement for digital economies and smart cities to develop, innovations are gradually moving from purely physical infrastructure projects to hybrid and digital infrastructure (e.g. e-government) (Table 4.1).

Investing in infrastructure and strategic public-private partnerships

Governments need to invest more and better on infrastructure. It was estimated that approximately USD 95 trillion would be needed in public and private investments in energy, transport, water and telecommunications infrastructure at global level between 2016 and 2030 in order to support growth and sustainable development (OECD, 2017[42]). Considering the tight fiscal context, mobilising private sources and building PPPs could help narrow the infrastructure gap.

Public-private partnerships are long-term contractual agreements between the government and a private partner whereby the latter typically finances and delivers public services using a capital asset (e.g. transport or energy infrastructure, hospital or school buildings). The private party may be tasked with the design, construction, financing, operation, management and delivery of the service for a pre-determined period of time, receiving its compensation from fixed unitary payments or tolls charged to users (OECD, 2013[43]). This definition includes both "pure" PPPs (where the main source of revenue is government payments) and concessions (where the main source of revenue is user fees).

Yet, despite a growing proportion of infrastructure services that has been delivered through PPPs in the last decade, PPP-based infrastructure investment are still moderate (OECD, 2018[44]). Most OECD countries report that less than 5% of public sector infrastructure investment took place through PPPs between 2015 and 2018 and PPPs are unevenly used across the world, with lower-income countries lagging behind in that respect. However, albeit of lower average value, PPPs at subnational level are more frequently implemented than at national level.

Governments also provide facilities for R&D, innovation and knowledge transfer (Box 4.2).

Deploying interfaces and platforms

Innovative activities by SMEs can be stimulated through the establishment and sharing of facilities which provide a physical environment for the exchange of knowledge and expertise. They can contribute effectively to knowledge transfer, networking, information

dissemination and collaboration among the undertakings and other organisations in innovative clusters.

Clusters' technological premises, facilities and activities can be developed and financed by industrial partnerships supported by public institutions, with the aim of expanding access to a variety of contributors who otherwise risk being excluded from the innovation process. SMEs could gain access to technologies that they could not afford independently, raising their competitive potential and allowing the whole system to benefit from their innovative contributions (OECD, 2017). Moreover, SMEs operating in clusters might be able to benefit from other agglomeration effects, such as improved access to a pool of skilled labour or capital, as their innovative efforts can become more visible to capital venture investors.

The cooperation among industry and academia include the joint use of research equipment through the institution of common corporate research centres. These centres allow SMEs that would not be able to finance an internal research facility to leverage cutting-edge research equipment, techniques and manpower from universities and public research institutes, thus greatly strengthening their technological capacity.

Another emerging area where governments can provide the platforms to operate is the access to super-computing capabilities by researchers and industry players. This allow them to fully leverage the potential of Big Data. As the infrastructures needed could be extremely expensive, governments have financed and supported public-private research networks in the development and establishment of such facilities, allowing academics, researchers and SMEs in particular to access them for research purposes (Table 4.2).

Table 4.2. Investing in network and knowledge infrastructure: Selected country examples

	Large scale research and computing infrastructure	
France	FIT-IoT-Lab	Provides large-scale Internet of Things testbeds with over 2 700 wireless sensor nodes in a variety of topologies and environments, and both fixed and mobile nodes. It is part of the OneLab Consortium created in 2014 to provide single entry point for federated infrastructure.
Netherlands	National Roadmap for Large-Scale Scientific Infrastructure 2016	Identifies strategic facilities for science, including databases and ICT facilities. In 2018, EUR 138 million were granted to ten top research facilities, including the Free-Electron Lasers for Infrared eXperiments Laboratory (FELIX) and the High Field Magnet Laboratory (HFML), that enable research under extreme conditions and are important in the fields of health, energy and smart materials.
EU	Mapping of the European Research Infrastructure Landscape (MERIL-2) (2016-19)	Aims to create an authoritative, exhaustive online source of scientific and policy relevant data on European research infrastructures (RIs) of more than national relevance. It is expected to be completed in 2019.
	Interfaces and platforms for technology transfer	
Germany	Joint Initiative for Research and Innovation (renewed in 2016) and High-Tech Strategy (since 2014)	Put emphasis on research commercialisation and academia-industry partnerships. This is on line with the recent emphasis given to the creation of user-oriented environments and tighter public-private cooperation.
Portugal	Interface Programme (2017)	Aims to enhance Portuguese products through innovation, increased productivity, value creation and technology incorporation by supporting Technological Interface Centres and SMEs, enhancing their linkages to the innovation system and providing incentives for hiring researchers and qualified staff. It also includes the creation of Collaborative Labs across the country and Suppliers' Clubs to facilitate the integration of Portuguese SMEs into GVCs. The Interface Programme provides EUR 1.4 billion to technology transfer and cluster certification.

EU	Research Infrastructures Work Programme (2018-20)	Operates under the Horizon 2020 framework programme as a policy tool to coordinate joint efforts and overcome issues relating to the cost and complexity of developing state-of-art facilities at the national level. Research infrastructures cover 'single-sited', 'virtual' or 'distributed' facilities. The Programme assigns priority, among others, to projects enabling European SMEs to innovate and access to High Performance Computing (HPC)
SME-targeted support for accessing state-of-the-art infrastructure		
Australia	Incubator Support Program (2015)	Helps a new generation of innovative firms to succeed in the market by providing them low cost access to facilities and international knowledge networks. It is part of the National Innovation and Science Agenda, an AUD 1.1 billion package focused on innovation and entrepreneurship.
Germany	Energy Efficiency Networks Initiative (2015)	Offers corporate experts a structure for exchanging experience on energy efficiency projects. 500 energy efficiency networks are to be implemented by 2020. The process begins with an energy audit. So far mainly medium companies have participated in networks, with an estimated average 10% reduction of energy consumption over 4-5 years.
Israel	Energy Efficiency and Emissions Reduction Investment Support Programme (2016-20)	Offers project grants to support first commercial installations of innovative energy efficiency technologies with the aim to reduce the country's greenhouse gas emissions by 20% by 2020 compared to planned scenarios.
Korea	Corporate Research Centres (2017)	The Ministry of SMEs and Start-ups (MSS) is allowing free use of expensive testing and research equipment possessed by regional MSS administrations to solve difficulties that regional SMEs had facing issues of testing equipment scarcity. The centres were established with the cooperation of industry, academia and public research institutions.
	R&D equipment of the Digital Design Innovation Support Centers, and, Test Product Manufacturing Support Centers	Aims to enhance manufacturing capability and design development of test products and support the technological innovation of regional SMEs.

Promoting SME access to network and knowledge infrastructure

Encouraging SMEs to access key network infrastructure is a policy objective that is mainly addressed through information and awareness campaigns, capacity building initiatives and financing measures.

As regards energy infrastructures, much of the potential lies in promoting the use of energy-efficient systems and the replacement of defective and polluting technologies by new, renewable and smart sources of energy and heat (IEA, 2015[13]).

Possible information measures include the promotion of best practices within each industrial sector and benchmarking information useable by SMEs (IEA, 2011[45]; IEA, 2015[13]).

Capacity building measures cover the promotion of easy-accessible energy audit services realised by qualified engineers, trainings of in-house personnel as well as peer-to-peer experience sharing, participative seminars and workshops (ibid.) (Figure 4.2).

Financial measures are also necessary to tackle the lack access to finance for SMEs, including trainings aiming to develop viable projects and the promotion of financial products for energy-related projects (Table 4.2).

As regards digital infrastructure, a particular focus is being given to promoting digital security among SMEs. In a 2017 OECD survey, 82% of the countries reviewed saw digital security risk awareness by SMEs as a specific objective. However, only 46% of them have developed specific incentives (rewards and/or sanctions) for promoting digital security risk management. Japan and Korea provide tax incentives for companies that invest in digital security products (OECD, 2017[21]).

As regards R&D infrastructure, policy makers support SME and start-up access to frontier know how and *state of the art* technologies by financing and sustaining incubators and accelerators in regions or sectors with high innovation potential, by boosting the effectiveness of high performing incubators, and by providing access to top quality research and technical talent through secondments of national or international expert advisers (Table 4.2).

Strengthening international co-operation

Recent important changes in the field of energy have been observed in the policy domain and enhanced international co-operation. The Paris Climate Agreement and the adoption of the Sustainable Development Goals (SDGs) by the United Nations gave a strong policy signal for an imperative transition towards a low-carbon economy. Policy commitment has translated into renewed energy technology policy agenda with a focus given to mission-oriented innovation, a new momentum for investments in renewables, better alignment of policies and policy mixes for a low-carbon transition, and increased international co-ordination as to leverage the mix of technologies that are required to achieve a 2ºC Scenario.

R&D is another area of active international policy co-ordination.

- As part of the EU multiannual financial framework (MFF) (2021-27), the European Commission proposed in 2018 an EUR 100 billion allocation to *Horizon Europe*, a 7-year scientific research programme fostering frontier research, innovation and open science within the European Union. Horizon Europe plans the creation of a *European Innovation Council* (EIC) and a one-stop shop for innovative firms and start-ups. The programme builds on the previous success of *Horizon 2020,* which favoured excellence in research through the *European Research Council* (ERC) and the Marie S.-Curie formation actions and fellowships.
- The European Commission's proposal for the 2021-27 MFF also includes EUR 9.2 billion investments in the first *Digital Europe* programme, with the objective of reinforcing Europe's strategic digital capacities in high-performance computing, artificial intelligence, cybersecurity and advanced digital skills.

Notes

[1] As measured by fixed broadband subscriptions per 100 inhabitants.

[2] For Colombia data refer to 2016.

[3] Connections ensuring a minimum download speed of 100Mbit/s.

[4] https://www.theverge.com/2018/6/15/17467734/5g-nr-standard-3gpp-standalone-finished, https://www.itproportal.com/news/first-worldwide-5g-standard-approved/ and https://www.ecnmag.com/article/2018/05/what-happens-now-5g-standards-are-set (accessed on 30 September 2018).

[5] https://www.reuters.com/article/us-telecoms-5g-nokia-t-mobile-us/nokia-t-mobile-us-agree-3-5-billion-deal-worlds-first-big-5g-award-idUSKBN1KK1IK, https://www.theverge.com/2018/7/30/17630042/t-mobile-nokia-5g-deal-three-billion-dollars-hardware-software-networking (accessed on 30 September 2018).

[6] https://www.ft.com/content/21e34e74-bcf0-11e8-94b2-17176fbf93f5 (accessed on 12 February 2019).

[7] Phishing is a cyberattack making use of emails and clones of legitimate websites for collecting personal information such as usernames, passwords or credit card details.

[8] Social engineering refers to technics of psychological manipulation aiming to get confidential information. Phishing is an example.

[9] DoS incidents affect an organisation by flooding its online service or bandwidth with spam requests, knocking it offline for hours or days, http://arstechnica.com/security/2015/11/pay-or-well-knock-your-site-offline-ddos-for-ransom-attacks-surge (accessed 01 October 2018).

References

Allain-Dupré, D., C. Hulbert and M. Vincent (2017), "Subnational Infrastructure Investment in OECD Countries: Trends and Key Governance Levers", *OECD Regional Development Working Papers*, No. 2017/05, OECD Publishing, Paris, https://dx.doi.org/10.1787/e9077df7-en. [38]

Bertschek, I., D. Cerquera and G. Klein (2013), "More bits - more bucks? Measuring the impact of broadband Internet on firm performance", http://www.dice.hhu.de/fileadmin/redaktion/Fakultaeten/Wirtschaftswissenschaftliche_Fakultaet/DICE/Discussion_Paper/086_Bertschek_Cerquera_Klein.pdf. [16]

Easterling, K. (2014), *Extrastatecraft: The Power of Infrastructure Space*, Verso. [35]

EC (2018), *2018 EU Industrial R&D Investment Scoreboard*, European Commission, http://iri.jrc.ec.europa.eu/scoreboard18.html (accessed on 03 October 2018). [32]

EC (2014), *Progress Report on Energy Efficiency in the European Union*, European Commission. [12]

Eurochambres (2014), *Smart Energy for Growth: SME Actions on Energy Efficiency Powered by Chambers of Commerce and Industry*, Eurochambres. [9]

Fu, W. and P. Peng (2013), "A discussion on smart city management based on meta-synthesis method", *Management Science and Engineering*, Vol. 8/1, pp. 68-72, http://dx.doi.org/10.3968/j.mse.1913035X20140801.4404. [41]

Haller, S. and S. Lyons (2015), "Broadband adoption and firm productivity: Evidence from Irish manufacturing firms", *Telecommunications Policy*, http://dx.doi.org/10.1016/j.telpol.2014.10.003. [17]

Handfield, R. et al. (2013), "Trends and strategies in logistics and supply chain management". [4]

IEA (2015), *Accelerating Energy Efficiency in Small and Medium-sized Enterprises: Powering SMEs to Catalyse Economic Growth*, OECD/IEA, https://www.iea.org/publications/freepublications/publication/SME_2015.pdf. [13]

IEA (2014), *Capturing the Multiple Benefits of Energy Efficiency*, OECD/IEA, http://www.iea.org/publications/freepublications/publication/Multiple_Benefits_of_Energy_Efficiency.pdf. [7]

IEA (2011), *25 Energy Efficiency Policy*, OECD/IEA. [45]

IFC (2012), *Study on the Potential of Sustainable Energy Financing for Small and Medium Enterprises in China*, International Finance Corporation, http://www.ifc.org/wps/wcm/connect/39ecf5004ff94de2acc8ff23ff966f85/China+SME+Report+for+web.pdf?MOD=AJPERES. [8]

IRENA (2014), *Renewable Energy in Manufacturing: A Technology Roadmap for REmap 2030*, International Renewable Energy Agency, http://www.irena.org/-/media/Files/IRENA/Agency/Publication/2014/IRENA_REmap-2030-Renewable-Energy-in-Manufacturing.pdf. [11]

ITF (2017), *ITF Transport Outlook 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789282108000-en. [37]

ITU (2018), *The State of Broadband 2018: Broadband Catalyzing Sustainable Development*, https://www.itu.int/dms_pub/itu-s/opb/pol/S-POL-BROADBAND.19-2018-PDF-E.pdf (accessed on 03 October 2018). [28]

ITU (2018), *World Telecommunication/ICT Indicators Database*, December, https://www.itu.int/en/ITU-D/Statistics/Pages/publications/wtid.aspx. [29]

OECD (2019), *Main Science and Technology Indicators*, OECD, Paris, https://stats.oecd.org/Index.aspx?DataSetCode=MSTI_PUB (accessed on 03 October 2018). [26]

OECD (2019), *OECD Broadband Database 2019*, OECD, Paris, http://www.oecd.org/sti/broadband/oecdbroadbandportal.htm (accessed on 11 February 2019 (accessed on 02 November 2019). [46]

OECD (2019), *OECD ICT Access and Usage by Businesses Database 2019*, OECD, Paris, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 12 February 2019). [25]

OECD (2019), *OECD International Transport Forum Database 2019*, OECD, Paris. [27]

OECD (2019), *OECD National Accounts Database 2019*, OECD, Paris, http://www.oecd.org/sdd/na/ (accessed on 12 February 2019). [24]

OECD (2019), *OECD Research and Development Statistics Database*, OECD, Paris, http://www.oecd.org/sti/rds (accessed on 08 March 2019). [34]

OECD (2018), *International Migration Outlook 2018*, OECD Publishing, Paris, http://dx.doi.org/10.1787/migr_outlook-2018-en. [3]

OECD (2018), *OECD Broadband Statistics Database*, OECD, Paris, http://dx.doi.org/oecd.org/sti/ict/broadband. [30]

OECD (2018), *OECD Regions and Cities at a Glance 2018*, OECD Publishing, Paris, http://dx.doi.org/10.1787/reg_cit_glance-2018-en. [33]

OECD (2018), *Subnational Public-Private Partnerships: Meeting Infrastructure Challenges*, OECD Multi-level Governance Studies, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264304864-en. [44]

OECD (2017), *Investing in Climate, Investing in Growth*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264273528-en. [42]

OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264276284-en. [21]

OECD (2017), *OECD ICT Access and Usage by Businesses Database*, OECD, Paris, https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 18 July 2018). [23]

OECD (2017), *Small, Medium, Strong. Trends in SME Performance and Business Conditions*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264275683-en. [36]

OECD (2017), *The Next Production Revolution: Implications for Governments and Business*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264271036-en. [19]

OECD (2016), "Managing Digital Security and Privacy Risk", *OECD Digital Economy Papers*, No. 254, OECD Publishing, Paris, http://dx.doi.org/10.1787/5jlwt49ccklt-en. [31]

OECD (2016), *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sti_in_outlook-2016-en. [20]

OECD (2016), *Road Infrastructure, Inclusive Development and Traffic Safety in Korea*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264255517-en. [2]

OECD (2016), *The Smart City Vision and Green Growth in Bandung*, OECD, Paris. [40]

OECD (2015), "Development of high speed networks and the role of municipal networks", *Working Party on Communication Infrastructures and Services Policy*. [15]

OECD (2015), *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264239814-en. [1]

OECD (2014), *Recommendation of the Council on Effective Public Investment Across Levels of Government*, OECD, Paris, http://www.oecd.org/regional/regional-policy/Principles-Public-Investment.pdf. [39]

OECD (2013), *Government at a Glance 2013*, OECD Publishing, Paris, https://dx.doi.org/10.1787/gov_glance-2013-en. [43]

OECD/ITF (2016), *Capacity to Grow - Transport Infrastructure Needs for Future Trade Growth*, Corporate Partnership Board Report, https://doi.org/10.1787/24108871. [47]

Sorbe, S. et al. (2019), "Digital Dividend: Policies to Harness the Productivity Potential of Digital Technologies", *OECD Economic Policy Paper*, No. 26, OECD Publishing, Paris, https://doi.org/10.1787/273176bc-en. [18]

Suurs, R. and E. Roelofs (2014), *Biobased Investment Climate in the Netherlands and Europe: Summary Results Quick Scan*, TNO, http://www.industrialbiotech-europe.eu/https://www.tno.nl/downloads/Biobased%20economy.pdf (accessed on 21 September 2018). [22]

Thollander, P. and J. Palm (2013), *An Interdisciplinary Perspective on Barriers, Energy Audits, Energy Management, Policies, and Programmes: Improving Energy Efficiency in Industrial Energy Systems*, Springer-Verlag. [10]

UNEP (2010), *PRE-SME - Promoting Resource Efficiency in Small & Medium Sized Enterprises*, United Nations Environment Programme, http://www.stenum.at/media/documents/UNEP%20PRE%20SME%20Industrial%20training%20handbook.pdf. [6]

Wouters, C. (2014), "Towards a regulatory framework for microgrids - The Singapore experience", *Sustainable Cities and Society*, pp. 22-32. [14]

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. [5]

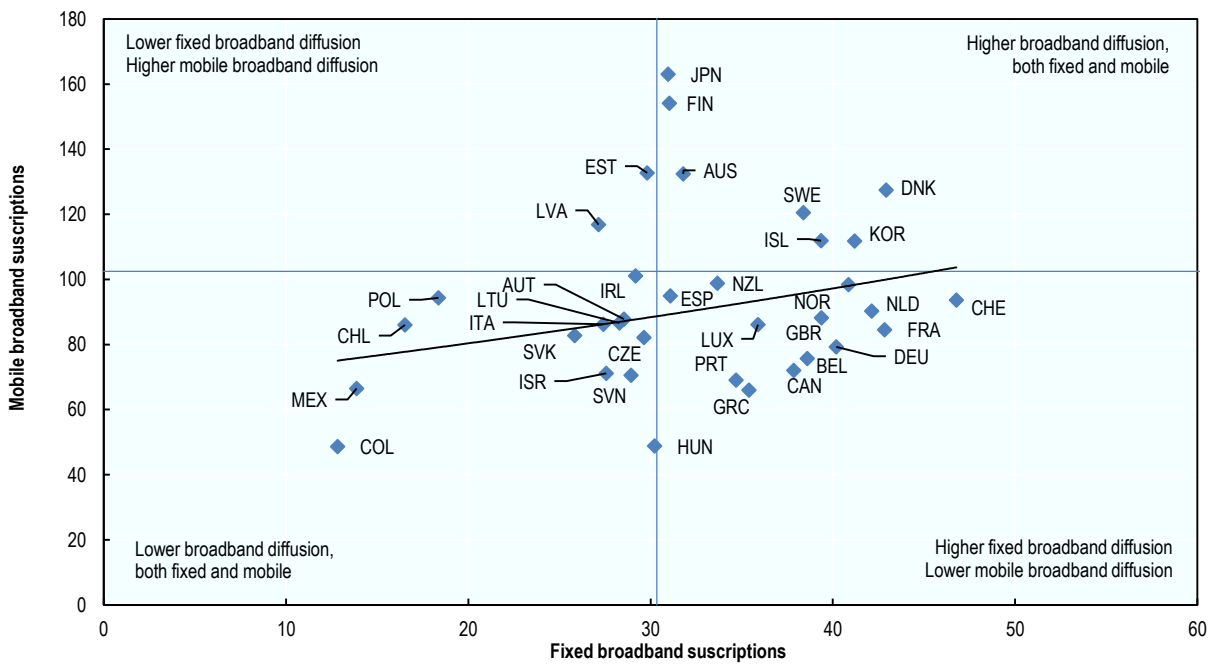
Annex 4.A. Fixed and mobile broadband: Substitution and complementarity

Fixed broadband allows connecting to the Internet though fixed phone or cable lines and can support faster and more data-intensive exchange of information, especially where the fibre optic technology is available. Fixed broadband is for instance more adapted to the use of supercomputing capacity (e.g. R&D), ultrafast data transfer (e.g. gaming, video) or dense urban areas with higher density of individual connections.

Mobile broadband is portable and allows users to connect to the Internet from any smart device and from anywhere where Wi-Fi connections are available. Mobile broadband is a flexible and sometimes more affordable solution for accessing the Internet (e.g. no need for investing in a computer, pay-as-you-go deals, enhanced mobility for traveling or working etc.). In some areas, 4G speeds exceed those of local fixed broadband. Mobile broadband has been determinant for the rise of the sharing economy via a proliferation of mobile applications and services. It is also at the core of the future developments of the Internet of Things (IoT).

Annex Figure 4.A.1. Fixed and mobile broadband are complementary

Fixed and mobile broadband subscriptions per 100 inhabitants, 2017



Source: OECD (2019[46]), *OECD Broadband Database 2019*, www.oecd.org/sti/broadband/oecdbroadbandportal.htm (accessed on 11 February 2019).

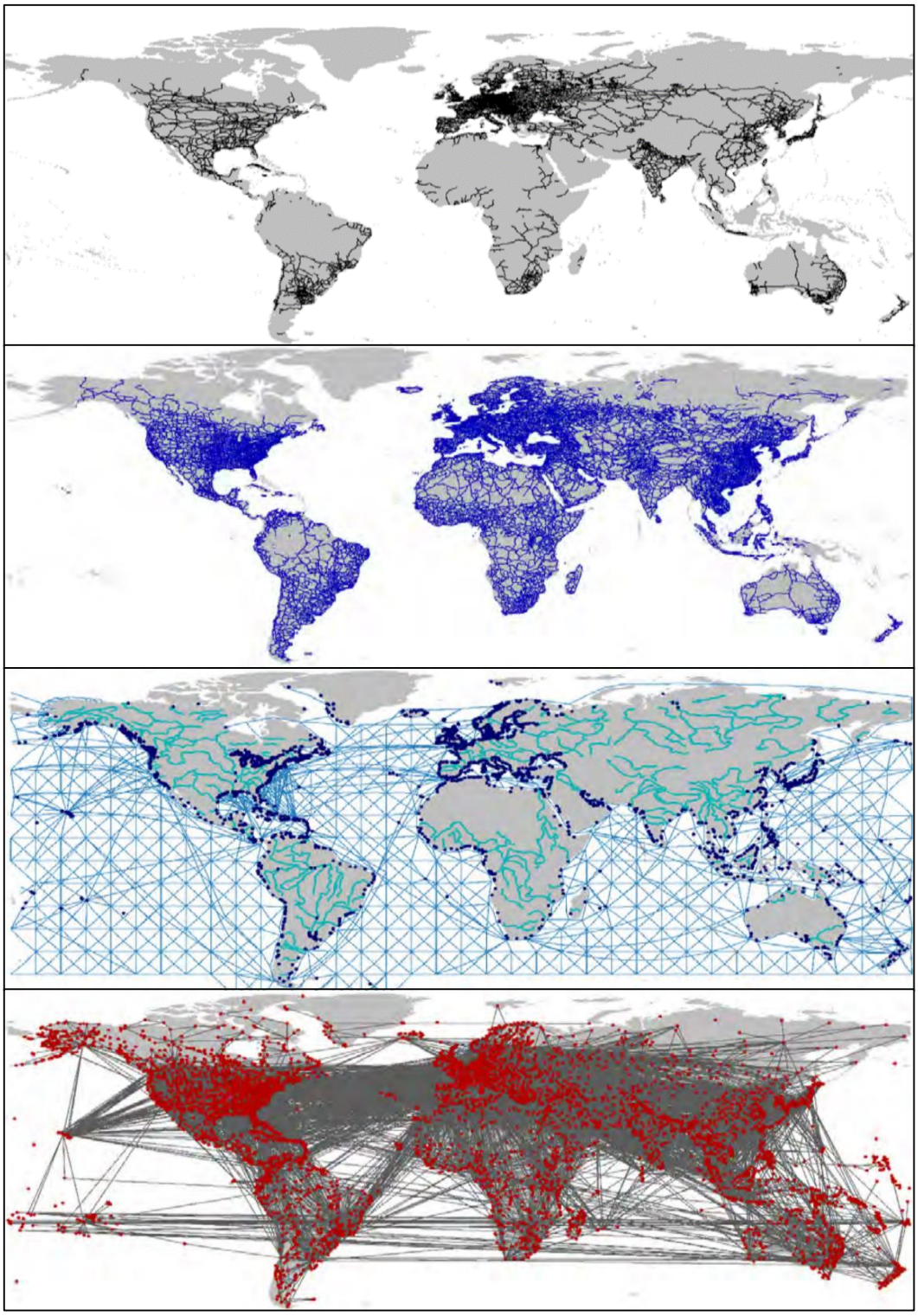
StatLink http://dx.doi.org/10.1787/888933924590

Fixed and mobile broadband are complementary. In a sense, all wireless technologies are extensions of fixed networks. For instance, higher penetration rate of fixed broadband networks are likely to improve the proximity to Wi-Fi coverage. In fact, users maintain both fixed and mobile subscriptions and substitute Wi-Fi for fixed connection when at home or at work as to ensure an access to technology at any point in time (OECD, 2017[21]).

Yet current infrastructure capacity restraints the potential of cellular networks for substituting fixed broadband. Smartphones are more and more data-demanding and much more than what mobile telephony was before. Such a substitution would require cellular networks to increase speeds and data allowances up to meet the needs of enough users for them to give up their fixed connection.

Annex Figure 4.A.2. The infrastructural backbone of the global economy

Top to bottom: rail, road, sea (waterways) and air networks



Source: OECD/ITF (2016[47]), *Capacity to Grow - Transport Infrastructure Needs for Future Trade Growth*, https://doi.org/10.1787/24108871.

Chapter 5. Access to finance

Access to finance, in the form and quantity needed at each stage of their life cycle, is critical for SME creation and scale-up. Yet, SMEs face difficulties in identifying and attracting appropriate sources of finance. Barriers such as information asymmetries, high transaction costs, and low levels of financial acumen of business owners explain why small businesses and entrepreneurs often face more difficulties in accessing finance than large enterprises. This chapter illustrates recent SME finance developments such as increased self-financing opportunities, an easing in SME credit conditions, more dynamic but concentrated venture capital (VC) markets and a rise in the uptake of asset-based funding solutions. This chapter shows that, while bank finance remains crucial to the financing of SMEs and entrepreneurs, alternative finance instruments have gained ground in recent years. It zooms in particular on how digitalisation is transforming SME finance and how Fintech (e.g. crowdfunding, blockchain) is likely to become a central feature in the SME finance landscape. The chapter concludes with major policy trends to support SME access to finance, e.g. a steady expansion of credit guarantees, new approaches to VC support, combining financial support with training and assistance and initiatives to reap the opportunities of Fintech and platforms.

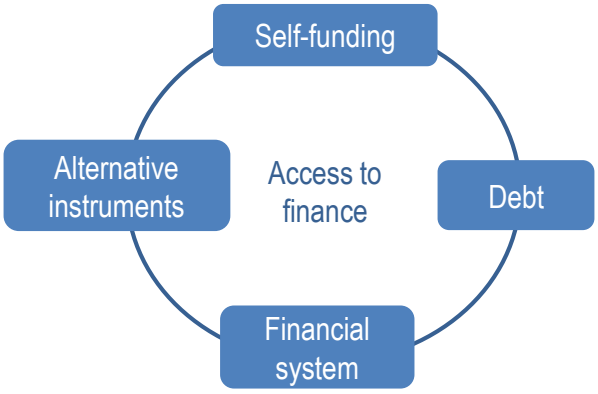
Highlights

- Although bank credit remains their main source of external finance, SMEs are turning towards alternative sources of funding, including asset-based and equity funding, for their finance needs. Venture capital has reached a historical high although wide geographical disparities persist.
- The banking sector has generally regained health in recent years. Interest rates have declined at historical lows and credit conditions have improved since 2012. There is however no clear upward effect on SME take-up of bank credit.
- SME long-term lending has been comparatively more dynamic than short-term loans over the 2008-17 period as a result of combined low interest rate environment and an improved investment climate.
- In parallel, corporate profit margins have recovered in many countries, increasing the potential for SMEs to rely on internal sources for their finance needs. However, SME self-funding capacity may decline as economic prospects weaken.
- Moderate economic prospects are likely to slow capital demand. At the same time, higher inflation levels may weigh on SME finance if liquidities dry up and final demand contracts.
- Governments have often steadily expanded their credit guarantee activities in recent years and, in the search of efficiency, increasingly combined financial support with training and assistance.
- Fintech is likely to become more central in the SME finance landscape. Digitalisation allows a range of innovative financial services to be offered to SMEs, from Initial Coin Offerings (ICOs), to crowdfunding to peer-to-peer lending. Established market players are increasingly adopting fintech instruments. Blended models are on the rise and SME agencies and development banks are poised to become further involved.
- The regulatory and supervisory framework is being reconsidered in many jurisdictions in order to balance the opportunities and risks of the "Fintech" industry.

Why is it important?

Accessing appropriate sources of finance across all stages of their life cycle is critical for SMEs to start, innovate and grow. Academic research suggests that there is a positive relationship between access to finance and post-entry performance of start-ups and SMEs [(Rajan and Zingales, 1998[1]); (Giovannini, Locapetta and Minetti, 2013[2])].

Conversely, financing constraints faced by SMEs, especially those with high growth potential, weigh on their investment, business and innovation capacity and negatively affect productivity, employment and income. Several recent studies based on large-scale data for euro zone countries establish a link between financial constraints and productivity at the firm level, with the most pronounced impact in R&D and innovative sectors (Ferrando and Ruggieri, 2015[3]) and (Altomonte et al., 2016[4]).



Typically, SMEs face structural barriers in accessing finance. Internal barriers include a lack of collateral to be provided to funders and investors as guarantees, insufficient financial skills of small business owners and managers and a lack of knowledge and awareness about funding options and alternatives. Market barriers include information asymmetries between financial institutions and the SME management, and relatively higher transaction and borrowing costs for funding institutions to serve SMEs.

Some segments of the firm population have more difficult access to funding channels, especially new firms, start-ups, and innovative ventures with high growth potential, where the above challenges are typically more pronounced, with implications for aggregate productivity and growth. Uneven access to finance can also be a driving factor of inequality. Funding gaps are also often more pronounced in middle- and low-income countries, as well as in remote and/or rural areas. In addition, groups under-represented in entrepreneurship, such as women, youth, seniors and migrants may face particular challenges in accessing finance (OECD/EU, 2017[5]).

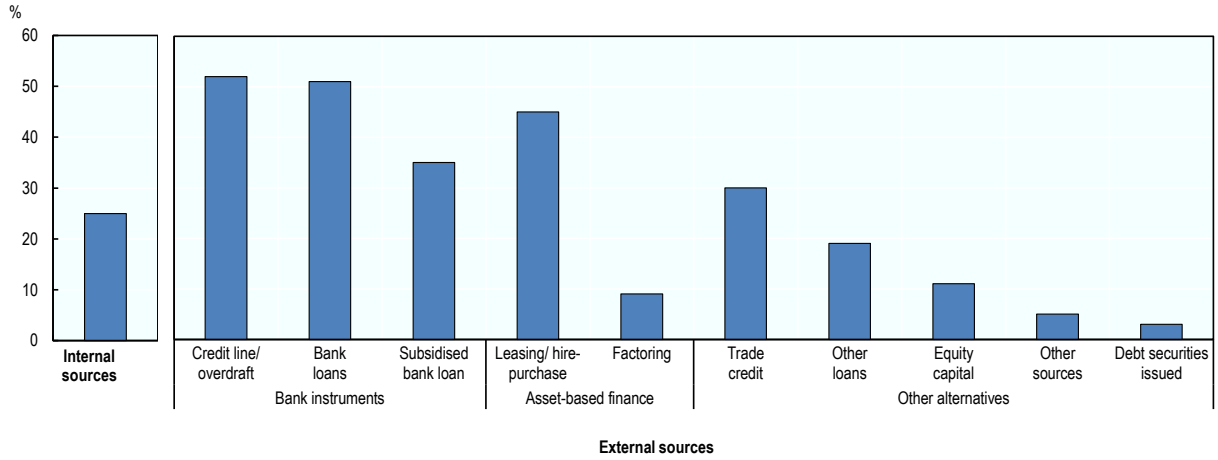
The last financial crisis also recalled that diversified SME financing can contribute to broader economic resilience. Many SMEs remain over-reliant on traditional bank debt and therefore more vulnerable to shifts in the credit market, which tends in turn to raise the vulnerability of business economy as a whole (OECD, 2015[6]). As liquidities and sources of credit dried up in 2008, SMEs, to a larger extend than large enterprises, faced a severe credit crunch and the downsides of their dependency on the banking system (Wehinger, 2014[7]).

The funding mix for SMEs: recent and emerging trends

SMEs combine different forms of funding, both internal and external, to support their activities and growth. The SAFE (Survey on the access to finance of enterprises) data show quite a stable SME funding mix across EU countries over the period 2015-17 with a slight shift from traditional and dominant bank credit options towards internal resources or asset-based finance. Bank credit is the primary source of external funding for SMEs. The SAFE survey shows that SME owners and managers report bank overdrafts and bank loans as among the most recently used instruments or the instruments to be used in a near future (European Central Bank, 2017[8]) (Figure 5.1).

Figure 5.1. Bank credit remains the primary source of finance for SMEs

Relevance of different types of financing for SMEs, percentage of respondents, EU28, 2018



Note: the most relevant financial instruments are the most recently used or the instruments SMEs take into consideration for near future needs. Based on responses to the Survey on the Access to Finance of Enterprises (SAFE) for the period from April 2018 to September 2018.
Source: European Commission (2017[9]), *Survey on the Access to Finance of Enterprises (SAFE): Analytical Report 2017*, https://ec.europa.eu/docsroom/documents/26641.

StatLink http://dx.doi.org/10.1787/888933924609

SMEs have reconstituted their profit margins and internal financing

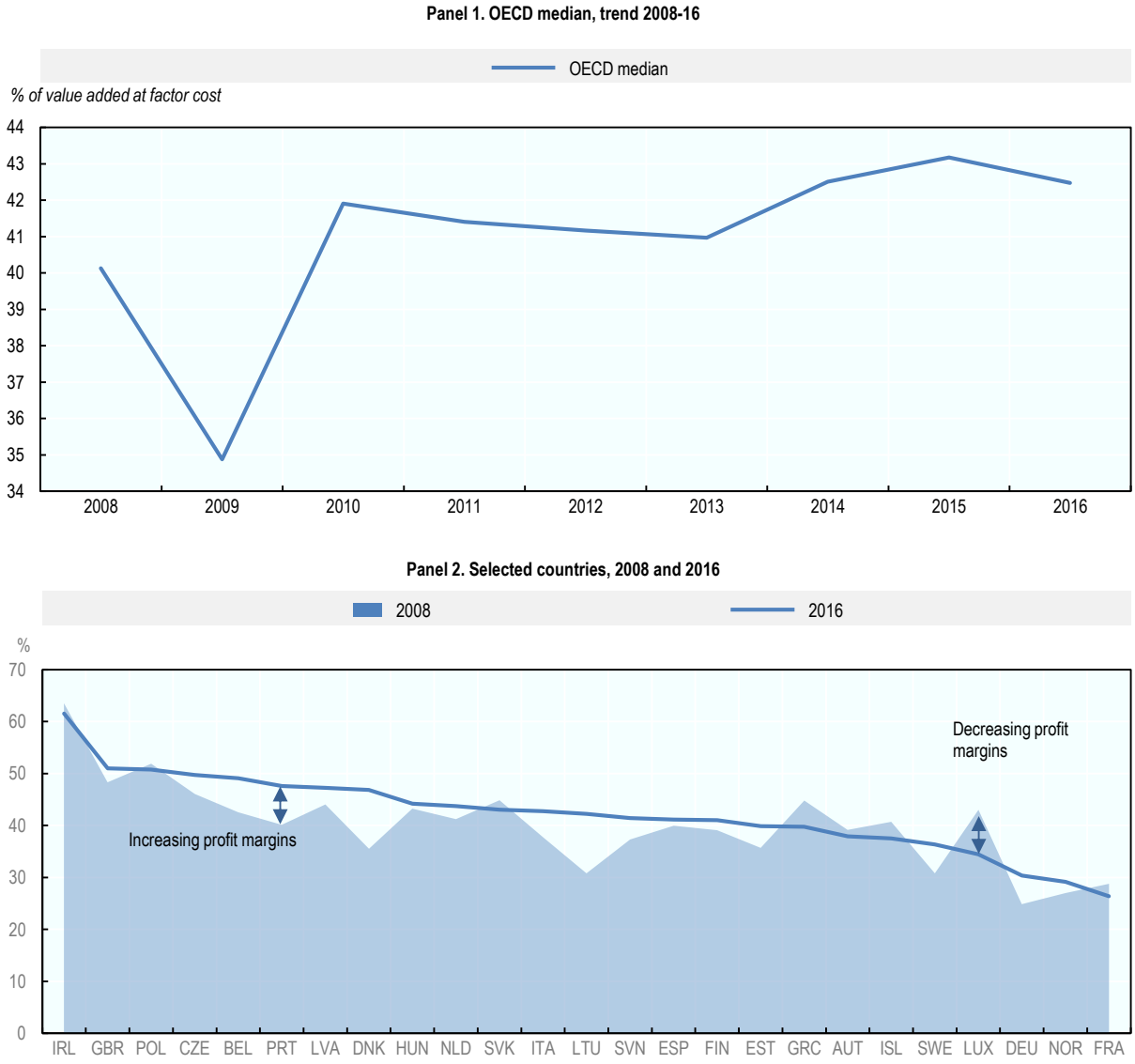
Recent research indicates that a large minority, estimated to around one-third of all SMEs of EU28 countries, do not use any source of external financing at all, instead relying on internally generated revenues for their growth or ultimately renouncing to grow at all. Non-institutional sources of funding are of particular relevance for start-ups that are mainly reliant on "friends, family and fools" (the so-called 3 Fs) for establishing and starting their business (Moritz, Block and Heinz, 2017[10]). Self-funding is also a common practice of family-owned businesses through cheap financing by family members (Bloom et al, 2014).

SME profit margins have recovered from their 2009 slump, making it easier for firms to grow by using internal sources of finance (Figure 5.2). OECD structural business statistics show that profit margins, as measured by operating surplus expressed as a percentage of value added, have increased gradually since 2012 and are above pre-crisis levels in most countries for which data are available. Yet, the rebound in SME profits seem to have peaked and started to slowdown in 2014 and decrease as from 2015.

Global economic growth is expected to weaken gradually over the next two years, with OECD projections of global GDP to rise by close to 3.7% in 2018 and 3.5% in 2019 and growth in the OECD area to remain under 2% by 2020 (OECD, 2018[11]). In addition, many downward risks, for example related to the global trade environment or weaknesses in the financial system, could dampen economic prospects further (see chapter 3 on market conditions). SME self-funding capacity is likely to decline as economic prospects weaken.

Figure 5.2. SMEs have restored their profit margins, which appear to have peaked

SME profit margins as a percentage of value added, industry (except construction)



Note: Operating profit margins are measured as gross operating surplus as a percentage of value added. Value added is estimated at factor costs. The OECD median is computed based on 24 countries for which data were available. Data for Norway only cover manufacturing and are not included in the OECD median.
Source: OECD (2019[12]), *OECD Structural Database on Business Statistics 2019*, http://www.oecd.org/sdd/business-stats/structuralanddemographicbusinessstatisticssdbsoecd.htm.

StatLink http://dx.doi.org/10.1787/888933924628

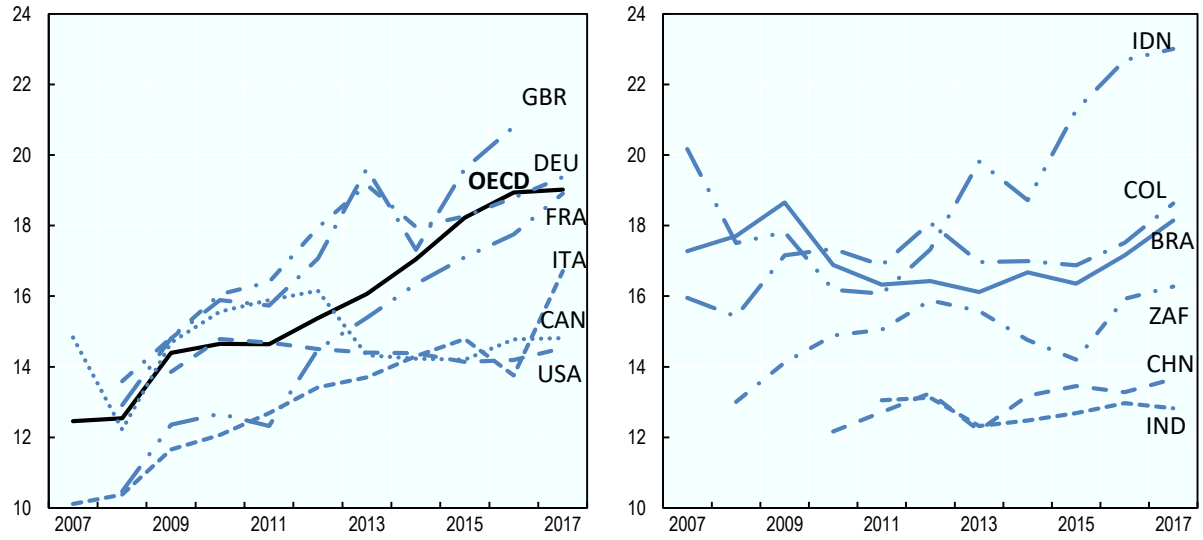
Credit conditions have become more favourable as the banking sector has recovered from the financial crisis and monetary policies remain very accommodative

The banking sector has gained robustness after the financial crisis (OECD, 2018[13]), as measured by the leverage ratio, i.e. the ratio of selected financial assets to total equity,

which ascertain overall financial stability and financial health (Figure 5.53). In 2008, the OECD median leverage ratio stood at almost 17%, reflecting the undercapitalisation of many banking institutions. This figure declined to 12.2% in 2012 and then to 10.2% in 2016, as capital ratios increased in line with Basel III recommendations and efforts to deleverage (OECD, 2017[14]).

Figure 5.3. The banking sector has regained robustness since the financial crisis

Regulatory capital to risk-weighted assets, selected OECD and emerging economies, 2007-17



Note: Data for Japan and New-Zealand not included into OECD average. Data for China refers to mainland and excludes Hong Kong and Macao, China.
Source: IMF (2018[15]), *IMF Financial Soundness Indicators*, http://data.imf.org/?sk=51B096FA-2CD2-40C2-8D09-0699CC1764DA (accessed on 18 February 2019).

StatLink http://dx.doi.org/10.1787/888933924647

Global financial conditions have also improved in recent years and are very accommodative by historical standards. Interest rates have declined significantly in 2016 and 2017 and are often very low in a historical context. In France, the average interest rate charged to SMEs in 2017 stood at 1.4%, down from 5.4% in 2008. In Korea, SME interest rates declined from 7.6% to 3.6% over the same period. In addition, credit conditions have generally been relaxed. As a consequence, access to finance is perceived as less problematic by SMEs and credit rejections less common, as reflected in demand-side surveys from the European Union, the United States and other high-income countries (OECD, forthcoming[16]).

Therefore, the recapitalisation of financial institutions and the creation of liquidity buffers since the global financial crisis have helped limit the risks of financial instability in the short run. In the medium term however, risks are likely to grow driven by the high indebtedness of the private non-financial sector (households and corporates) and the overpricing of assets and housing in many countries (BIS, 2017[17]).

In addition, higher inflation may have two major adverse effects on SME capacity to finance operations and growth. First, growing inflation may lead to strong responses from central banks and a sharp tightening of financial conditions worldwide (IMF, 2018[18]).

After years of easing monetary conditions, this reversal is likely to affect SMEs disproportionately. For instance in Mexico, the spread in interest rates between SMEs and large enterprises rose sharply following the monetary tightening of 2016. Second, inflation may put a severe break on consumption, a key driver of economic growth (OECD, 2018[19]). Effects on business market prospects and profit margins may be all the more severe as demand is still weakened by high household indebtedness and a rise in interest rates would mechanically increase their debt burden.

The impact of growing inflation would however be uneven across countries. There are indeed large cross-country differences in core inflation rates (i.e. excluding volatile food and energy prices) and the major contributor to these differences is housing prices[1], which have risen faster in the United States than in Germany, and faster in Germany than in Japan.

Yet, SMEs have turned less towards new bank credits

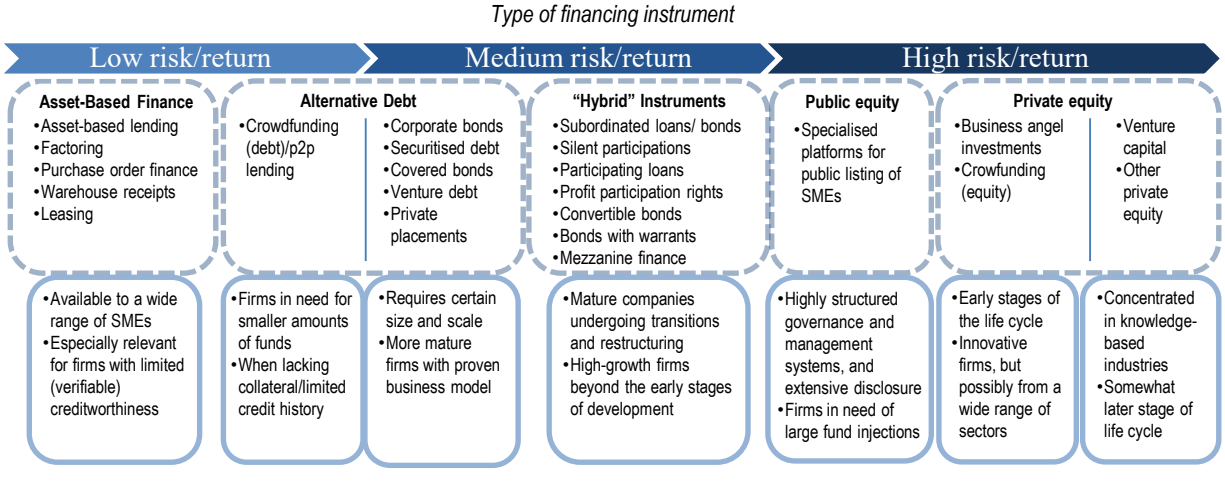
Nonetheless, growth in new SME lending has often remained weak over the 2012-17 period and the outstanding stock of SME loans has little evolved. In particular, short-term SME lending has declined; in 2007, almost 40% of all credit to SMEs was short-term for the median country for which data are available, a proportion that fell to year after year to reach 25% in 2017 (OECD, forthcoming[16]).

Several causes may contribute to the wider use, in relative terms, of longer-term lending, such as the low interest rate environment (making it interesting to "lock in" rates), the increased capacity of many SMEs to use internally generated revenues for their day to day operations and improvements in the investment climate (for which long-term loans are more suitable) (OECD, forthcoming[16]).

The use of alternative funding sources is on the rise

The range of SME financing instruments covers a large spectrum of financing needs, firm characteristics and risk profiles (Figure 5.4).

Figure 5.4. Alternative-to-bank debt financing instruments by firm profile and stage of development



Source: Revised from OECD (2018[20]), "Enhancing SME access to diversified financing instruments", http://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Plenary-Session-2.pdf.

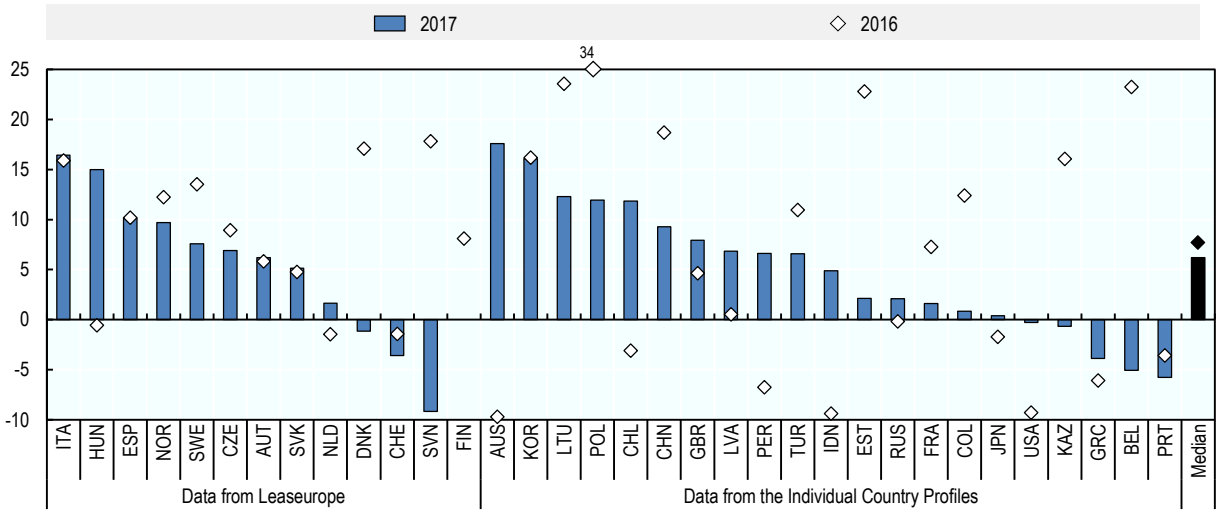
Asset-based finance and alternative debt are more suitable for SMEs with lower risk of default but limited return on investment. At the other end of the risk/return spectrum, equity instruments, both private and public, target innovative ventures with high growth potential and higher return on investment, but at higher risk. Hybrid instruments share some characteristics of both equity and debt schemes, and are often used by more established companies in transition.

The 2019 edition of the annual OECD Scoreboard on Financing SMEs and Entrepreneurs, which reports data on SME access to finance from 46 countries, shows a steady upward trend in the use of most alternative sources of finance, other than straight debt, over 2015-17. (Figure 5.1) (OECD, forthcoming[16]).

New production in leasing and hire purchases rose steadily between 2014 and 2017 in most countries with a median growth rate of 6.2% in 2017 (Figure 5.6). The picture is broadly similar with respect to factoring, with new production of factoring rising by a median value of 3.3% between 2016 and 2017 for the 46 countries that participate in the annual scoreboard on SME and Entrepreneurship Financing.

Figure 5.5. Volume of leasing and hire purchases continue to increase

Year-on-year growth rate (%) adjusted for inflation, 2016 and 2017



Note: Data for Japan refers to leasing only, measured as stocks. 2016 data for Poland were not available. Data for non-OECD countries come from the World Development Indicators, World Bank.
Source: OECD (forthcoming[16]), *Financing SMEs and Entrepreneurs 2019: An OECD Scoreboard*, OECD Publishing, Paris.

StatLink http://dx.doi.org/10.1787/888933924666

In addition, the global private debt market has gained momentum since the financial crisis and grew by almost 15% between 2015 and 2016. Private debt is a relatively recent innovation through which specialised loan funds propose a portfolio of loans. This type of finance is mostly relevant for established SMEs facing a major transition, such as a change in ownership, expansion into new markets and/or activities or acquisitions, which are deemed too risky for banks (Thompson and Boschmans, forthcoming[21]).

Venture capital markets are expanding and evolving

Venture capital (VC) investments typically invest in start-ups and young firms with high growth potential (but a high risk profile). The industry was severely hit by the 2007 financial crisis and activities have not fully recovered to their pre-crisis levels in most countries, especially small and micro-cap markets.

In 2016 and 2017, however, there was an increase in VC investments in a majority of OECD countries (OECD, 2018[22]). Private sources also point to a global surge in VC funding to post-2000 records propelled by Asia[2]. European VC investment reached a ten-year high of EUR 6.4 billion in 2017 surpassing 2008's amount (Invest Europe, 2017[23]). Seed and start-up capital grew by 50% in 2017 only. VC in Asia now exceeds Europe by more than EUR 40 billion annually[3]. 2017 was the second year that saw the US VC-backed funding top USD 70 billion.

This recovery may be, at least in part, due to increased government involvement in the VC market, especially in Europe where government agencies are the most important source of VC funds (BPIFrance et al., 2016[24]). For example, in France, Sweden and the United Kingdom, governments created funds that specifically target the early stage phase in recent years (OECD, forthcoming[16]).

However, the VC horizon is still not fully cleared for SMEs. Another recent important development in VC markets is that deal tickets are increasing in size. The median global VC deal size more than doubled between 2012 and 2017, according to Pitchbook data. This poses potential challenges to smaller firms in need of smaller amounts of financing (Pitchbook, 2017[25]). In a similar vein, the sectors of VC investment remained broadly stable between 2012 and 2016, ICT being the main sector in which venture capitalists invest, followed by life sciences, and at the possible detriment of start-ups intending to emerge in different technology fields (OECD, 2017[26]).

Finally, VC markets appear to be ever more concentrated, at least in the United States. In 1995, around half of all US VC investments took place in the metropolitan area of San Francisco, Los Angeles, New York, and Boston. In 2015, this proportion reached almost 80%, potentially hindering fast-growing ventures in other parts of the country and cementing the position of these areas as centres of innovation (Liner and Bhandari, 2017[27]). There appears to be a paucity of comparable data in other countries.

Recent developments in VC markets reflect in part shifts in the geography of innovation and raises the issue of the positioning of countries, regions and cities as innovation and growth capital redistribute.

Digitalisation is bringing new opportunities for online SME finance

"Fintech", defined as technology-enabled innovation in financial services, offers new opportunities for SMEs seeking finance. Digital platforms and blockchain technology in particular have the potential to revolutionise the financial industry.

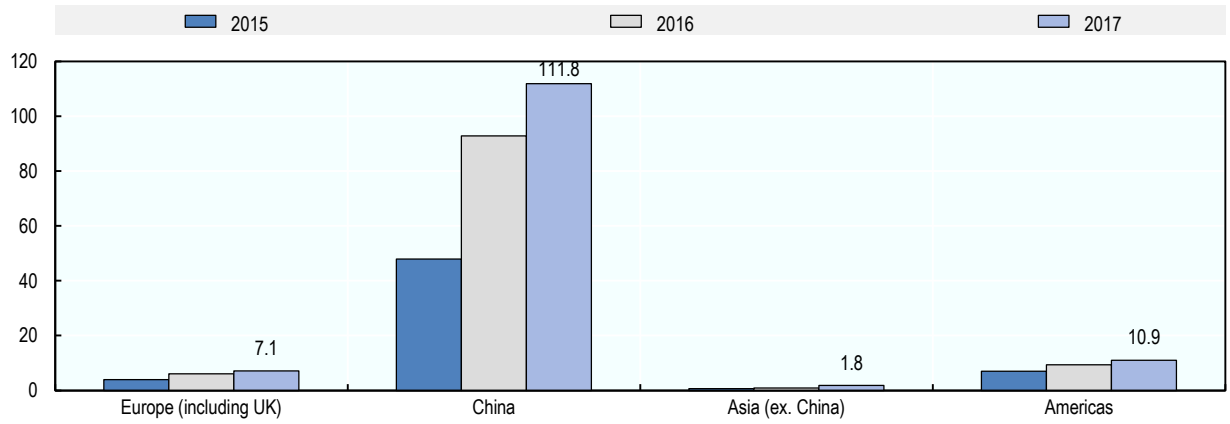
Fintech enables mobile banking, settling (international) payments and collecting and using alternative data sources for assessing SMEs' creditworthiness etc. These technological developments are likely to have a high impact on financial inclusion, as they often drive transaction costs down, making it profitable for financial institutions to serve the segments of the SME population that were previously left aside, such as very small and informal businesses or firms operating in remote and peripheral areas. As a

result, many of these businesses are able to open an account, use payment systems other than cash and buy financial services such as insurance and saving deposits.

The total amount of finance raised through peer-to-peer (P2P) lending or equity crowdfunding platforms and other related alternative online finance instruments has expanded very rapidly in recent years, albeit often from a low base (Figure 5.6). The online finance market is largest in China, followed by the United States and the United Kingdom with volumes in other countries small by comparison.

Figure 5.6. Online markets for SME finance are expanding rapidly

Total volume of alternative finance for business purposes raised through digital platforms, selected regions, billion USD



Source: OECD (forthcoming[16]), *Financing SMEs and Entrepreneurs 2019: An OECD Scoreboard*, OECD Publishing, Paris.

StatLink http://dx.doi.org/10.1787/888933924685

Blockchain technology allows transparency in transactions, including transfers of value, assets and ownership, and a full disintermediation as transfers take place within computer networks on the basis of a consensus among peers. Applications for SME finance include: syndicated loans (where a group of lenders work together to offer a loan to a single borrower, coordinating through blockchain and smart contracts), supply-chain financing (with smart contracts enabling all parties in a supply-chain finance to act on a single shared ledger, with an unprecedented level of trust and efficiency, especially in cross-border value chains) or tokenised loans with digital assets posed as collateral (also through smart contracts).

Initial Coin Offerings (ICOs) are the main financing model introduced with blockchain technology and can be attractive for start-ups aiming to raise funds with very limited restrictions and low regulatory scrutiny (Box 1). ICOs are public financing calls following which token are issued and sold against cryptocurrencies or fiat currencies. Tokens issued through ICOs do not usually grant voting rights or decision-making power but can be used to access a company's services or products.

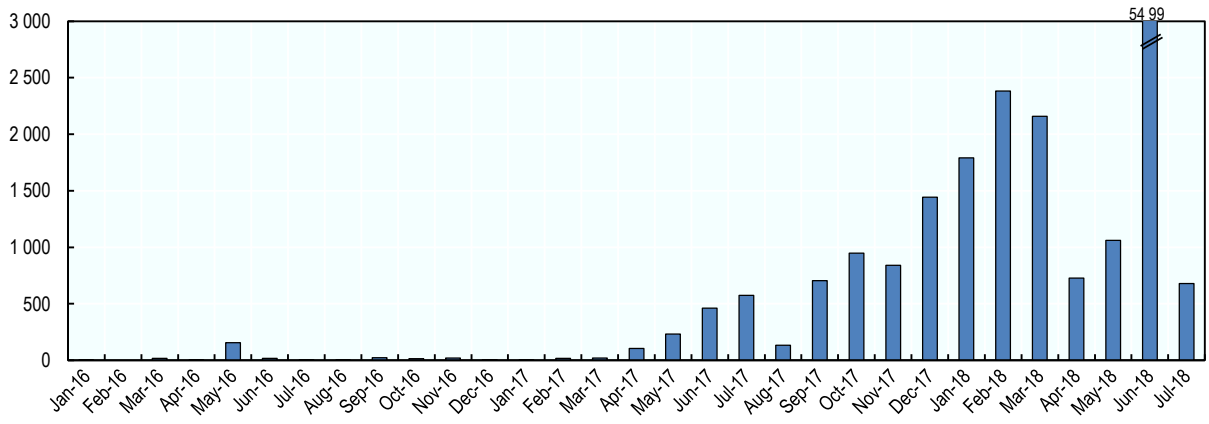
Box 5.1. Initial Coin Offerings (ICOs)

Initial Coin Offerings (ICOs) are usually emitted by start-ups and SMEs along the following pattern: i) Pre-ICO: creation of a white paper and a website, identification of early investors, listing on ICO trackers and comparison websites, development of infrastructure to accept Bitcoin or Ethereum; ii) Pre-Sale: sale of tokens at a discount rate (25-50%) to pre-registered investors, usually through auto-executed smart contracts in exchange of cryptocurrencies; iii) Public sale: open to professionals as well as to retail investors; iv) Public listing: the token are listed either in an unregulated exchange using cryptocurrencies or in a regulated exchange against fiat currency. ICOs are issued since 2013.

ICO issuances have grown rapidly in a very narrow window of time. 2017 marked an important year for the take-off of cryptocurrencies. Although this is a new and fast-changing area with few internationally comparable data available, by some estimates blockchain start-ups and SMEs appear to have raised over USD 5.68 billion through this means in 2017 with activities remaining strong in the first half of 2018. Activities are very volatile over time, partly because of the positive link between the value of ICOs and fluctuations in the

Figure 5.7. Global ICO issuance between 2016 and mid-2018

In USD million



Sources: Coindesk, www.coindesk.com, accessed 25 March 2019, OECD calculations.

StatLink http://dx.doi.org/10.1787/888933924704

Fintech developments, broadly defined, are likely to become a more central feature in the SME finance landscape in the years to come, with established market players adopting techniques and instruments introduced by fintech companies, and blended models on the rise. Development banks and SME agencies are likely to increase their involvement in fintech companies, as for example the European Investment Fund is increasingly doing (Kraemer-Eis et al., 2018[28]).

Although fintech offers opportunities to SMEs in need of finance, there are also risks involved. These can be broadly classified as financial risks, especially for retail investors

that often have little experience or understanding of their investment, cyber-security risks and data privacy risks. Also, these developments may impact financial stability, for example by threatening the business model of established actors, or by concentrating segments of the financial industry in a limited number of technology firms (Pereira da Silva, 2018[29]). Regulators are aiming to find the appropriate balance between encouraging financial innovations and managing the risks, especially since the new Basel III risk-weighting framework is not aimed at risks that have been growing in recent years, such as those associated with disruptive new technologies, blockchain or digital currencies (OECD, 2018[30]).

Main policy approaches and recent policy developments

Governments worldwide have developed policy responses to the challenges SME in need of external finance, often adopting a two-pronged approach of strengthening bank financing as well as providing support to diversify the finance mix of SMEs. This is in line with the G20/OECD High-Level Principles on SME Financing (G20/OECD, 2015[31]) and (OECD, 2015[6]).

A steady expansion of credit guarantee activities

Credit guarantees are the most widely used policy instrument for supporting SME access to finance and the breath and volume of guarantee activities have significantly enlarged since the 2008-09 crisis. Credit guarantee design has been continuously revised and public offer adjusted to keep pace with firms' evolving needs and demand. Many OECD and non-OECD governments expanded the scope of and the budget earmarked to their credit guarantee schemes, either open for all SMEs or by targeting specific firm population's segments such as agricultural ventures, firms operating in the social economy or women-owned SMEs.

In recent years however, the trend has been more mixed with volumes expanding in some countries (strongly in the case of Turkey, for instance), but declining in others. At the same time, countries also paid attention to targeting support towards innovative firms with high growth potential. These firms may face more pronounced finance gaps but offer greater potential in terms of employment and wider economic outcomes.

Korea, for example, plans to provide KRW 2 trillion in loan guarantees between 2018 and 2021, targeting SMEs who receive investments from the Innovation Venture Capital Fund, which provides equity finance from private and public sources to high-potential firms.

New approaches to VC funding

Countries have shifted policy focus from direct participation in equity funds to co-investments and the creation of fund-of-funds.

Table 5.1. Fostering equity investment in new and high growth firms: Selected policy examples

Canada	Venture Capital Catalyst Initiative (VCCI) (2017)	Aims to build a portfolio of large funds-of-funds and alternative models that strengthens and broadens the Canadian VC ecosystem and increases the availability of late-stage venture capital (VC). CAD 400 million earmarked in 2017,
Korea	Support to early stage equity investments	Aims to boost equity investments, especially in firms at early stages of their life cycle, through tax incentives for angel investors, new matching funds for early stage investors (whereby private sector investments are augmented by government investments), and special guarantees for innovative ventures.
United Kingdom	British Patient Capital by the British Business Bank (BBB) (2018)	Aims to enable long-term investment in high growth potential companies across the United Kingdom. By investing alongside private sector equity funds, the GBP 2.5 billion programme will support a total of GBP 7.5 billion of investment into beneficiary businesses over 10 years.

Combining financial support with upskilling and assistance

Financial support is increasingly complemented with non-financial support measures, such as the provision of advisory services, mentoring and tutoring or the provision of network opportunities. Evidence from the Business Development Bank of Canada suggests that policy intervention is more likely to be successful when combining different support measures, especially in light of financial and managerial skills gaps in SMEs (Boschmans and Pissareva, 2017[32]).

As an example, credit guarantee schemes typically offer assistance in the preparation of accounting statements and information on financial markets, and even consultancy-type services, aimed at improving firm competitiveness and productivity. Countries as varied as Chile, Italy and Georgia have taken a step further and address the financing gap of start-ups in particular with comprehensive policy reforms. Micro-finance institutions across the world are increasingly offering non-financial support in addition to financial services. At the end of 2017, micro-finance institutions worldwide provided USD 114 billion to around 139 million underserved clients, up by 5.6% in the number of borrowers and 15.6% in loan portfolio compared to 2016 (European Microfinance Platform et al., 2018[33]).

Seizing the opportunities of Fintech, platforms and blockchain

Acknowledging the potential of Fintech and online finance, governments worldwide are taking initiatives with a view to stimulating the supply and uptake of these alternative forms of finance.

One recent and increasingly popular approach is the so-called regulatory sandbox, which allows innovators in the financial industry to test their products/business models in live environment without following some or all legal requirements, subject to predefined restrictions. This approach was adopted in the United Kingdom in 2015[4] and later in a number of other jurisdictions such as Australia, Canada, Denmark, Hong Kong, Malaysia and Singapore.

The legal framework and supervision of crowdfunding platforms are also being consolidated.

Table 5.2. Sustaining and regulating alternative financing instruments: Selected policy examples

China	National Internet Finance Association of China (NIFA) (2016)	Aims to strengthen industry self-discipline. Initiated by the People's Bank of China in collaboration with relevant ministries and commissions
Mexico	Crowdfunding and cryptocurrency bill	Seeks to protect investors, inject trust and transparency in the market and minimise risks of fraud and money laundering. In addition, government provided support for the creation of an association bringing together major crowdfunding platforms.
United Kingdom	Finance platform referrals (since 2016)	If any of nine designated UK banks are unable to supply the funding an SME requests from them, they are required to offer the SME a referral to (currently) three designated finance platforms. These designated finance platforms each have diverse lending panels ranging from the big banks to niche alternative finance providers and responsible finance providers who may be able to help the SME get the finance they want. In addition, the UK Financial Authority has taken an active role in monitoring online financing activities and providing a regulatory framework in support of their development.

Given the newness of the phenomenon, regulatory frameworks and supervision mechanisms for ICOs are still in their infancy. Country approaches vary markedly, from outright ban in China and Korea, to the establishment of rudimentary framework and guidelines in Singapore and Switzerland, to a free-market development in the US and Japan. But regulatory and standardisation initiatives are likely to develop rapidly in the near future as governments pay increased attention to the risks incurred –often underestimated- and seek to reinforce market integrity and consumer protection (e.g. ill-defined property rights, lack of reporting requirements, lack of standards for documentation, audits and post-issuance disclosure, risks of money laundering etc.). In that vein, some global initiatives are undergone for defining guidelines and taxonomy and better understanding the practices in place.

Another challenge related to digitalisation is that a larger proportion of SME assets are intangible rather than tangible. Although intangible assets, such as patents and other forms of intellectual property, can be collateralised, challenges arise and the practice is relatively uncommon, which limits the potential to obtain external financing for intangible-rich SMEs. Nonetheless, governments in countries such as Korea and Japan have taken initiatives to leverage intangible assets to access debt (Brassell and Boschmans, 2019[34]).

Other relevant aspects of SME access to finance are related to:

- ***Institutional and regulatory framework conditions***, e.g. strong insolvency regimes that offer a second chance for entrepreneurs, or favourable taxation, for instance for investors and business angels, or for SMEs to reinject profit into business development, technology adoption or other investments;
- ***Market conditions***, e.g. by ensuring SME integration into global value chains (GVCs) and their access to additional supply-chain funding opportunities, or by ensuring SME participation in public procurement on level playing field and securing timely payments from public administration;
- ***Infrastructure***, through the deployment and the broad accessibility of secure digital platforms and networks, as well as the protection of data and privacy;
- ***Access to financial skills***, and training of SME owners and managers.
- ***Access to innovation assets*** as the valuation of tangible and intangible assets could provide SMEs with new forms of collateral and helps them raise their profile vis-a-vis potential investors.

Notes

[1] Housing prices correspond to housing rentals (including imputed rentals for owner-occupied dwellings) and maintenance costs. This ignores the purchase prices of houses and apartments, which are considered as investments rather than consumption and are covered by separate price indices.

[2] PricewaterhouseCoopers and CB Insights' 2017 MoneyTree report on Venture Capital, https://www.cbinsights.com/research/report/venture-capital-q4-2017/, accessed 18 September 2018.

[3] PricewaterhouseCoopers and CB Insights' 2017 MoneyTree report on Venture Capital, https://www.cbinsights.com/research/report/venture-capital-q4-2017/, accessed 18 September 2018.

[4] More information on how a regulatory sandbox was developed by the UK's Financial and Conduct Authority(FCA) can be found here: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/701847/UK_finanical___regulatory_innovation.pdf.

References

Altomonte, C. et al. (2016), "R&D investments, financing constraints, exporting and productivity", *Economics of Innovation and New Technology*, Vol. 25, https://www.tandfonline.com/doi/abs/10.1080/10438599.2015.1076203. [4]

BIS (2017), *Global Financial Stability Report April 2018: A Bumpy Road Ahead*, https://www.imf.org/en/Publications/GFSR/Issues/2018/04/02/Global-Financial-Stability-Report-April-2018. [17]

Boschmans, K. and L. Pissareva (2017), "Fostering markets for SME finance: Matching business and investor needs", *OECD SME and Entrepreneurship Papers*, Vol. 6, https://www.oecd-ilibrary.org/docserver/0bd38639-en.pdf?expires=1528191492&id=id&accname=guest&checksum=FE1241E7B73ACE88B281AF96805874EE. [32]

BPIFrance et al. (2016), *Building Momentum in Venture Capital Across Europe*, https://www.kfw.de/PDF/Download-Center/Konzernthemen/Research/PDF-Dokumente-Studien-und-Materialien/Building-Momentum-in-Venture-Capital-across-Europe.pdf. [24]

Brassell, M. and K. Boschmans (2019), "Fostering the use of intangibles to strengthen SME access to finance", *OECD SME and Entrepreneurship Papers*, No. 12, https://doi.org/10.1787/729bf864-en. [34]

EC (2017), *Survey on the Access to Finance of Enterprises (SAFE): Analytical Report 2017*, European Commission, https://ec.europa.eu/docsroom/documents/26641. [9]

European Central Bank (2017), *Survey on the Access to Finance of Enterprises in the Euro Area, October 2016 to March 2017*, https://www.ecb.europa.eu/pub/pdf/other/ecb.accesstofinancesmallmediumsizedenterprises201705.en.pdf?17da4ff2a730b7ababea4037e4ce8cae. [8]

European Microfinance Platform et al. (2018), *Microfinance Barometer 2018*, http://www.convergences.org/wp-content/uploads/2018/09/BMF_2018_EN_VFINALE.pdf. [33]

Ferrando, A. and A. Ruggieri (2015), "Financial constraints and productivity: Evidence from euro area companies", *European Central Bank Working Paper Series*, Vol. 1823, p. 43, https://www.ecb.europa.eu/pub/pdf/scpwps/ecbwp1823%20en.pdf. [3]

G20/OECD (2015), *High-Level Principles on SME Financing*, http://www.oecd.org/finance/G20-OECD-High-Level-%20Principles-on-SME-Financing.pdf. [31]

Giovannini, A., M. Locapetta and R. Minetti (2013), "Financial markets, banks, and growth: Disentangling the links", No. 2013-23, Documents de travail de l'OFCE, https://ideas.repec.org/p/fce/doctra/1323.html. [2]

IMF (2018), *Global Financial Stability Report: A Bumpy Road Ahead*, http://www.imf.org/en/Publications/GFSR/Issues/2018/04/02/Global-Financial-Stability-Report-April-2018. [18]

IMF (2018), *IMF Financial Soundness Indicators*, http://data.imf.org/?sk=51B096FA-2CD2-40C2-8D09-0699CC1764DA (accessed on 18 February 2019). [15]

Invest Europe (2017), *European Private Equity Activity 2017*, https://www.investeurope.eu/media/711867/invest-europe-2017-european-private-equity-activity.pdf (accessed on 18 September 2018). [23]

Kraemer-Eis, H. et al. (2018), "European small business finance outlook", *EIF Working Paper*, No. 2018/50, EIF Research and Market Analysis, http://www.eif.org/news_centre/publications/eif-wp-50.pdf. [28]

Liner, E. and R. Bhandari (2017), *America's Got Talent - Venture Capital Needs to Find It*, Thirdway, https://www.thirdway.org/report/americas-got-talent-venture-capital-needs-to-find-it. [27]

Moritz, A., J. Block and A. Heinz (2017), "Financing patterns of European SMEs revisited: An updated empirical taxonomy and determinants of SME financing clusters", *EIF Working Paper*, No. 2017/40, EIF Research & Market Analysis, http://dx.doi.org/centre. [10]

OECD (2019), *OECD Structural Database on Business Statistics 2019*, OECD, Paris, http://www.oecd.org/sdd/business-stats/structuralanddemographicbusinessstatisticssdbsoecd.htm. [12]

OECD (2018), "Enhancing SME access to diversified financing instruments", 2018 OECD SME Ministerial Conference, http://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Plenary-Session-2.pdf. [20]

OECD (2018), *Entrepreneurship at a Glance: 2018 Highlights*, OECD, Paris, http://www.oecd.org/sdd/business-stats/EAG-2018-Highlights.pdf. [22]

OECD (2018), *Financing SMEs and Entrepreneurs 2018: An OECD Scoreboard*, OECD Publishing, Paris, http://dx.doi.org/10.1787/fin_sme_ent-2018-en. [13]

OECD (2018), *OECD Business and Finance Outlook 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264298828-en. [30]

OECD (2018), *OECD Economic Outlook, Volume 2018 Issue 1*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_outlook-v2018-1-en. [19]

OECD (2018), *OECD Economic Outlook, Volume 2018 Issue 2*, OECD Publishing, Paris, https://doi.org/10.1787/eco_outlook-v2018-2-en. [11]

OECD (2017), *Banking Sector Leverage*, OECD, Paris, https://data.oecd.org/corporate/banking-sector-leverage.htm. [14]

OECD (2017), *Entrepreneurship at a Glance 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/entrepreneur_aag-2017-en. [26]

OECD (2015), *New Approaches to SME and Entrepreneurship Financing: Broadening the Range of Instruments*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264240957-en. [6]

OECD (forthcoming), *Financing SMEs and Entrepreneurs 2019: An OECD Scoreboard*, OECD Publishing, Paris. [16]

OECD/EU (2017), *The Missing Entrepreneurs 2017: Policies for Inclusive Entrepreneurship*, OECD Publishing, Paris, https://doi.org/10.1787/9789264283602-en. [5]

Pereira da Silva, L. (2018), "Fintech in EMEs: Blessing or curse?", https://www.bis.org/speeches/sp180620.pdf. [29]

Pitchbook (2017), *The Rise in VC Deal Sizes since 2012*, Pitchbook News and Analysis, https://pitchbook.com/news/articles/the-rise-in-vc-deal-sizes-since-2012. [25]

Rajan, R. and L. Zingales (1998), "Financial dependence and growth", *American Economic Journal*, Vol. 88/3, pp. 559-586, https://ideas.repec.org/a/aea/aecrev/v88y1998i3p559-86.html. [1]

Thompson, J. and K. Boschmans (forthcoming), "Alternative financing instruments for SMEs and entrepreneurs: The case of capital market finance", *OECD SME and Entrepreneurship Papers*, OECD Publishing, Paris. [21]

Wehinger, G. (2014), "SMEs and the credit crunch: Current financing difficulties, policy measures and a review of literature", *OECD Journal: Financial Market Trends*, Vol. 2013/2, http://dx.doi.org/10.1787/fmt-2013-5jz734p6b8jg. [7]

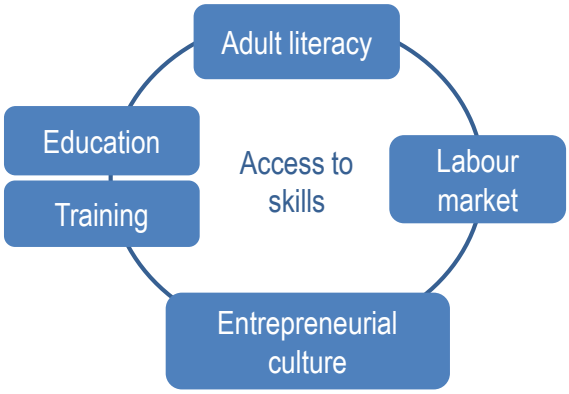
Chapter 6. Access to skills

Skilled workers are a key asset for competition in a knowledge-based economy. However, SMEs have greater difficulty in hiring and retaining skilled workers than larger firms because they lack the capacity and networks needed to identify talent and offer less attractive working conditions. Rapid digital transformation, growing globalisation and emerging skills shortages worldwide are likely to put further pressure on labour markets and increase the competition for skills, placing SMEs at an even greater disadvantage. This chapter presents recent labour market trends and discusses the implications for SMEs with respect to their access to skilled workers. It reveals that, although SMEs are reducing the training gap with large firms, relatively few SMEs support the acquisition of digital skills. Moreover, there appear to be persistent gender gaps among entrepreneurs and small business owners in entrepreneurship attitudes and access to training. The chapter also discusses recent national policy actions that improve the capacity of SMEs to upskill their workers, e.g. training and education programmes, technology extension programmes, regulatory measures that encourage upskilling, tailored support for women entrepreneurs and business owners.

Highlights

- Employment rates across OECD countries have increased for three consecutive years and SMEs face skilled labour shortages. SMEs appear to have difficulties attracting and retaining employees with management, communication or problem-solving skills, which are crucial for innovation.
- SMEs are increasingly engaging with continuous vocational and education training programmes and catching up to large firms in the proportion that offer these opportunities to employees. Yet, there is a lack of ICT training in the workplace, which is of particular concern in light of adult skills gaps and urgent retraining needs, including to harness the digital transformation.
- The under-representation of women among entrepreneurs and business owners is in part linked to skills. More needs to be done to help women harness the opportunities created by the digital economy, including in acquiring ICT skills, Science Technology Engineering and Math (STEM) skills, management and communication skills, and entrepreneurship skills.
- Policy makers continue to use a mix of instruments to urge SMEs to offer upskilling opportunities for their employees. This includes measures that reduce training costs and strengthening linkages between SMEs and training providers. There is a growing focus on strengthening management skills, developing entrepreneurial skills and mindsets, and offering tailored training and support for female entrepreneurs and business owners.

Why is it important?



Skilled workers are a key asset for competition in a knowledge-based economy (Autor, 2013[1]; Grundke et al., 2017[2]). Skills development has therefore become critical in a context of a fast and irreversible digital transition and growing globalisation.

Highly skilled employees have an important role in firms because they are more likely to be involved in performing complex tasks that help drive firm competitiveness and productivity growth (Acemoglu, 2002[3]). This is confirmed by empirical studies that point to a mutually reinforcing relationship between workforce skills, and innovation and

productivity (OECD, 2018[4]). Skilled employees are also vital for enhancing technology and innovation absorption, as well as breaking into new markets.

Skilled workers typically have strong cognitive (e.g. literacy, numeracy and problem solving), management and communications skills, and a readiness to learn. ICT skills are of particular relevance for making use of emerging digital technologies, such as cloud computing, the Internet of things or big data (OECD, 2017[5]). However, firms also need workers with strong social and emotional skills (e.g. communication, self-organisational skills) that complement cognitive skills. Successful employers also need employees with entrepreneurial skills and mindsets to help firms identify, create and act upon opportunities, and adapt to change (OECD, 2018[6]).

The benefits for SMEs of upskilling their workforce can be extensive. In addition to helping to close the productivity gap with large firms, improving the skills of workers can also strengthen the position of SMEs in global value chains (GVCs) by helping them specialise in high value-added activities (e.g. technologically-advanced industries, complex business services) and integrate themselves into higher value-added segments of GVCs (OECD, 2017[7]). Skilled employees are also valuable for SMEs managing organisational change encountered during company transitions such as growth or exporting for the first time (OECD, 2015[8]).

However, SMEs typically have greater difficulty in attracting and retaining skilled employees than large firms because they tend to lack the capacity and networks needed to identify and accessing talent. More importantly, they tend to offer less attractive remuneration and working conditions compared to larger firms (Eurofound, 2016[9]) and therefore have difficulty competing for highly skilled workers. Recent results from the OECD/Facebook/World Bank Future Business Survey show that as many as one-third of SMEs report that recruiting and retaining skilled employees is the most pressing challenges for their business (Facebook/OECD/World Bank, 2018[10]).

Moreover, this challenge appears to be increasing. Results from the Survey on the Access to Finance of Enterprises (SAFE) by the European Central Bank and the European Commission show that 24% of surveyed SMEs in the Euro area reported that "labour availability of skilled staff or experienced managers" was the most important problem faced in 2017 (European Commission/European Central Bank, 2018[11]). This was nearly double the proportion that reported this as the most important problem in 2011 (13%).

SMEs also offer fewer opportunities for employee development and skills acquisition. Employees in small firms are 50% less likely to be offered formal training than those in larger firms (OECD, 2013[12]), which is often due to the lack of dedicated internal training or Human Resources departments to organise and co-ordinate training. Moreover, SMEs tend to have lower levels of management skills and practices, which hampers the utilisation and development of skills within SMEs (OECD, 2015[13]). Thus, even when skills are increased they may not be used effectively.

In addition, direct financial costs for developing tailored training are relatively higher for SMEs than for large firms because large firms can distribute the fixed training costs over a larger group of employees. It must also be recognised that the opportunity cost of training is often greater in SMEs as they have fewer employees, leaving less scope to release people from revenue-generating activities for training.

SMEs also tend to view training differently than large firms. Some SMEs do not consider training to be a value-generating activity, but rather as part of an induction process required by the law, e.g. to familiarise new employees with health and safety

requirements (OECD, forthcoming[14]). Furthermore, SMEs tend to experience higher job turnover than larger firms, constraining the capacity and willingness of SMEs to invest in the skills development of their workforces when there is a risk that an upskilled employee will leave shortly after training.

Poorly developed markets for business transfer may also play a role in holding SMEs back in renewing their skills and practices, and this is a growing policy concern in many countries.

Public policy can play a role in addressing these challenges to help boost productivity within SMEs, which would be expected to lead to job creation and growth. One under-exploited area for policy is to tap into the existing but unrealised potential for innovation and growth among certain segments of entrepreneurs and SME owners, e.g. female entrepreneurs and business owners.

It is also important for policy makers to support SMEs in adjusting to changing nature of work. Nearly one in two jobs are likely to be significantly affected by automation: about 14% of workers are at a high risk that their tasks will be automated over the next 15 years, and another 30% will face major changes in the tasks required in their job and, consequently, the skills they would need to do their job. At the same time, new jobs will be created that will likely require workers to use digital technologies and undertake more complex tasks. OECD countries where workers use ICT more intensively at the work are also characterised by a higher share of non-routine jobs (OECD, 2018[15]). This suggests that the skill requirements of many jobs will very likely change in the not-so-distant future and this trend will make training, reskilling and upskilling even more critical for workers, firms (of any size) and policy makers (Frey and Osborne, 2013[16]; Nedelkoska and Quintini, 2018[17]).

Skills, labour markets and emerging trends

There are signs of continued skilled labour shortages in SMEs

Labour market participation has been increasing in the OECD area in recent years, signalling an ongoing recovery from the global financial crisis and a return of discouraged jobseekers to the labour market. The share of the population aged 15 to 64 years old who were employed reached 68.5% in Q4 2018, above the business-cycle peak in Q4 2007 (also 66.5%) just before the crisis. Labour markets are expected to continue to tighten over the next two years but employment growth is still expected (OECD, 2018[18]). Although, recent job creation has been largely driven by SMEs, especially new enterprises, most of the new jobs in many countries have been created in low productivity sectors where skills requirements are also lower (see Chapter 1 on recent trends in SME sector and performance). The tightening labour market is likely to increase the competition for skills, which may have a disproportionate impact on the ability of SMEs to attract skilled workers.

This pressure is likely to increase on SMEs in the future given the rate of population aging, which is expected to increase competition for workers.

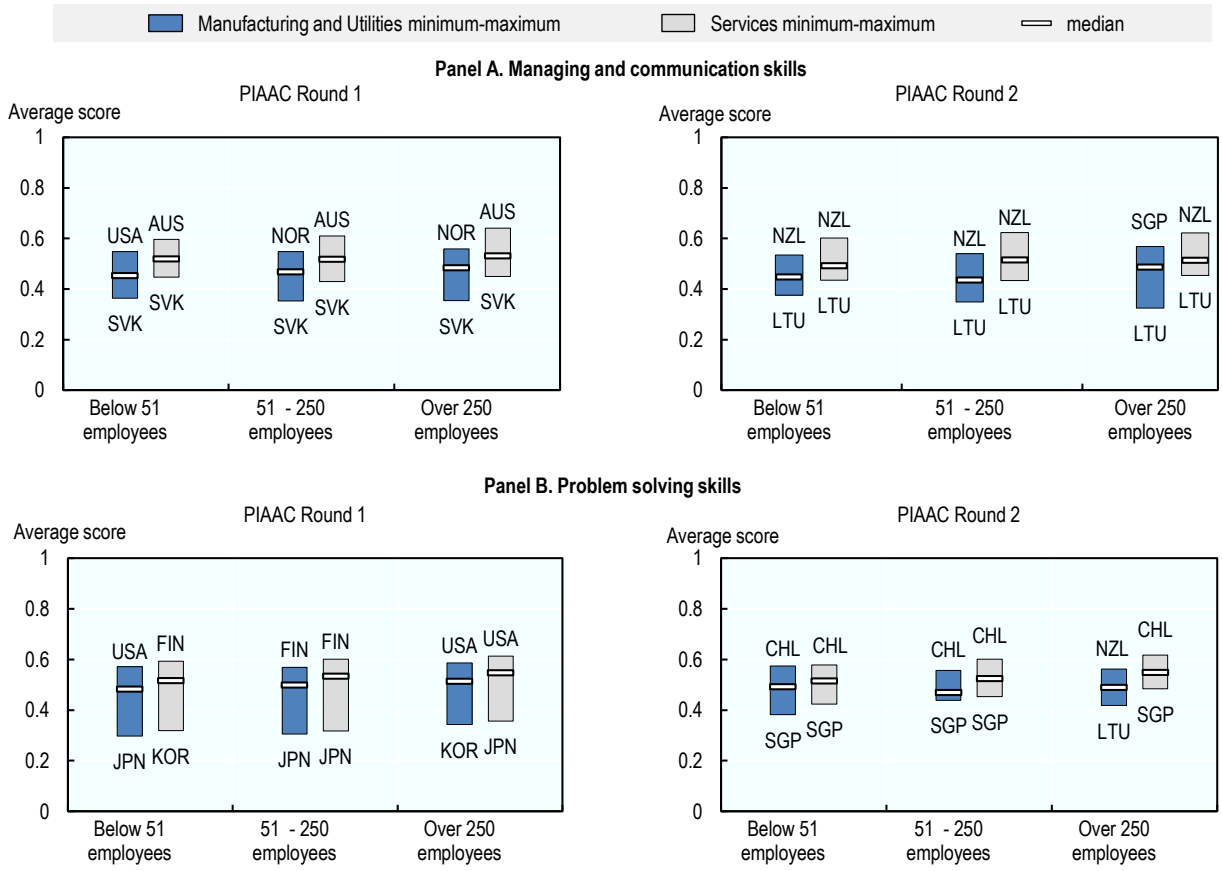
OECD work also shows that transversal skills are a key component of the skills mix that is needed at the worker, firm and country level to harness increased globalisation, to seize the benefits but also to face the potential negative impacts of increased global competition and fragmentation of production (OECD, 2017[5]). This increases the demand for workers who have not only strong cognitive skills (including literacy, numeracy and problem

solving) but also management and communication skills, and a readiness to learn (OECD, 2018[15]). Acquiring these skills is particularly important for workers in SMEs, where employees are called on to perform a variety of tasks in a less structured fashion than in large firms.

Evidence suggests that employees in SMEs are less likely to have innovation-related transversal skills than those working in large firms. For example, results from the OECD Survey on Adult Skills (PIAAC) show that workers in large firms have higher scores on questions related to management and communication skills (Figure 6.1, Panel A), and problem solving capacity (Figure 6.1, Panel B). While the maximum and minimum of test scores are approximately the same across all firm sizes, the median scores increases by firm size. Thus, SMEs appear to be just as likely as large employers to have employees that have very high and very low scores. However, on average scores appear to be higher in large employers.

Figure 6.1. Smaller firms lack soft skills for innovation

Distribution of skills across countries by firm size and sector



Note: PIAAC tests the cognitive skills of adults on different dimensions (literacy, numeracy and problem solving in technology rich environments) as well as the type of tasks they frequently perform. PIAAC Round 1 was conducted in 2008-13 and Round 2 was conducted in 2012-16.

Sources: Grundke, R. et al. (2017[2]), "Skills and global value chains: A characterisation", https://doi.org/10.1787/cdb5de9b-en, based on data from OECD (2016[19]), Survey of Adult Skills (PIAAC) (Database 2012, 2015) http://www.oecd.org/skills/piaac/publicdataandanalysis/.

StatLink http://dx.doi.org/10.1787/888933924723

Employees in service sector firms have higher scores relative to those in manufacturing and utilities sections, both in terms of the maximum and minimum scores as well as the median score. A similar firm-size pattern is observed in both sectors. Moreover, little difference in results is observed between the two time periods of the survey, i.e. Round 1 (2008-12) and Round 2 (2012-16).

SMEs continue to offer fewer opportunities to upskill but are closing the gap with large firms

In most OECD countries, the majority of SMEs offered continuing vocational education and training (CVET)[1] to their employees in 2015 (Figure 6.2). Nonetheless, the proportion of employers that offer CVET increased with firm size.

However, there appears to be a growing number of small and medium-sized employers that offer CVET. While the proportion of all firms offering CVET increased between 2010 and 2015 in nearly all countries, the gains observed among small and medium-sized employers are relatively greater so the gap between small and large firms appears to be narrowing.

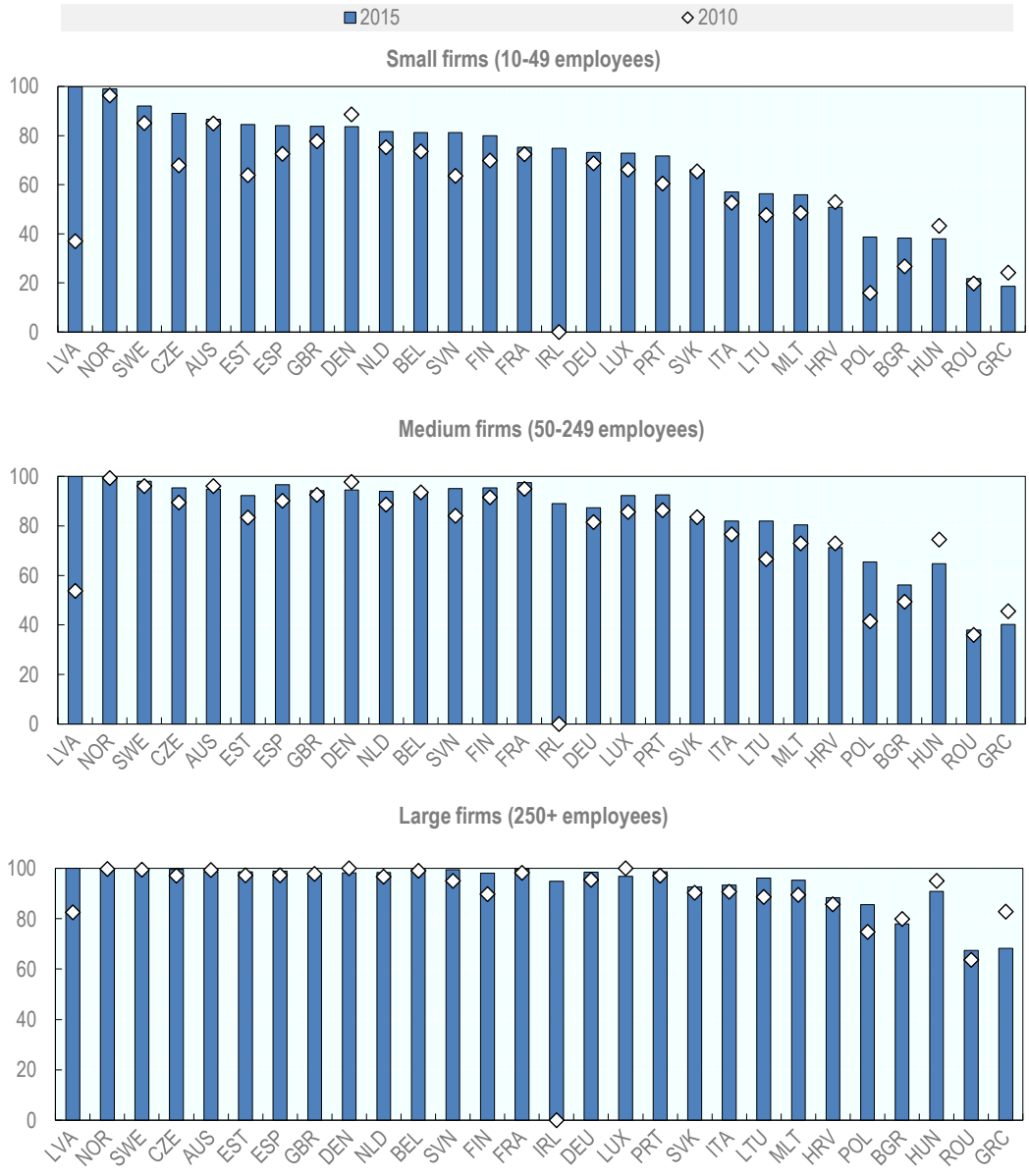
Within SMEs, CVET courses were the most frequently offered type of training in 2010 and 2015. External courses were offered more frequently than internal courses. Other common approaches included guided-on-the-job training; training at conferences, workshops, trade fairs and lectures; and self-directed learning.

Many OECD countries are examining the role of apprenticeship programmes as a means of better linking the education system to the world of work. Apprenticeship programmes combine both school-based education and the on-the job training and result in a formal qualification or certificate (OECD/ILO, 2017[21]). Many SMEs use apprenticeship programmes because of their benefit in stimulating company productivity and profitability. In countries for which data are available, more than 50% of all apprentices work in companies with 50 employees or fewer (see Figure 6.3). Apprenticeships are more common in manufacturing, construction and engineering sectors, where employers (and often unions) are well represented and organised (Kuczera, 2017[22]).

The proliferation of ICT offers growing opportunities for SMEs to further close the training gap with large firms. Online training platforms decrease the costs of delivering training. These approaches typically use a modular approach, which increases the flexibly for employers and employees to manage the time needed for training with work responsibilities.

Figure 6.2. A larger share of small firms are offering training, narrowing the gap to larger firms

Proportion of employers that offer continuing vocational education and training, by firm size class, 2010 and 2015

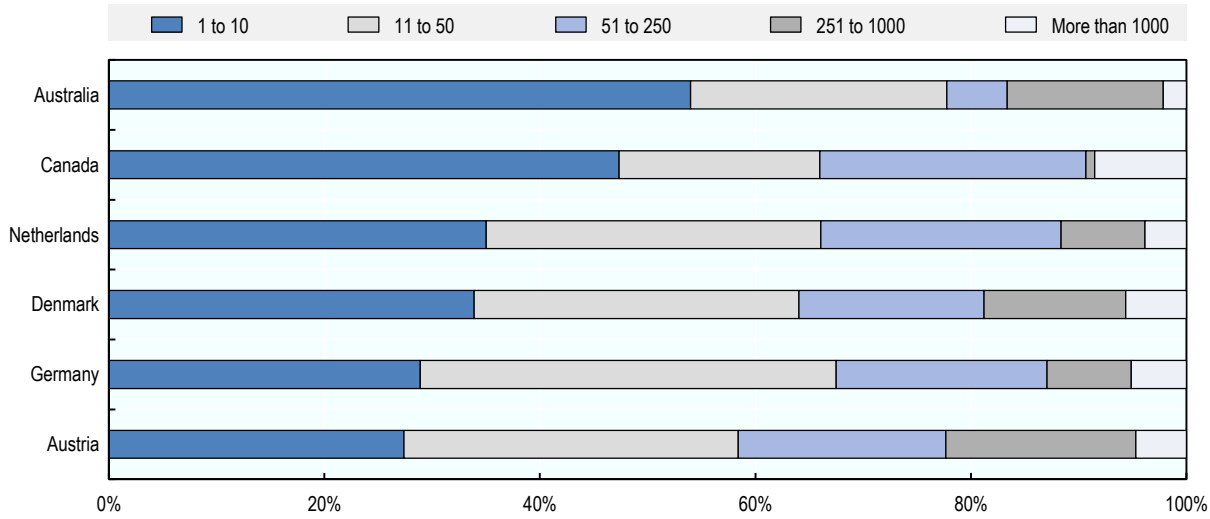


Source: Eurostat (2018[20]), *Continuing Vocational Training Survey*, https://ec.europa.eu/eurostat/web/education-and-training/data/database.

StatLink http://dx.doi.org/10.1787/888933924742

Figure 6.3. A large share of apprenticeships work in small companies

Share of apprentices by firm size (employment)



Source: OECD (2016[19]), *Survey of Adult Skills (PIAAC) (Database 2012, 2015)*, www.oecd.org/skills/piaac/publicdataandanalysis/.

StatLink http://dx.doi.org/10.1787/888933924761

Few SMEs support the acquisition of digital skills

The level of ICT skills in the workforce has a strong relevance in the context of the general trend towards job automation which, with the advent of robotics, machine learning algorithms and artificial intelligence, is becoming increasingly pervasive both in manufacturing and in services.

Results from the OECD Survey on Adult Skills (PIAAC) reveal that two-thirds of adults in the OECD area lack core ICT skills to succeed in technology-rich environment. Thus, strengthening of the provision of digital training in SMEs appears to be crucial but there are wide cross-country differences in firms' participation in ICT training (Figure 6.4). Whereas 48.9% of firms in New Zealand with fewer than 50 employees trained their employees in 2017 with a view to developing their ICT-related skills, only 6.7% of small firms in Latvia did. While a similar pattern is also observed in medium-sized and large firms, the relative gap between the high and low performers decreases as firm size increases.

Figure 6.4. Business supply of ICT training has progressed little in recent years

Percentage of businesses providing ICT training to their employees by size class, 2018 compared to 2012

Note: Data refer to businesses with 10 or more employees that provided any type of training to develop the ICT related skills of their employees within the last 12 months. Data for New Zealand refer to 2016 and Iceland to 2014. Data for medium-sized firms in Portugal refer to 2017.
Source: OECD (2017[23]), *ICT Access and Usage by Businesses Database*, http://dx.doi.org/10.1787/58897a61-en.

StatLink http://dx.doi.org/10.1787/888933924780

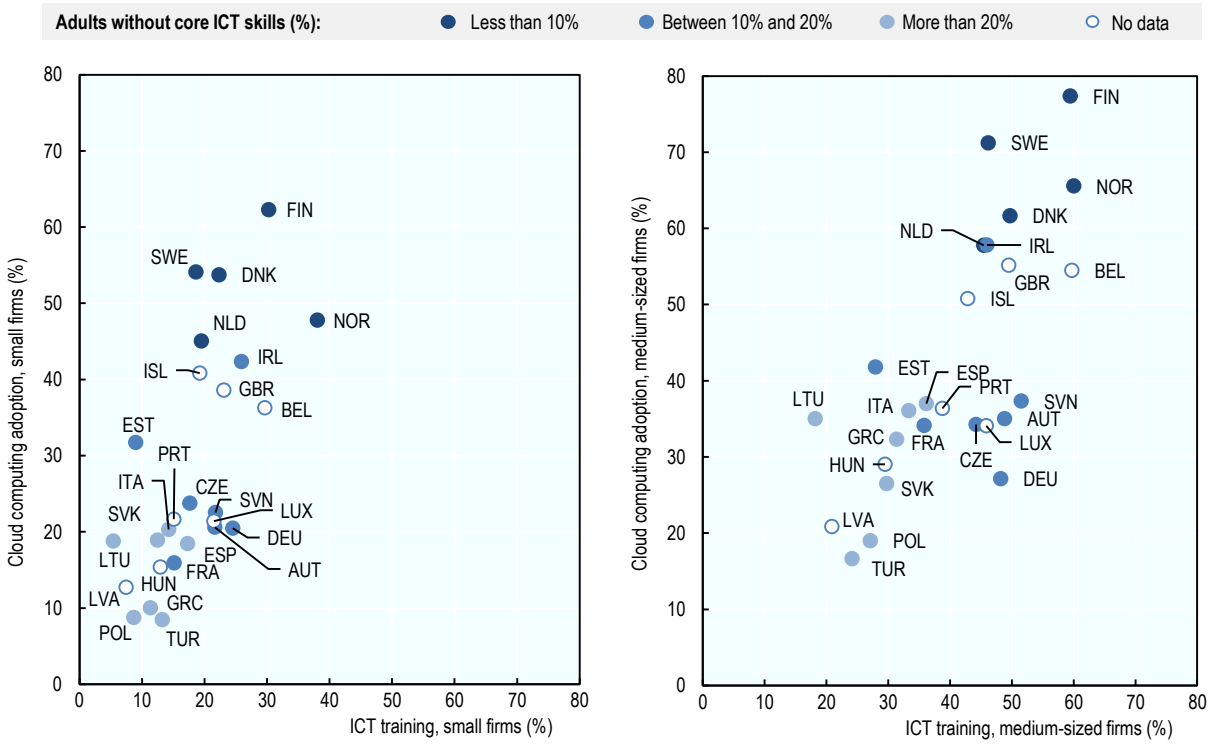
Nevertheless, the proportion of businesses supplying ICT training has not increased substantially since 2012. This observation holds across all firm size classes (Figure 6.4). Belgium, Germany, Italy, Luxembourg, Netherlands and Spain are the few countries where small firms have engaged more actively in training their employees in 2018 than they did in 2012. The share of medium-sized firms providing ICT training also slightly increased in Belgium, Hungary, Italy, Luxembourg, Netherlands, Poland and Spain over the period. But changes remain limited overall and the situation has even worsened in Finland, Portugal and the Slovak Republic for all SMEs, and in Norway and the UK for medium-sized firms.

There appears to be a correlation between the offer of ICT training and the adoption of digital technologies. European countries where firms more actively offer ICT training show higher business adoption rates of cloud computing (CC) (Figure 6.5).[2] Denmark, Finland, Norway and Sweden lead the ranking while SME digital transformation appears less advanced in Southern and Central European countries. The same data show greater country dispersion in the uptake of CC among small firms than medium-sized firms, and

conversely greater country dispersion in training practices among medium-sized firms than small firms. Furthermore, firms in countries with higher adult digital literacy tend to invest more in ICT training and have higher CC adoption.

Figure 6.5. Smaller firms provide less ICT training for their staff at the risk of delaying their digital transition

Percentage of businesses that provided ICT training to their employees by firm size class (x-axis) and use cloud computing services (y-axis), 2018



Note: Adults without core ICT skills include 25-65 year old adults with no computer experience or failing the ICT core in the 2015 PIAAC survey. Data on ICT training and cloud computing refer to 2018 or latest year available and comprise businesses with 10 or more employees that respectively provided any type of training to develop the ICT skills of their employees within the last 12 months and that use cloud computing services.

Sources: OECD (2019[24]), *ICT Access and usage by Businesses Database*, http://dx.doi.org/10.1787/58897a61-en; OECD (2017[25]), *OECD STI Scoreboard 2017*, https://www.oecd.org/sti/scoreboard.htm based on OECD (2016[19]), *Survey of Adult Skills (PIAAC) (Database 2012, 2015)*, www.oecd.org/skills/piaac/publicdataandanalysis/.

StatLink http://dx.doi.org/10.1787/888933924799

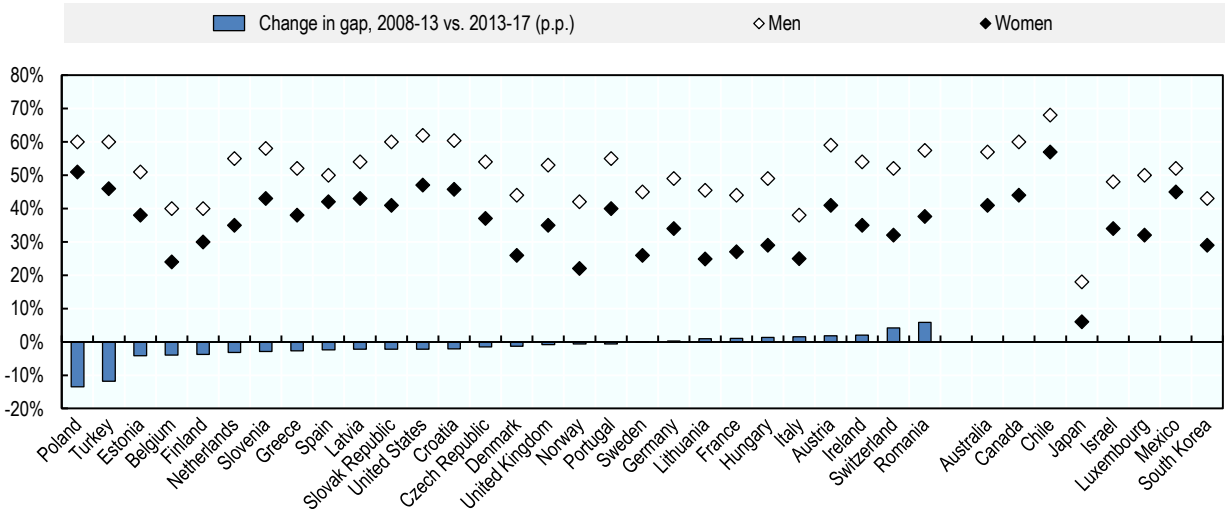
Female entrepreneurs and business owners have great potential but face barriers to acquiring skills

The formal education levels attained by women, on average, increasingly exceed those of men. However, women still tend to have less experience in self-employment (Marlow and Carter, 2004[26]; Collins-Dodd, Gordon and Smart, 2004[27]) and continue to have fewer opportunities than men in management positions, which acts as a barrier to gaining management experience and skills that can be used in entrepreneurship (Boden Jr. and Nucci, 2000[28]).

Women are also less likely than men to feel that they have the skills, knowledge and experience to start a business. Across OECD countries, 37% of women indicated that they had sufficient skills, knowledge and experience to start a business over the 2013-17 period. However, more than half of men did (51%) and this gender gap holds across all OECD countries (OECD/EU, 2017[29]). Relative to the 2008-13 period, the gender gap has closed slightly in most countries, notably in Poland (9 percentage points) and Turkey (12 p.p.) (Figure 6.6). The gender gap only increased slightly in Switzerland (4 p.p.) and Romania (6 p.p.), driven by more improved perceptions in the male population.

Figure 6.6. There is a pervasive gender gap in adult perception of their entrepreneurship skills

Proportion of adults who report having the skills and knowledge to start a business, 2013-17



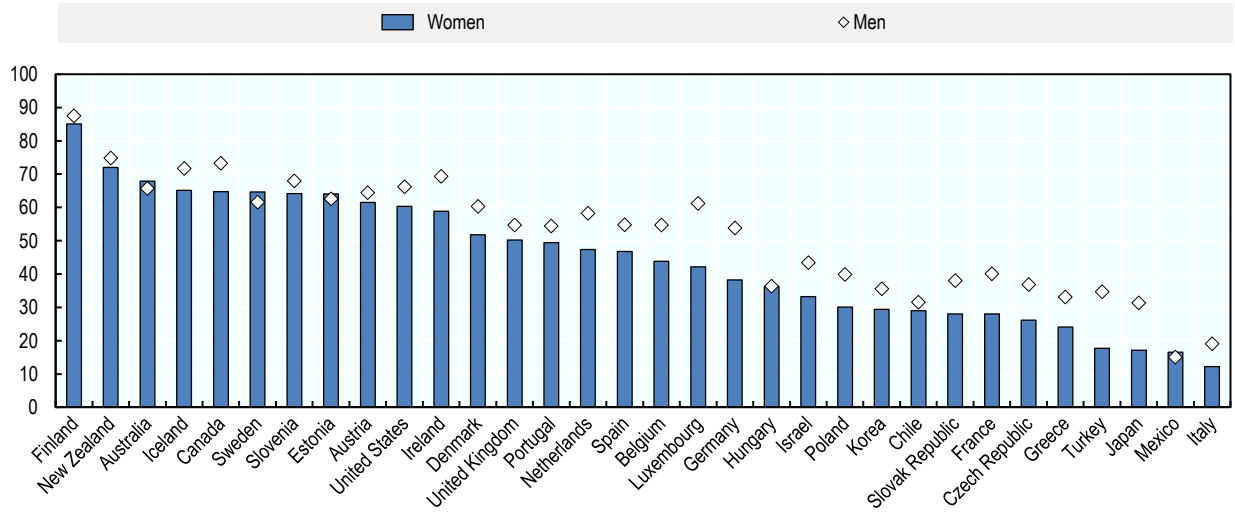
Note: The change in the gender gap measures the change between the period 2013-17 relative to the period 2008-13.
Source: GEM (2018[30]), *Special Tabulations of the 2013-17 Adult Population Survey*, Global Entrepreneurship Monitor.

StatLink http://dx.doi.org/10.1787/888933924818

Moreover, women are less likely than men across OECD countries to report that they have access to training on starting and growing a business (OECD, 2016[31]). Figure 6.7 confirms that in all but three OECD countries (Australia, Sweden and Mexico), women were less likely to have access to entrepreneurship training in 2013. This gap can be explained by several factors, including low levels of awareness of available support, unappealing training programmes (i.e. the content is less relevant for the types of businesses that women operate), selection bias in programme in-take, or issues of accessibility (e.g. childcare services are not offered as part of the support programme).

Figure 6.7. Females report less access to entrepreneurship training

Proportion of adults who report that they can access to training on how to start a business, 2013



Source: OECD (2018[32]), "Entrepreneurship: Access to training and money to start a business, by sex", OECD Gender Portal, OECD, Paris.

StatLink http://dx.doi.org/10.1787/888933924837

There are substantial economic gains to be realised from female participation in the labour market, entrepreneurship and business ownership. For example, estimates suggest that cutting the gap in labour market participation in half by 2025 would result baseline GDP growth by 2.5 percentage points per year (OECD, 2017[33]).

Main policy approaches and recent policy developments

Engaging SMEs in training and education

There are several types of policy initiatives that can be deployed to support the development of workforce skills in SMEs (OECD, 2012[34]), mainly focusing on reducing training costs for firms and promoting the benefits of workplace training (Table 6.1).

Many OECD countries offer tax incentives to reduce the cost firms incur for training their employees. Training costs can be, partially or fully, deductible from annual corporate profits in the form of tax exemptions. Such schemes may specifically target smaller firms by offering them enhanced deductions.

Smaller firms are also frequently targeted by direct training subsidies schemes. Training vouchers, for example, help SMEs purchase training hours from accredited individuals or institutions.

In addition, countries aim to raise awareness of the importance of training and skills development in SMEs through various channels, including public and stakeholder organisations.

An option for awareness raising is to leverage local employer networks to promote skills upgrading in the workplace. Employer networks and associations can also foster trust-based relationships between firms that support knowledge-sharing and pooled

investments in training. Collaborations across firms can also foster innovative diffusion within regional supply chains, potentially integrating firms into GVCs, which also reduces regional vulnerability to automation (OECD, 2018[35]).

Countries are also investing more in "brokers" or intermediator bodies such as group or collective training offices to organise training for groups of SMEs to shift the burden away from individual employers. These organisations often sign apprenticeship contracts with government while also providing pastoral care and practical assistance to individual apprentices. They are particularly useful for SMEs who would not otherwise be able to meet the national minimum standards for training apprentices and upholding apprenticeship training quality standards.

Regulation can also encourage skills development. Some countries have introduced statutory rights for employees for training leave. However, their take-up is generally not high (less than 2% of employees benefitting from the measure).

Table 6.1. Engaging SMEs in training their workers: Selected country examples

		Financial support for SME access to training
Canada (Quebec)	Tax credit for on-the-job training	Tax credits were increased in 2018 from 24% to 32% for trainees enrolled in an education programme (among other special programmes) with an aim to increase the incentive for SMEs to train their staff.
Lithuania	Competence vouchers (2017)	Granted to employers to purchase training services for employees within 12 months. The EUR 4 500 vouchers can be used towards 80% of the training costs for the micro, small and medium enterprises and 70% for large enterprises. The scheme is operated by the Ministry of Economy and Innovation with support from the European Social Fund.
		Training brokers and intermediaries
Ireland	Skillnet Ireland	National agency dedicated to the promotion and facilitation of workforce learning in Ireland. Skillnet Ireland funds more than 15 000 companies and provide learning experiences to more than 50 000 trainees. Member companies actively participate in determining their own training needs and how, when and where training will be facilitated. Programmes are optimised to suit the needs of employed learners, through both formal and informal learning that spans further education and higher education provision. In 2018, Skillsnets Ireland had a 29% increase in its budget to help make workplace training more responsive to a rapidly changing world of work and to increase its focus on enterprise-led programmes.
		Regulation for skills development
France	Personal Training Account (2015)	Provides every employee with a personal training account accessible online and valid throughout its entire career. Every employee receives 24 hours of training per year worked (for a full-time post) until they reach a threshold of 120 hours. Above this threshold, 12 hours a year are received up to the threshold of 150 hours. The Personal Training Account replaced the 2003 Individual Rights to Training.

Using technology extension policies and programmes to provide tailored support to SMEs

Government-funded technology extension programmes seek to expand the absorption and adaptation of existing technologies (e.g. equipment, new managerial skills) in firms, and to increase their absorptive capacity. While this type of support is not new, the use of technology extension programmes that are targeted at SMEs has expanded over the last decade (Shapira, Youtie and Kay, 2011[36]).

Technology extension programmes typically start with an assessment of the firm's operations and processes, followed by a proposed plan for improvement and implementation assistance. Key services include information provisions (e.g.

opportunities to improve use of existing technologies, trends, best practices); benchmarking to identify areas for improvements; technical assistance and consulting; and training.

Technology extension services are often offered by networks of technical specialists (e.g. engineers) who proactively reach out to firms to organise visits and consultations. However, firms can also reach out for assistance to technology extension programmes.

This type of support is typically offered individually to interested firms, but may also be provided simultaneously to groups of firms with common needs. The first stages of review and diagnosis are generally free of charge, while more intensive projects often require co-financing by the firm, although at lower than market prices for consulting services (Table 6.2).

Table 6.2. Increasing SME absorptive capacity: Selected country examples

		Technology extension programmes
Singapore	National Centre of Excellence for Workplace Learning (2018)	Aims to help companies set up on-the-job training structures. Companies can apply for grants from SkillsFuture Singapore, and SMEs can receive up to 90% of the cost of training in-house trainers. It is expected to help more than 1 000 companies, especially SMEs, in the next five years.
		Management skills in SMEs
UK	Small Business Leadership Programme (2018)	Looks to provide management training to 2 000 small business leaders in its first year with and aims to scale-up to reach 10 000 beneficiaries by 2025. The Small Business Leadership Programme is part of package of measures aiming to assist businesses in improving their productivity, This also includes the strengthening of local networks focused on business improvement, getting the UK's leading businesses signed-up to mentoring programmes, and promoting "Knowledge Transfer Partnerships" whereby postgraduates are placed in businesses to translate their research insights into business growth.
		Management skills and ICT adoption
Mexico	Business incubators for basic enterprises (2015)	Encourages the upgrading of managerial skills and ICT adoption in micro-enterprises. Micro-enterprise owners receive six hours of basic management training as part of this programme.

Strengthening management skills in SMEs

Governments have several tools at their disposal to help build management skills in SMEs, ranging from the provision of digital diagnostic tools to help SMEs identify their management deficiencies, training and workshops, and more intensive approaches such as management coaching. Most programmes and initiatives tend to cover business strategy; operating models; process management; performance management; leadership; governance; agility; and innovation (Table 6.2).

One of the greatest challenges for governments is to create a demand for existing support services since many programmes have low take-up rates due to a lack of awareness of existing programmes; legitimacy issues around public support operators; doubts on the usefulness of the advice; and limited ambitions for business development and growth.

Some countries also combine management training and consulting with support in ICT adoption and use. This approach can help stimulate innovation and boost productivity (OECD, 2016[37]).

An important component of management skills is financial planning and management. The need to enhance financial skills and strategic vision of entrepreneurs and small business owners is recognised in the G20/OECD High-Level Principles on SME Finance.

This includes the ability to conduct financial and risk planning, keep track of financial transactions, respond to disclosure requirements and provide relevant financial information in start-ups' business plans and SME investment projects (G20/OECD, 2015[38]).

Creating an adaptive and entrepreneurial workforce

Many OECD countries have recently developed strategies, programmes and initiatives to develop transversal skills that allow individuals to be creative, take initiative, act as problem-solvers, effectively manage resources, and build financial and technological knowledge. Initiatives include entrepreneurship education and entrepreneurship training programmes, as well as workplace training on innovation and change management. These competencies enable entrepreneurs and entrepreneurial employees to provoke and adapt to change and are thus crucial for innovation and business growth in SMEs.

Building entrepreneurship skills and entrepreneurial mindsets has become a central mission of education policies. In many OECD countries, schools, vocational education and training (VET) institutions and higher education institutions (HEIs) have been enriching their study programmes with education activities to develop entrepreneurship competencies, either as self-standing modules or embedded into curricula. Developing countries are also becoming more active in this policy area (Table 6.3).

Table 6.3. Building transversal and entrepreneurial skills: Selected country examples

Vocational Education and Training system		
China	New Enterprise-based Apprenticeship Program (2015)	Aims to adapt the workforce to firm-based needs. The programme has targeted medium and large enterprises. The programme is among the first efforts to introduce an official apprenticeship system.
India	Recognition of Prior Learning programme (2015)	Allows young Indians to have skills acquired through informal means recognised and certified by government agencies. The programme was launched by the Ministry of Skills Development and Entrepreneurship under the Skill Mission umbrella.
Africa	United Nations Industrial Development Programme	Introduces entrepreneurship education into secondary education and vocational education and training. The UN Nations Industrial Development Programme is part of the Entrepreneurship Curriculum Programme, and collaborates with governments in several African States (UNIDO, 2017[39]).
Women-targeted education, mentorship and support programmes		
Australia	Women in STEM and Entrepreneurship (2016)	Aims to increase awareness and participation of girls and women in STEM and entrepreneurship education and careers, increase participation of girls and women throughout the innovation ecosystem, and stimulate an increase in the number of women in senior leadership and decision making positions in government, research organisations, industry and businesses. This programme supports projects that seek to increase girls' and women's interest in STEM fields and entrepreneurship, develop their skills and knowledge, build their professional networks, or other activities consistent with the programme's objectives. The Government has allocated AUD 8 million (approximately EUR 5 million) for 2016-20.
New Zealand	Lightning Lab XX	Four-month mentorship-driven business acceleration programme (OECD, 2017[33]). Based in Wellington, Lightning Lab XX makes a seed investment of NZD 20 000 (approximately EUR 12 600) in each company in return for a small equity stake, and offers support services that are delivered through mentors. The programme receives funding from the science and innovation arm department of the Ministry of Business, Innovation and Employment and private sponsors.

Tapping into the potential of women entrepreneurs and business owners

Traditional policy supports for women's entrepreneurship have included women's enterprise centres, tailored entrepreneurship training programmes, loan guarantees and microcredit. In recent years, new approaches have been implemented to stimulate growth aspirations among women entrepreneurs and help them acquire the tools needed to seize the benefits of the digital transformation, including tailored entrepreneurship training for women operating in the digital economy and greater use of women-dedicated business incubators and accelerators.

Women entrepreneurs need to acquire the skills demanded by the digital era, including ICT skills, numeracy and STEM-quantitative skills, as well as self-organisation and management and communication skills (OECD/EU, 2017[29]) (Table 6.3). While the gender gap in the use of software at work is small in most OECD countries, men are more likely to be working in the platform economy and are four times more likely than women to be ICT specialists (OECD, 2017[40]). Smart education policies can help ensure women benefit from digital technologies in the workplace, and as entrepreneurs. In addition, national connectivity policies can enable women access to and use of new technologies.

A growing number of countries are setting up women-dedicated business incubators to help them start quality businesses with growth potential (Table 6.3). Although they account for fewer than 3% of incubators globally, international evidence shows that women-only incubators are more effective than mainstream incubators that rely on male-centric networks and have male-dominated selection panels (OECD/EU, 2017[29]).

Other relevant aspects of SME access to skills include:

- ***Institutional and regulatory framework***: e.g. competition for enabling an optimal reallocation of resources including skills, taxation of labour and wages, especially of the highly skilled, tax exemptions on hiring highly skilled, etc.;
- ***Market conditions***: e.g. integration into GVCs and knowledge transfer and staff mobility within the value chain; access to public procurement and lead markets, etc.;
- ***Infrastructure***: e.g. broad and equitable access to high speed broadband and affordable ICT services;
- ***Access to finance***: e.g. loans and subsidies for retraining, mentorship and training services provided as a complement of financial support, etc.;
- ***Access to innovation assets***: e.g. collaborative open innovation networks, transfer of data and knowledge, learning-by-doing innovative approaches, etc.

Notes

[1] CVET includes training in the form of courses, but also activities such as attending conferences, workshops, lectures and seminars; job rotations and secondments; learning and quality circles; self-directed learning; and training at workstations.

[2] See also the chapter on access to innovation assets for a broader discussion on cloud computing and SME use of new digital technologies.

References

Acemoglu, D. (2002), "Technical change, inequality, and the labor market", *Journal of Economic Literature*, Vol. 40.1, pp. 7-72. [3]

Autor, D. (2013), "The 'task approach' to labour markets: An overview", *Journal of Labour Market Research*, Vol. 46/3, pp. 3-30. [1]

Boden Jr., R. and A. Nucci (2000), "On the survival prospects of men's and women's new business ventures", *Journal of Business Venturing*, Vol. 15/4, pp. 347-362. [28]

Collins-Dodd, C., I. Gordon and C. Smart (2004), "Further evidence on the role of gender in financial performance", *Journal of Small Business Management*, Vol. 42/4, pp. 395-417. [27]

Eurofound (2016), *Sixth European Working Conditions Survey – Overview Report*, http://dx.doi.org/eurofound.link/ef1634. [9]

European Commission/European Central Bank (2018), *Survey on the Access to Finance of Enterprises in the euro area: October 2017 to March 2018*, https://www.ecb.europa.eu/pub/pdf/other/ecb.accesstofinancesmallmediumsizedenterprises201806.en.pdf?f710aadd09e7d0036678df8612df9104. [11]

Eurostat (2018), *Continuing Vocational Training Survey*, https://ec.europa.eu/eurostat/web/education-and-training/data/database. [20]

Facebook/OECD/World Bank (2018), *Future of Business Survey*, https://eu.futureofbusinesssurvey.org/manager/storyboard/RHViewStoryBoard.aspx?RId=%c2%b3&RLId=%c2%b3&PId=%c2%b1%c2%ba%c2%b4%c2%ba%c2%bd&UId=%c2%b5%c2%b6%c2%b3%c2%b3%c2%b9&RpId=3&slide=0 (accessed on 31 May 2018). [10]

Frey, C. and M. Osborne (2013), "The future of employment: How susceptible are jobs to computerisation", *Oxford Martin School Working Paper*, https://www.oxfordmartin.ox.ac.uk/publications/view/1314. [16]

G20/OECD (2015), *High-Level Principles on SME Financing*, http://www.oecd.org/finance/G20-OECD-High-Level-%20Principles-on-SME-Financing.pdf. [38]

GEM (2018), *Special Tabulations of the 2013-17 Adult Population Survey*, Global Entrepreneurship Monitor. [30]

Grundke, R. et al. (2017), "Skills and global value chains: A characterisation", *OECD Science, Technology and Industry Working Papers*, No. 2017/05, OECD Publishing, Paris, https://doi.org/10.1787/cdb5de9b-en. [2]

Kuczera, M. (2017), "Striking the right balance: Costs and benefits of apprenticeship", *OECD Education Working Papers*, No. 153, OECD Publishing, Paris, http://dx.doi.org/10.1787/995fff01-en. [22]

Marlow, S. and S. Carter (2004), "Accounting for change: Professional status, gender disadvantage and self-employment", *Women in Management Review*, Vol. 19/1, pp. 5-16. [26]

Nedelkoska, L. and G. Quintini (2018), "Automation, skills use and training", *OECD Social, Employment and Migration Working Papers* 202. [17]

OECD (2019), *ICT Access and usage by Businesses Database*, OECD, Paris, http://dx.doi.org/10.1787/58897a61-en. [24]

OECD (2018), "Developing entrepreneurship competencies", http://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Parallel-Session-3.pdf (accessed on 19 June 2018). [6]

OECD (2018), *Enhancing Productivity in SMEs*, OECD, Paris. [4]

OECD (2018), "Entrepreneurship: Access to training and money to start a business, by sex", OECD Gender Portal, OECD, Paris. [32]

OECD (2018), *Job Creation and Local Economic Development 2018: Preparing for the Future of Work*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264305342-en. [15]

OECD (2018), *OECD Economic Outlook, Volume 2018 Issue 2*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_outlook-v2018-2-en. [18]

OECD (2018), *Productivity and Jobs in a Globalised World: (How) Can All Regions Benefit?*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264293137-en. [35]

OECD (2017), *Entrepreneurship at a Glance 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/entrepreneur_aag-2017-en. [40]

OECD (2017), *ICT Access and Usage by Businesses Database*, OECD, Paris, http://dx.doi.org/10.1787/58897a61-en. [23]

OECD (2017), *OECD Skills Outlook 2017: Skills and Global Value Chains*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264273351-en. [7]

OECD (2017), *OECD STI Scoreboard 2017*, OECD, Paris, https://www.oecd.org/sti/scoreboard.htm. [25]

OECD (2017), *The Next Production Revolution: Implications for Governments and Business*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264271036-en. [5]

OECD (2017), *The Pursuit of Gender Equality: An Uphill Battle*, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264281318-en. [33]

OECD (2016), *Entrepreneurship at a Glance 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/entrepreneur_aag-2016-en. [31]

OECD (2016), *Increasing Productivity in Small Traditional Enterprises: Programmes for Upgrading Managerial Skills and Practice*, OECD, Paris. [37]

OECD (2016), *Survey of Adult Skills (PIAAC) (Database 2012, 2015)*, OECD, Paris, http://www.oecd.org/skills/piaac/publicdataandanalysis/. [19]

OECD (2015), "Skills and learning strategies for innovation in SMEs". [13]

OECD (2015), *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264239814-en. [8]

OECD (2013), *Skills Development and Training in SMEs*, OECD Skills Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264169425-en. [12]

OECD (2012), *Upgrading Workforce Skills in Small Businesses: International Review of Policy and Experience*, OECD LEED Programme, Paris. [34]

OECD (forthcoming), *Enhancing Productivity in SMEs*, OECD Publishing, Paris. [14]

OECD/EU (2017), *The Missing Entrepreneurs 2017: Policies for Inclusive Entrepreneurship*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264283602-en. [29]

OECD/ILO (2017), *Engaging Employers in Apprenticeship Opportunities: Making It Happen Locally*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264266681-en. [21]

Shapira, P., J. Youtie and L. Kay (2011), "Building capabilities for innovation in SMEs: A cross-country comparison of technology extension policies and programmes", *International Journal of Innovation and Regional Development* , Vol. 3, pp. 254-272. [36]

UNIDO (2017), *Youth in Productive Activities*. [39]

Chapter 7. Access to innovation assets

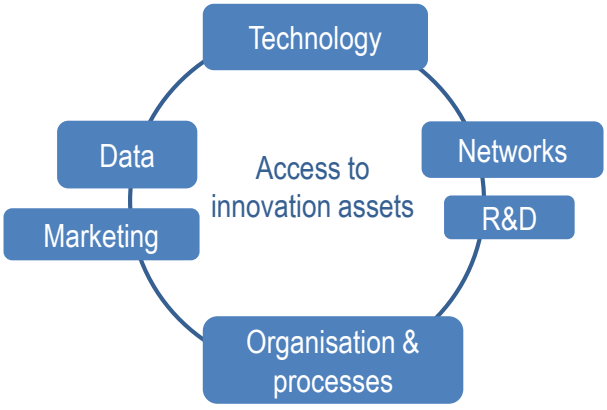
If access to innovation assets is critical for firms to compete in a knowledge-based economy, the challenge is particularly acute for SMEs. SMEs face specific barriers in finding and managing the technology, data and networks that enable innovating. SMEs also engage less in R&D and, while they are more dependent on external sources of knowledge, they are also less well integrated into knowledge networks. This chapter presents recent developments in innovation diffusion in SMEs. It explains how SMEs can benefit from new business models and organisational practices that require greater product differentiation and shorter time-to-market. It takes stock of SME digital transformation through cloud computing or big data analytics. The report explains the importance of data as a source of competitiveness and the specificity of SME strategies in terms of data protection, as well as the role of open innovation and the platform economy in scaling up SME networks. The chapter concludes with recent policy developments for innovation diffusion in SMEs, e.g. by accelerating their digital transition, better targeting innovation support packages to smaller firms, often on a place-based or sector-wide basis, building clusters, incubators and accelerators, enacting open data and adapting intellectual property rights framework to SMEs.

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.

Highlights

- SMEs are primary sources of innovation but struggle combining different innovation modes that would require a larger portfolio of innovation assets.
- The rise of customer-centric business models is likely to benefit SMEs, digitalisation allowing greater mass customisation and new strategies (e.g. commercialisation of beta versions, lead time advantage) reducing radically the distance and time to markets. Business-to-business (B2B) practices are to adapt with more integrated and reactive supply chain systems and smart factories.
- Yet SMEs' lag in digital technologies adoption could jeopardise their transition towards the next production revolution. The greatest acceleration in digital diffusion in recent years has been in the conduct of big data analysis and the purchase of cloud computing (CC) services. SME use of CC is likely to intensify if trust-related barriers to adoption are overcome.
- Open innovation (OI) is on the rise. Large firms are taking active part in the transformation of business ecosystems through business accelerators and innovation labs involving innovative SMEs and public research. Open sourcing has spurred a democratisation of innovation.
- Data is the new gold. Data access and protection are more than ever strategic to the firm. Hyperconnectivity, sensors and internet-based activities are creating an unprecedented volume of data. But digitalisation also makes trade secret protection increasingly difficult. Progress in SME patenting may remain limited for lack of awareness, interest and a limited SME participation in business R&D.
- Governments aim to ensure SMEs keep pace with technological change and the industrial transformations at play through SME-targeted financial support and technical assistance, often on a place-based or sector-wide basis.
- SME policy considerations are increasingly mainstreamed in innovation policy making. Innovation support packages are revamped for better targeting SMEs. Cluster policies are evolving with a view to scaling up innovation networks through stronger industry-science and more cross-sectoral interactions. Accelerators and incubators are also popular instruments for supporting start-ups.
- Open Government Data (OGD) initiatives bring opportunities for SMEs to access new data at reduced costs. At the same time data protection is being legally reinforced and efforts are made to harmonise legislations across jurisdictions and assist SMEs in using intellectual property rights (IPRs).

Whys is it important?



Innovation results from a process of knowledge accumulation. Firms create, acquire and recombine innovation assets[1] which allows them designing and introducing new products and services, implementing new processes or adopting new organisational and marketing practices (OECD/Eurostat, 2005[1]).

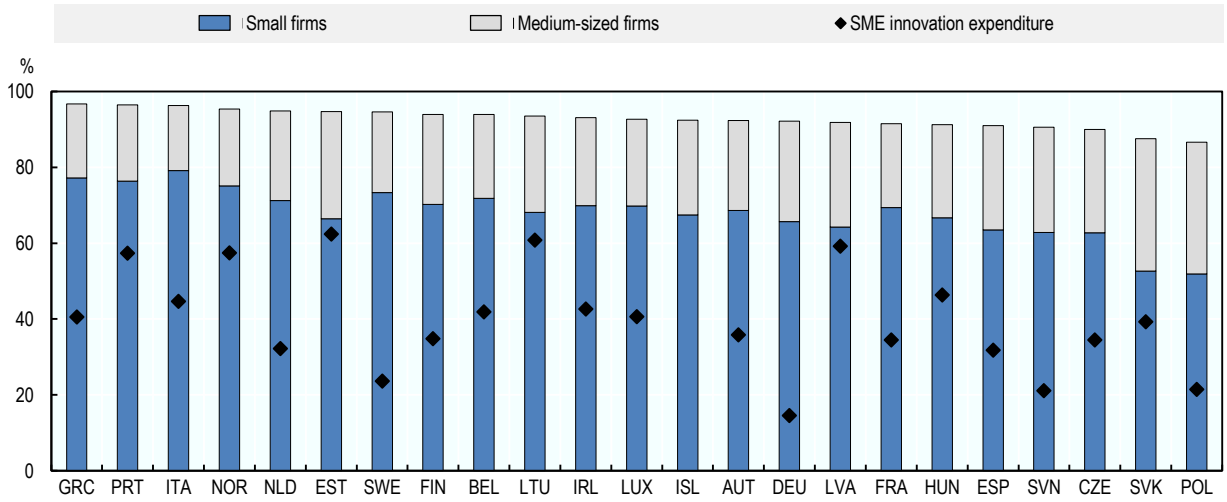
The changing nature of innovation has altered the conditions under which firms innovate and modified the range and importance of the innovation assets they use. The shift towards more incremental, non-technological and open innovation models has brought new opportunities for firms that do not perform -research and development (R&D) and for smaller scale actors. Innovation modes have diversified as firms increasingly combined different approaches and invested in complementary assets, such as technology, firm-specific skills and know-how, data and brands, organisational settings and processes, and business models and networks (OECD, 2009[2]; OECD, 2015[3]).

Small and medium-sized enterprises (SMEs) are primary sources of innovation. Based on national innovation surveys that cover firms with 10 employees or more, SMEs account on average for over 90% of the innovative firms (as broadly defined in the Oslo Manual (OECD/Eurostat, 2005[4])) and incur between 20% and 60% of business expenditures on product or process innovation (EU data, 2016) (Figure 7.1). Their contribution to innovation remains however subdued as compared to the large population of firms they account for. In addition data gap makes it difficult to extrapolate on the participation of micro firms in innovation.

SMEs play a key role in shifting innovation models by adapting supply to different contexts or user needs and responding to new or niche demand (see also the chapter on market conditions). Innovative start-ups bring new ideas into the market by tapping into knowledge generated but not commercialised by existing firms (Acs et al., 2009[5]; OECD, 2016[6]). Smaller firms also have a competitive edge due to their higher risk acceptance, greater flexibility, greater ability to integrate complex sets of information and technologies, more agile and adaptive organisational culture, as well as greater cohesion and sense of collective purpose, that help them overcome their size-related disadvantages (OECD, 1998[7]). In some strategic sectors such as software, nanotechnology, biotechnology and clean technologies, new and small firms are also important drivers of the sector's growth, as they bear the risk and costs of early market developments.

Figure 7.1. SMEs are primary sources of innovation

SMEs as a percentage of total innovative firms (bars) and innovation expenditure (diamonds), 2016



Note: Covers firms with 10 and more employees.
Source: Eurostat (2019[8]), *Eurostat Community Innovation Survey (CIS-2016)*, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190312-1.

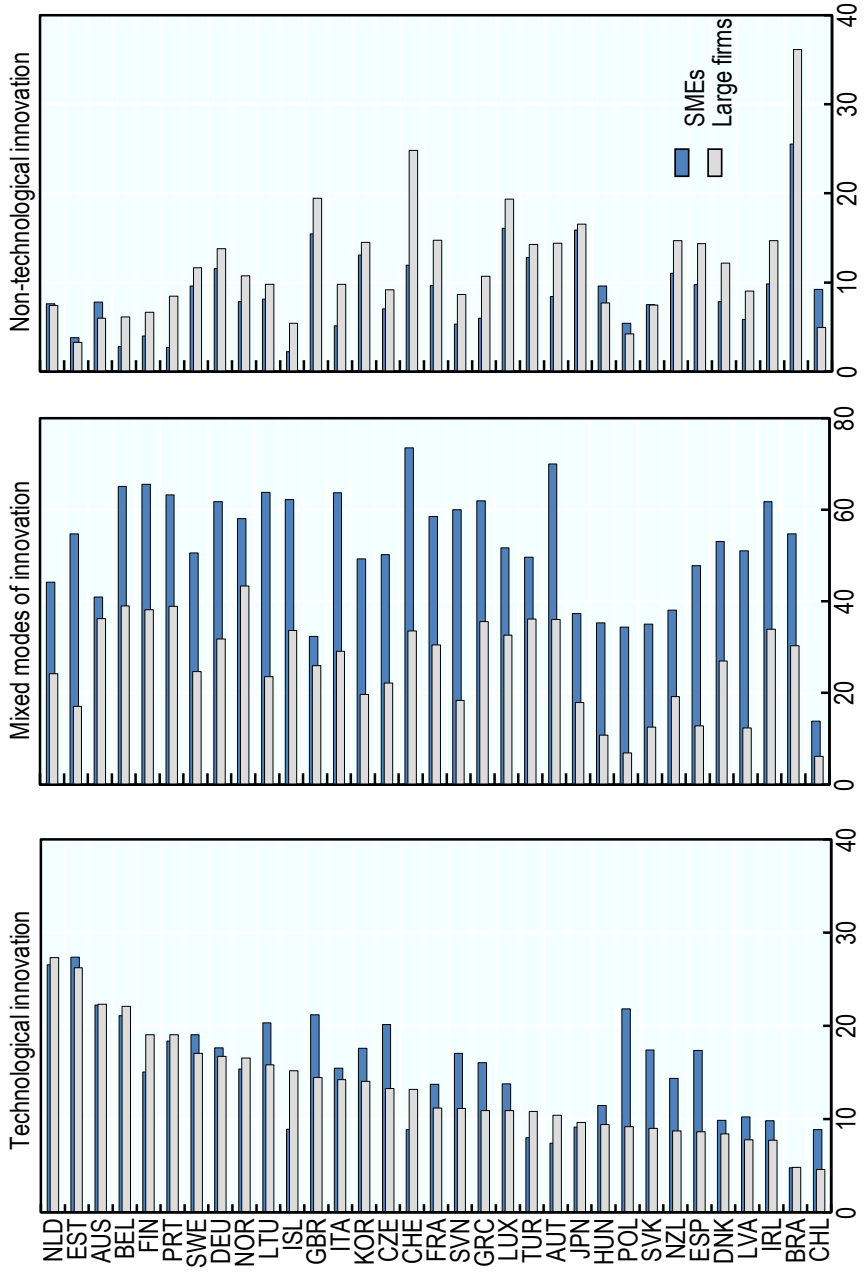
StatLink http://dx.doi.org/10.1787/888933924856

In fact, SMEs are comparatively less at difficulty in performing a specific type of innovation than in combining different innovation modes that require mobilising a larger portfolio of innovation assets (Figure 7.2). Business innovation surveys show that SMEs are more engaged in new organisational or marketing practices than large firms and in some cases even more innovative for developing new products and processes. With few country exceptions, the percentage of firms engaging in non-technological innovation (to the exclusion of other modes of innovation) is notably higher among SMEs than among large firms, reflecting also a sectoral bias towards services where SMEs concentrate and where innovation is in essence more incremental and non-technological.

If access to innovation assets is critical for firms of all sizes, the challenge is particularly acute for SMEs that confront specific barriers in finding and using the technology, data, information and networks that would enable them participating in and benefiting from innovation activities. For instance, small enterprise owners are often unaware of the potential new digital tools could offer for improving their business or they consider the upfront costs of upgrading towards more sophisticated digital technologies as too high (OECD, 2017[9]). Smaller firms are less likely to engage in R&D, for both lack of capacity and incentives. Acquiring frontier technology and advanced skills for performing increasingly costly and multidisciplinary research (OECD, 2016[10]) remains out of the reach of smaller players or require them high specialisation that limits the scope of R&D spillovers and ultimately reduces the financial incentive of taking risks. In addition SMEs tend to be more dependent on external sources of knowledge but they are also less well integrated into the local, national and global innovation networks that would help them capture knowledge spillovers (OECD, 2013[11]).

Figure 7.2. SMEs struggle to combine innovation modes that require larger knowledge endowment

Percentage of innovative firms in each size category by mode of innovation, 2016 or latest available year



Note: Technological innovation includes product and process innovation; non-technological innovation includes organisational and marketing changes (OECD/Eurostat, 2005[1]). Size is calculated on the basis of numbers of persons employed. SMEs are defined as businesses with 10 to 249 employees and large firms as businesses with 250 employees or more. International comparability may be limited due to differences in innovation survey methodologies and country-specific response patterns. Data for non-EU countries are drawn from the OECD STI Scoreboard 2017 based on the 2017 OECD survey of national innovation statistics and national sources, http://oe.cd/inno-stats, June 2017 and refer to 2012-14. Please refer to http://dx.doi.org/10.1787/888933619353 for further information.

Sources: Eurostat (2019[8]), *Eurostat Community Innovation Survey (CIS-2016)*, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190312-1; OECD (2017[12]), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, http://dx.doi.org/10.1787/9789264268821-en.

StatLink http://dx.doi.org/10.1787/888933924875

Innovation and knowledge diffusion in SMEs: Recent trends

Socio-economic systems and business environment worldwide are going through deep and irreversible transformations driven by fast digitalisation and technology convergence (OECD, 2016[10]; OECD, 2018[13]).

Combined together, the Internet of Things (IoT, i.e. hyperconnectivity of devices, sensors and systems that supports machine-to-machine communication and enables the generation of unprecedented volume of data), cloud computing (CC, that allows storing and processing more information at more affordable cost) and data analytics (that leverages machine learning and new algorithms for data exploration and market intelligence) are likely to increase firms' capacity for simulation, prototyping, decision making and automation (OECD, forthcoming[14]). These three emerging technologies hold the premises of the next production revolution (OECD, 2017[15])

This fast-changing environment is creating unprecedented opportunities for SMEs to scale-up their internal capacity, reach scale without mass and embrace new business perspectives, provided they succeed managing their own transformation.

SMEs are to benefit from the rise of new business models and practices

ICT have been major disruptors of business practices, firms increasingly using the Internet for operational matters, including ordering, selling, marketing or online banking, and for interacting with business partners and public authorities (OECD, 2017[16]). ICT have also contributed to change consumer behaviours and expectations by enabling the rise of a more sophisticated and better informed demand and by shortening innovation cycles and time to market.

Customer demand has evolved towards more personalised, tailor-made and on-demand products and services. The fragmentation of final demand into a myriad of business segments has prompted firms to develop more customer-centric strategies and to adopt a 'segment-of-one' approach in marketing products and services.

In this changing landscape, SMEs have new opportunities to position and compete on niche markets and to take advantage of the closer proximity to demand that new consumption models require. But customisation also raises difficulties, especially for smaller scale firms, as regards their capacity to increase variety while reducing unit costs.

Digital technologies provide opportunities for greater mass customisation. The IoT and big data analytics can help enhance customer behaviour analysis and create new knowledge for product differentiation and customisation, for better anticipating user expectations and for improving customer experience. 3D printing is possibly another main driver of mass customisation and the range of applications is likely to further expand as the technology matures, printing costs reduce and access to printing materials broadens[2]. Examples of digital-driven business innovation spread across all sectors and are already transforming traditionally SME-dominated industries[3] (Box 7.1).

For instance, the retail sector is experiencing a deep digital transformation. E-commerce has been a game changer and a major driver of disruptive innovation in business-to-consumer (B2C) and business-to-business (B2B) markets. The number of firms engaging in e-retail has increased over the past years, increase observable across all firm size classes and countries (OECD, 2017[16]). The turnover generated by e-retail has grown (OECD, 2017[12]) and Internet-based companies such as Amazon and Alibaba have entered the top of capitalisation markets in positions that used to be hold by the giants of the oil and bank industries. E-retail has disrupted B2C practices but less so because of its

–all in all- minor contribution to the sector's turnover (less than 10% in the United States and Europe in 2015 (OECD, 2017[12])) but because of its strong influence on customer shopping decisions and the incentive it gave to traditional "brick and mortal" shops to reshape their business models (Box 7.1).

Box 7.1. Disruptive innovation in business models and organisational practices: selected examples in three SME-dominated sectors

E-commerce has been a major driver of changes in trade business practices. Most brands already propose smart applications to check product availability, shop and plan delivery at the consumer convenience. The NikeID platform enables customers to design and shop personalised sportswear online. The Dash Replenishment Service of Amazon allows measuring product usage at home and reordering through connected devices. Alibaba's new chain of grocery stores integrates offline and online shopping by combining smart apps, big data, mobile payment service and in-house transportation system (e.g. Hema, China). This new generation of groceries proposes big-data-optimised offerings, product traceability and cashierless payment with on-the-spot services (e.g. cooking).

Physical shops are also at the dawn of a revolution as they adapt to new market conditions and offer customer experience that cannot be replicated online. New business models target and follow shoppers from their entry to their exit from the stores and along the entire path-to-purchase. Beakons transmit Bluetooth signals to nearby smartphones proposing promotional offers even before customers enter the stores (e.g. Macy's, USA). Shopping assistant robots provide in-store services, check stocks and collect data on customer behaviours (e.g. Walmart, USA; SoftBank Mobile, Japan). Smart fitting rooms equipped with virtual augmented reality mirrors and sensors enable customers to create an outfit, try it without underdressing and share for comments on social media via their mobile phone (e.g. Van Heusen, USA). Cameras and sensors track what shoppers remove from the shelves and charge them as they walk out with the products in hand, removing checkout lines and waiting queues (e.g. Amazon Go Store, USA).

Emerging consumption practices require revamping supply chains. Wholesale business is to adapt its operational capability accordingly. The radio frequency identification (RFID) technology supports integrated business intelligence system. Combined with the IoT and sensors installed along the supply chain it allows tagging and tracking each piece or product from factory to distribution platforms to the shop until its final sale and enables real-time inventory and greater visibility on product availability (e.g. Inditex, Spain).

In the construction sector, the Building Information Modelling has changed the way construction professionals work together by reinforcing co-ordination. The structures, pipes and other building components are integrated into a smart 3D model that evolves as work progresses. This digital twin allows collecting and sharing information over the life cycle of the building and improving construction and future maintenance (e.g. Grand Paris Express, France). Sensors on construction sites help gather real-time data on people, materials and displacements and improve preventive maintenance and efficiency. Drones are increasingly used to monitor and secure construction sites, making the construction industry one of the main business sectors for drone tech application.

In the accommodation services, the famous short-term lodging model introduced by AirBnB creates a substitute offer to hotels by providing a marketplace where travellers and local home owners can connect. In food services, the use of tablets in restaurants is picking up, allowing speeding up orders, sending commands to kitchen in real time and improving service while collecting consumer data. Self-driving cars and drones are also poised to open new avenues for food delivery.

Sources: See web references.

Shopper experience is being radically altered by combined applications of IoT, artificial intelligence, facial and move recognition, virtual reality and smartphone and data technology. As to meet the expectations of the next consumer generation, the retail trade is likely to extend its physical presence, via different partnerships, store formats and mobile applications, offering differentiated and inventive experiences to attract customers back into stores on a regular frequency (Deloitte, 2018[17]).

B2B practices and wholesale services are to adapt accordingly. Digitalisation is transforming supply chain operation technologies and processes and shifting the frontiers of manufacturing systems. Smart factories are moving away from the traditional linear and sequential automation processes towards a more interconnected, open system of supply operations with enhanced integration of operational systems, manufacturing and end-to-end value chain (Mussomeli and Gish, 2016[18]). Customer data that are increasingly collected through feedback on social media and digital platforms is also more and more integrated in product conception and early phases of development.

As demand is increasingly met at the individual level, reducing distance and time to markets has become critical with implications for transportation systems, modes of delivery or corporate location strategies (Backer et al., 2016[19]). In addition paths from research and design to experimentation to market introduction have shortened, with businesses moving faster to commercialisation through beta versions of products that could give them the first mover advantage, by setting industry standards, raising their visibility and increasing user costs of switching to alternative models or branding.

Organisations are restructuring accordingly. Firms re-organise internal functions along agile management principles, i.e. smaller cross-disciplinary teams working in less hierarchical settings and covering end-to-end process cycles, with a view to foster cooperation between teams and speed decision making process.

Cloud computing is a pivotal asset for SME digital transition

Digital technologies offer a number of opportunities for SMEs to better integrate their operations, reduce costs and expand into new markets. Information and communication technologies (ICT) empower SMEs, as they alter market conditions, reduce the structural size-related disadvantages SMEs face in accessing resources and business partners, reduce the level of production needed to reach minimum cost per unit, enabling reaping economies of scale without mass, and create new market outcomes and marketplaces (OECD, 2010[20]).

Cloud computing allows SMEs accessing 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 of upfront investments in hardware and regular expenses on maintenance, IT team and certification (see chapter on infrastructure). Overall, the first uses for which firms turn towards CC are email services and storage capacity, then accessing office software and hosting databases (OECD, 2017[21]).

Likewise, Enterprise Resource Planning (ERP) systems enhance back office efficiency as they integrate the management of internal and external information flows, from material and human resources to finance, accounting and sales, and automates planning, inventory, purchasing and other business functions. On the other hand Customer Relationship Management (CRM) and Supply-Chain Management (SCM) software are used for managing a company's interactions with its customers, clients, prospects, employees and

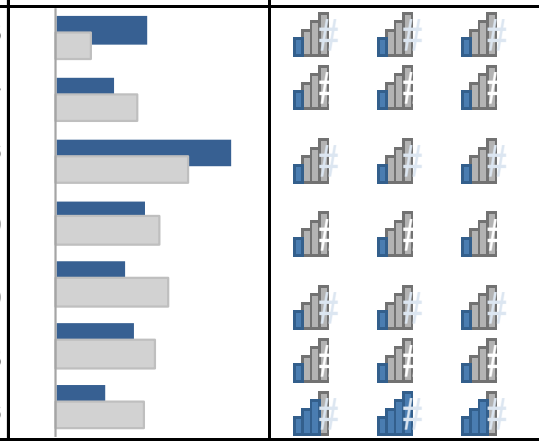
suppliers and help enhance front office integration (OECD, 2017[22]; Andrews, Nicoletti and Timiliotis, 2018[23]).

Nonetheless, although the majority of businesses are connected, ICT are still primarily seen as a communication tool and adoption rates tend to decrease as technologies become more sophisticated (Figure 7.3). Having a website has become a common practice (73%-94% of firms) and using social media for business purposes is frequent (48%-71% of firms). Firms performing data analytics are conversely less widespread (10%-33%).

Figure 7.3. Digital diffusion tends to slowdown as firms get smaller

OECD unweighted average, 2018 or latest year available

	Technology adoption rates (%)			SME difffusion gap (% point)	Digital transformation speed (2014-18)
	Large	Medium	Small	Small vs medium / Medium vs large	Large Medium Small
Website or a homepage	93.9	88.2	73.5		
Social media	71.2	57.9	48.4		
Enterprise Resource Planning (ERP)	76.2	54.9	26.6		
Customer Relationship Management (CRM)	41.1	24.3	10.0		
Supply Chain Management (SCM)	42.5	24.3	13.0		
Cloud computing services	56.2	40.2	27.5		
Big data analysis	33.1	18.7	10.6		



Note: Adoption rates are the percentage of firms using the related software, tools or services. Gaps in technology diffusion are the difference between the OECD average diffusion rate for a size group of firms with the OECD average diffusion rate for another size group of firms. Digital transformation speed is the average annual growth rate in technology adoption rates between 2014 and 2018. Unweigthed averages are computed for countries for which data are available. Firm size classes are defined by employment size. Small firms employ [10-49] employees; medium firms [50-249] and large firms more than 250 employees.
Source: OECD (2019[24]), *OECD ICT Access and Usage by Businesses Database 2019*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 15 February 2019).

Adoption patterns tend also to differ across firm size classes and technologies. Small firms are particularly less likely to use ERP systems than large firms (Figure 7.3). Firms adopt ERP systems when they reach a critical size that allows them dealing with the complexity and the significant amount of time, financial resources and reskilling required for ERP implementation (Andrews, Nicoletti and Timiliotis, 2018[23]). Consequently, the ERP diffusion gap is significantly larger between medium and small firms than between large and medium-sized firms. The reverse is true for supply-chain management software, cloud computing or big data analytics for which the digital gap enlarges between medium and large firms.

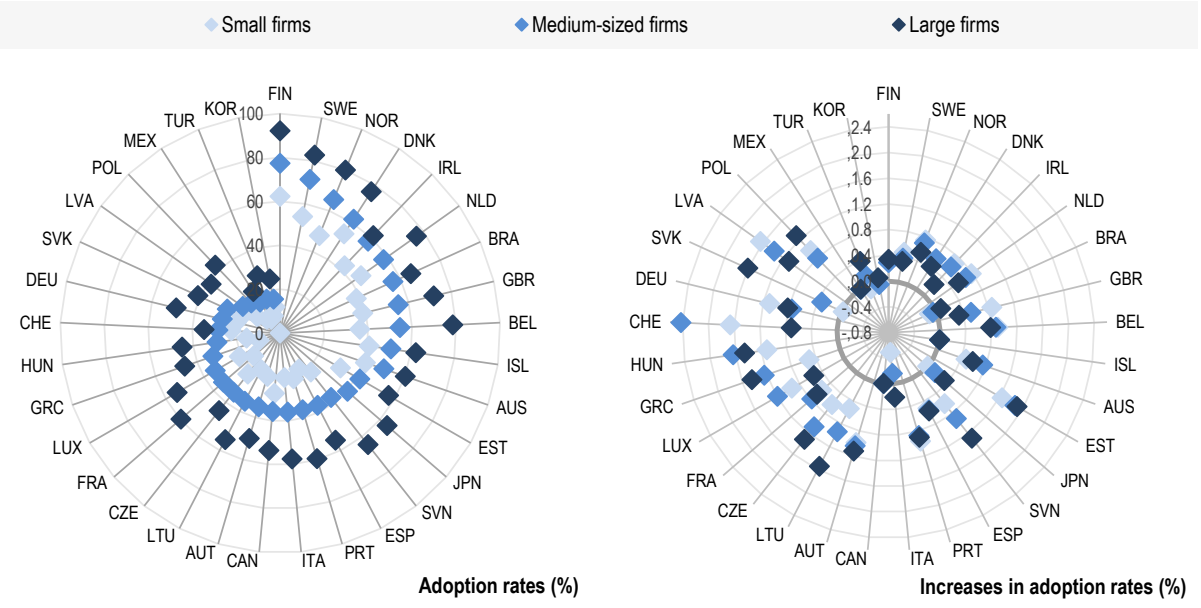
Although small firms appear comparatively less at disadvantage in using cloud computing services or performing big data analytics, the digital gap with larger firms remain striking

(Figure 7.4). Nordic countries show higher adoption rates across all firm size classes. Turkey, Korea and Mexico show the lowest adoption rates for all firms. In Belgium, Japan and Slovenia, the digital gap between large firms and SMEs is particularly marked.

Digital transformation occurs at different speeds (Figure 7.3). SMEs are catching up larger enterprises in using social media whereas the adoption of business intelligence and supply-chain management software have little progressed between 2014 and 2018, especially among smaller firms.

Figure 7.4. SME lag in adopting cloud computing could hold back their digital transformation

CC adoption rates in 2018 and increases in adoption rates over 2014-18 by firm size class



Note: Small firms employ [10-49] employees; medium firms [50-249] and large firms more than 250 employees. Adoption rates are the percentage of firms purchasing CC services in 2018. Increases in adoption rates are computed as average growth rates between 2014 and 2018. Data for Japan are collected following a different methodology and exclude firms with less than 100 employees. Data refer to 2014 and 2018 or nearest year available. Countries are ranked by descending order of 2018 diffusion rates in medium-sized firms.

Source: OECD (2019[24]), *OECD ICT Access and Usage by Businesses Database 2019*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 15 February 2019).

The greatest acceleration in technology diffusion over a couple of years only, has been observed in the conduct of big data analysis albeit starting from low levels. Firms have also increasingly turned towards the cloud for accessing emails, storage or data management capacity (Figure 7.3). The acceleration in CC diffusion has been uneven across firm size classes and patterns of diffusion vary from one country to another (Figure 7.4). CC diffusion among large firms has steadily outpaced diffusion among SMEs in countries achieving technological catch-up (e.g. Czech Republic, Lithuania and Slovak Republic). In Nordic countries, there are rather consistent increases of absorption rates across all firm size classes while in Belgium, Latvia, Spain and the UK small firms seem to have moved faster to CC than their larger counterparts.

StatLink http://dx.doi.org/10.1787/888933924894

Reasons for the rapid diffusion of CC are manifold. In addition to its intrinsic values, cloud computing serve the dissemination of other technologies (Annex Figure 7.A.1) and enable technological catch-up. New mobile forms of work have also contributed to increase its popularity as firms were able to adopt platform-independent technologies that

could be accessed anywhere and from any device (e.g. smart phones, desktops, laptops etc.).

SME use of cloud computing services is therefore likely to expand in a near future, especially as SME owners get increasingly aware of CC potential for gaining flexibility and reducing costs, general diffusion increases pressure from competitors and business partners to follow the trend and barriers to adoption are progressively overcome.

In that respect, trust issues remain a major obstacle to CC adoption, SMEs showing more reluctance than large firms (OECD, 2017[22]). It has become apparent that the preservation of data sovereignty, integrity and security is a key reason for SMEs not to abandon on-premise IT and data solutions. The loss of data control is indeed closely associated to the uncertainty of data location that raises uncertainty around the data protection regulation that applies and the jurisdictions under which it is enforced. Likewise the lack of open standards within the cloud providers' community increases the difficulty for CC users to switch between providers and the risk of technological lock-ins. As a consequence, users can become extremely vulnerable to providers' price policy, especially as new development in data analytics will allow them profiling their users and discriminating prices. Fears are further exacerbated by the current high market concentration of the cloud industry (Kushida, Murray and Zysman, 2011[25]).

Data is the new gold

Data has become a strategic asset for a firm's and a country's competitiveness. Data are increasingly generated along business operations, e.g. production and delivery (process data), and compiled at various stages of business transactions (user, consumer and supplier data). Process data can improve stock management, logistics and maintenance, and business reactivity to just-in-time production requirements. They also increase the scope of efficiency gains including in terms of energy and resource consumption. User, consumer and supplier data are crucial for developing market knowledge, improving customisation and shaping new products and business models.

Consequently, data access and protection are more than ever strategic to the firm.

Although Intellectual Property Rights (IPRs) are instrumental for firms to ensure they can appropriate the full benefits of their innovations, they are not popular among SMEs (Box 7.2). Even when active in innovation, SMEs use less formal IP instruments than large firms (OECD, 2011[26]). And when they adopt formal IPRs, they tend to use copyright or trademarks above all other instruments, particularly patents. A recent study by the European Patent Office (EPO) shows that SMEs and individual inventors account for only 28% of all applications filed at the office in 2016, up to 26% the year before (European Patent Office, 2017[27]).

Box 7.2. Trade secrecy and IPRs: How SMEs protect and appropriate knowledge

IPRs range from patents to copyrights, to trademarks or to design, each instrument offering exclusive rights to their owners on different forms of tangible and intangible assets (OECD, 2015[28]). This variety reflects the multidimensional nature of innovation and innovation assets.

IPRs can help SMEs position themselves competitively vis-à-vis large enterprises in global markets, open up new or existing segments in markets, gain additional revenues and serve as collateral or guarantee for bank lenders and investors.

Yet few SME filed patent applications. There are several reasons behind this low popularity of IPRs among SMEs. SMEs lack awareness and expertise, as well as resources, for applying and managing an IPR portfolio. And in response, there are few regulatory frameworks or specific instruments directed to SMEs (OECD, 2011[26]). Obstacles also arise when SMEs operate internationally and have to deal with legal overheads, cross-country filings, regulatory and technical differences, as well as differences in local IP enforcement practices (OECD, 2011[26]). Not specific to SMEs but to the business environment they evolve in, technological change and innovation cycles in some sectors (e.g. software) are more rapid than IP and patent application process, reducing the economic advantage of patenting and licensing (OECD, 1998[7]).

Trade secrecy is confidential business information that can cover new manufacturing processes, improved recipes, business plans or commercial information on whom to buy from and whom to sell to (e.g. customer list). Unlike patents, trade secrets are protected by law on confidential information, e.g. confidentiality agreement, or non-disclosure or covenant-not-compete clauses.

Trade secret popularity holds on its relative ease of use (due to low technicity and the absence of formal registration requirements), lower costs incurred for administration and the absence of definite term of protection. Trade secrets apply to a range of approaches used by SMEs and can help them capture the value of their innovations, reinforce strategies such as lead-time, product complexity and customer-driven innovation, or support innovation modes emphasizing incremental change and open collaboration: (Brant, 2014[29]).

In fact trade secrecy and patents complement each others. Trade secret law "plugs several holes in the patent statute" (Friedman, Landes and Posner, 1991[30]) and both offer SMEs distinct tools for a comprehensive IP protection. Trade secrets are more likely to be used (often without patents) for process innovation and for innovations in services (where SMEs are majority) while patents are more likely to be used (alone or in combination with trade secrets) when the innovative product is a physical good (EUIPO, 2017[31]). Trade secrets can also be more suitable for inventions that do not meet the criteria for patentability, especially in profitability terms and at the early stages of product development. On the downward side, trade secret law is more difficult to enforce than a patent; it does not protect from fair discovery or reverse engineering and the secret is lost when disclosed. Also trade secret laws are set within national legal frameworks limiting transnational knowledge transfers.

Sources: OECD (2015[28]), *Enquiries Into Intellectual Property's Economic Impact*, http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP(2014)17/CHAP1/FINAL&docLanguage=En (accessed on 13 March 2019); OECD (2011[26]), *Intellectual Assets and Innovation: The SME Dimension*,

http://dx.doi.org/10.1787/9789264118263-en; OECD (1998[7]), *Technology, Productivity and Job Creation: Best Policy Practices 1998 Edition*, http://dx.doi.org/10.1787/9789264163416-en; Brant, J. (2014[29]), "Trade Secrets: Tools for Innovation and Collaboration in Innovation", https://cdn.iccwbo.org/content/uploads/sites/3/2017/02/ICC-Research-Trade-Secrets-english.pdf; Friedman, D., W. Landes and R. Posner (1991[30]), *Some Economics of Trade Secret Law*, https://www.jstor.org/stable/1942702?seq=1#metadata_info_tab_contents; EUIPO (2017[31]). *Protecting Innovation through Trade Secrets and Patents: Determinants for EU Firms*, https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/Trade%20Secrets%20Report_en.pdf (accessed on 13 March 2019).

Instead, SMEs tend to privilege trade secrecy as their default mode of data protection. Past surveys have showed that small firms consider trade secrecy as an important means for protecting innovation (Cohen, Nelson and Walsh, 2000[32]; Jankowski, 2012[33]; Hall et al., 2014[34]), with the lead time advantage -that is a primary mechanism of IP appropriation in some industries- and on-purpose complex product design -that aims to discourage competitors from engaging in counterfeiting (Rujan and Dussaux, 2017[35]; Hughes and Mina, 2011[36]).

Nonetheless the protection of trade secrets is becoming increasingly difficult. Digitalisation and the revolution in data codification, storage and exchange (i.e. cloud computing, emails, USB drives) are prime drivers of a rise in trade secret infringements. Increasing value given to IP (and *de facto* its misappropriation), staff mobility and changing work culture and relationships (e.g. temporary contracts, outplacement, teleworking) or the fragmentation of global value chains (with more foreign parties involved within more diverse legal frameworks and uneven enforcement conditions) also contribute to increase exposure and risk of disclosure (Almeling, 2012[37]).

Although estimating the economic costs of trade secrets remains challenging, the literature provides converging figures on the large damages incurred by firms whose know-how and confidential information were unduly misappropriated. The cost of trade secret theft to US firms was estimated to USD 300 billion annually (Almeling et al., 2010[38]). Based on interviews with members of the European Chemical Industry Council, misappropriation of confidential business information is estimated to costs a firm 30% of its revenue or more (CEFIC, 2012[39]). Trade secret litigation in US federal courts has grown exponentially over the past three decades, roughly doubling every decade, with colossal sums conceded in damage awards (Almeling, 2012[37]).

Increases in SME patenting in a near future are likely to remain limited. Some improvements might be observed as SMEs get increasingly aware of the benefits of patenting and licensing for consolidating partnerships and attracting investors. And increases might be more substantial in sectors that are traditionally prone to file patents, such as ICT, chemicals and medical devices, or in technology areas that are currently experiencing patent burst, such as digital data transfer or payment protocols (OECD, 2017[12]). But the still limited SME participation in business R&D will (somehow mechanically) weight on their patenting interests and intentions.

Digitalisation could however bring new solutions for IP protection. Blockchains technology could offer a secure and efficient alternative form of IP protection as they support data encryption, proof of existence and transactions with total disintermediation and transparency. Typically trade secret protection is provided through confidentiality provisions in contracts. Blockchain enables the design, execution and enforcement of smart contracts that can protect trade secrets at no additional cost.

SME participation in R&D remains limited overall, with large country differences

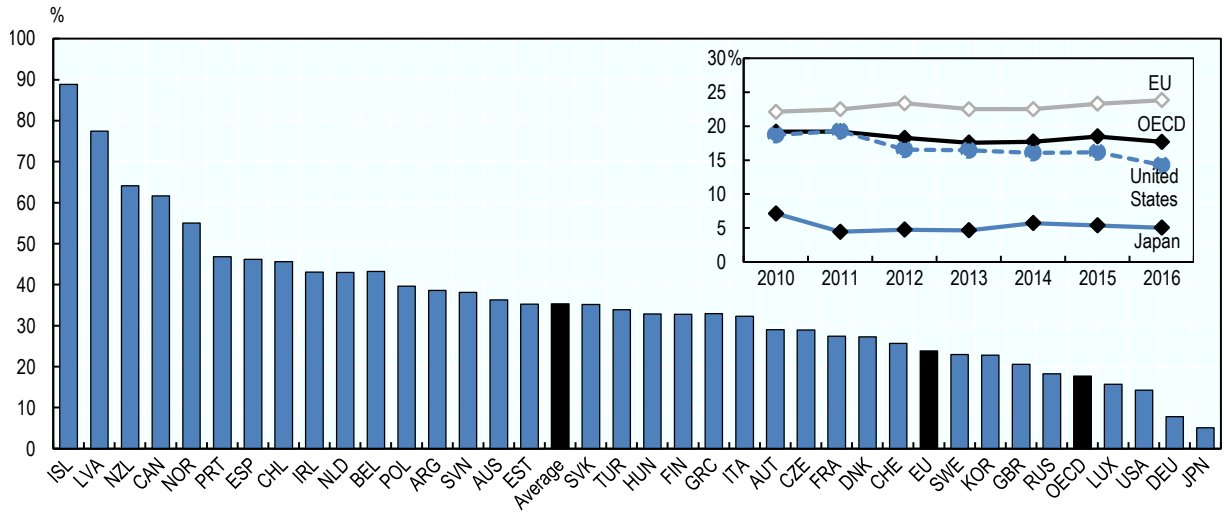
Business research and development (R&D) activity is typically concentrated in a relatively small portion of the business population, especially large firms (see chapter 4 on infrastructure). Even if one cannot exclude that an important part of SME total R&D may be informal, performed outside R&D department or ill-captured by official statistical system, SMEs hardly average 17% of total corporate R&D expenditure in the OECD area (Figure 7.5).

Country situations differ though. In Iceland and Latvia, SMEs contributed in 2016 to over 70% of total business efforts whereas they account for less than 10% of total business expenditure on R&D (BERD) in large industrial R&D players such as Germany and Japan. In the United States, according to the definition used, 10% of BERD is performed by firms with less than 250 employees and 14% by firms with less than 500 employees.

Cross-sector specificities also matter. In science-driven sectors (e.g. biotechnology or nanotechnology), small businesses are often the source of radical innovations and bear the risks of the research endeavour, their greater flexibility enabling them to work outside of dominant knowledge paradigms.

Figure 7.5. Few SMEs participate in R&D with little progress made in recent years outside Europe

Share of business R&D expenditure performed by SMEs, 2016 and trends in main regions, 2010-16



Note: SME definition includes firms with less than 250 employees, except for the United States where data also include firms with 250-499 employees. Data for Australia refer to 2011. OECD and EU totals are estimates.
Source: Author's estimates based on OECD (2019[40]), *R&D Statistics Database, March*, www.oecd.org/sti/rds (accessed on 08 March 2019).

StatLink http://dx.doi.org/10.1787/888933924913

Overall little progress has been made in increasing SME participation in R&D since 2010 in the OECD area. R&D survey data show increases in SME share of total BERD in Australia and most European countries with more significant shifts in Finland, Latvia or

Portugal. Drops have conversely been recorded in the Czech Republic, Estonia, Greece or New Zealand.

Future developments remain uncertain but radical improvements in SME contribution to R&D are unlikely for structural reasons. Progress made in some EU countries might however consolidate under the impulsion of the EU Horizon 2020 framework programme that gives SMEs particular attention. SMEs accounted for 20% of total H2020 participations in 2017[4].

SME capacity of building and scaling up networks is determinant for their growth outlook

Business innovation, no longer confined to corporate R&D labs, is increasingly the results of collaborative efforts between business partners that interact, exchange knowledge and information and share standards and infrastructure. This shift towards an 'open innovation' (OI) paradigm has considerably reduced the investments needed to access innovation assets, making the innovation endeavour more accessible to SMEs (OECD, 2010[20]).

Business linkages act as channels for accessing technology, skills or for fostering data exchange and knowledge spillovers (OECD, 2018[41]). Firms engaged in buyer-supplier relationships can enter in collaborative arrangements for undertaking innovation, for competition or internationalisation purposes or for workforce training. Integration into global value chains (GVCs) is of particular relevance for small firms that can proceed to capacity upgrading through the exchanges that take place within the value chains. However integration does not automatically translate into upgrading and upgrading trajectories are shaped by various factors, including economic competencies of the firms, replicability of the value chain business models and the mode of GVC governance that determines the relationships –and the scope of knowledge spillovers- between lead firms and more or less 'captive' suppliers (Gereffi, Humphrey and Sturgeon, 2005[42]). Collaboration with customers can also be a channel, especially as SMEs tend to enjoy close relationships with end-users and better understanding of near-by market.

In some cases licensing in technology or other forms of IPRs is an alternative to performing and developing in-house knowledge and an integral part of a SME's growth strategy. And SME types of co-operation involve non-private stakeholders such as universities or research organisations. In its annual survey the US Association of University Transfer Managers show that 70% of university innovations were licensed to start-ups and small companies in 2017[5].

However a key challenge for many SMEs is to identify and connect to appropriate knowledge partners and networks at the local, national and global levels, as well as to develop appropriate skills and management practices for co-ordinating and integrating knowledge created by external partners with in-house practices and innovation processes (OECD, 2015[43]) (see also the chapter on access to skills).

Large firms have been taking actively part to the OI transformation by developing strategic partnerships with smaller actors or by deploying specialised accelerators where start-up and individuals can access office infrastructure and supportive business environment for nurturing new ideas and incubating projects that could be profitable to their sponsors' business ecosystem. Business accelerators tend to address some of the main challenges high-growth firms can face (e.g. managerial competences, professional networks, equity finance). Barclays[6] expanded its accelerator programme to London, New

York and Tel Aviv to help innovators develop new disruptive business models in the investment banking and wealth management industries. Fintech companies get access to Barclays technology and data, as well as mentorship programmes and co-working spaces. Likewise Microsoft[7] offers a go-to-market support to start-ups via its accelerator programme that gives them access to Microsoft technology and local and global community spaces. It also foresees a joint sales engagement between partners.

Large firms also increasingly set up innovation labs, often outside their own premises and close to high-tech clusters, with a view to encouraging "out-the-box" thinking and new collaborations within the firm. The Volkswagen Automotive Innovation Lab (VAIL) provides a state of the art research facility and community space where interdisciplinary teams work on moving vehicle technology forward and developing new mobility solutions. Located on the Stanford University campus, VAIL partners with the university on research projects on drive-by-wire, driver assistance systems or solar cars.

As OI initiatives are sprouting worldwide, cities are turning into hubs for data-driven innovation and testbeds for experimentation and prototyping (OECD, 2017[22]), not without consequence on housing market and land-use planning (see also the chapter on institutional and regulatory framework). 340 European cities are part of the European Network of Living Labs that encourages cross-fertilisation, co-creation, exploration of emerging usages, behaviours and market opportunities, experimentation and evaluation of concepts, products and services. Station F opened in Paris in 2017 with the ambition to become the biggest start-up hub in the world. The hub hosts incubators and accelerators for large multinationals like Facebook, Microsoft, Ubisoft, Airbnb, or L'Oreal and spans sectors from medicine, to food, fashion, software, beauty, and e-commerce.

Open sourcing and more intense knowledge sharing have also spurred a democratisation of innovation. Market outsiders (e.g. citizens, new-to-the-market firms) have entered existing markets (e.g. Uber, AirBnB), increasing the competitive pressure on traditional actors and incumbents (e.g. taxis, hotels). The rise of the platform economy has been instrumental to the deployment of these new OI practices as industry platforms, marketplaces and crowdsourcing platforms allowed to various degrees enhancing system integration, interoperability and data sharing and openness (OECD, 2017[22]).

Main policy approaches and recent national policy development

Conditions under which business innovation emerges and reaches the market have changed, leaving room for SMEs to increase their contribution. More niche market demand, more responsive supply chains, more open sourcing of knowledge, data and technology enable SMEs to strengthen their comparative advantages and reduce the structural constraints they used to face in accessing resources and achieving economies of scale (OECD, 2017[44]).

Policy approaches for fostering SME innovation vary across countries, but governments have been placing strong emphasis on ensuring SMEs keep pace with the industrial transformations at play. Unless specified differently in the notes, policy examples presented below are drawn from country responses to the OECD Digital Economy Surveys 2017 and the EC/OECD STI Policy Survey 2017[8].

Accelerating the SME digital transition

The uptake of digital technologies is a key lever – and prerequisite- to the SME transition towards the next production revolution.

In addition to their efforts to upgrade and consolidate digital infrastructure (see also the chapter on infrastructure), policy makers have been active in providing SMEs targeted financial support and technical assistance in conducting technology and problem-solving diagnosis or implementing new e-business solutions, often in the form of small-scale and place-based initiatives (Table 7.1).

Table 7.1. Accelerating the SME digital transition: Selected country examples

	Financial support for technology adoption	
Brazil	BNDES Soluções Tecnológicas (2015)	Targeted loans to SMEs, specifically aimed at boosting investments in technology and innovation.
France	National Strategy for the Digital Transformation of SMEs (2018)	Helps SMEs finance their digital transformation with regional vouchers.
Hungary	Non-repayable aids (2016)	Support SME business digital developments (e.g. ERP, CRM, mobile and cloud solutions etc.) through an open tender.
Lithuania	Competitive grants (2016-23)	Aim to help SME access to business consultancy on business planning issues (e.g. starting a business, financing, implementing new technologies etc.) and invest in innovative e-business processes.
Spain	Innovative Clusters Initiative (2016)	Grants aiming to increase SME competitiveness through digitalisation.
	Cloud computing adoption programmes	The government has launched various programmes to promote cloud computing adoption among SMEs.
Turkey	SME Development Organisation (KOSGEB) programme (2015)	Funding programme for reducing SME costs in building IT capabilities, including on cloud computing services.
	Training, information and assistance	
Austria	SME Digital Programme (2017-18)	Mix of support activities, events, webinars, analysis tools and training programmes that aim to foster digital competencies in SMEs. The programme ends in spring 2019 and a follow-up programme will promote, in addition to consulting services, concrete implementation measures.
Canada	Federal-Provincial-Territorial Action on Economic Growth Plan (2018-20)	Aims – among other things – to support firms in recruiting highly qualified people and increasing their management skills. The Plan foresees to accelerate the digital skills agenda and foster SME adoption of technology.
Colombia	Information campaigns (2016)	Series of events aimed at micro firms and SMEs and aimed to raise awareness on digital opportunities.
Germany	Go Digital (2017)	Provides SMEs with external consultancy on IT security, online marketing and digital business process.
	Amendment to the Tele-Media Code on WiFi operators' liability	Aims to improve legal certainty for SMEs and open their Wifi to the public.
New Zealand	Digital Business Academy (2016)	Offers, in partnership with Tech City UK, free online courses designed by experts and help people start, grow or join a digital business. The courses cover a range of essential business skills ranging from developing a digital product, to running social media campaigns, to mastering finance for their business.
Switzerland	Regional Policy Coaching (2016)	Raises awareness among industrial SMEs located in rural and mountainous areas and improve knowledge transfer.
Turkey	Consultancy and education programme (2016-19)	Consultancy and education to support SMEs in purchasing computer and information technology.

		Sector-targeted approaches
Denmark	Public-private partnerships	Series of partnerships with specific sectors (e.g. retail and wholesale trade, and transportation) with a view to promoting the use of ICT by SMEs.
New Zealand	Sector partnerships for SME digital technology adoption	New project for encouraging better use of digital technologies by SMEs. The initiative has been jointly developed by the Ministry of Business, Innovation and Employment, the Ministry for Primary Industry, technology industry associations, regional economic development agencies, and the wider business community. The project is being tested with three pilot sectors: arable farming, tourism and construction.
Spain	E-commerce Impulse Programme (2017)	Aims to boost SME participation in e-retail trade.
	National Strategy of Digitalisation: Connected Industry 4.0	Targets firms in the manufacturing sector through awareness and information campaigns and training, technology platform and a national network of Digital Innovation Centers in support of multi-sectoral partnerships, assistance for the business development of Industry 4.0 technology suppliers and initiatives for encouraging the adoption of new manufacturing technologies, including financing.

In some cases financial and technical support is supplemented with training and guidance on the skillset and organisational changes that are required to support technological change (see also the chapter on access to skills).

Sector-wide approaches and solutions are also often instrumental for accelerating technology diffusion within specific business ecosystems.

Revising national innovation policy support packages for SMEs

Ministries and departments in charge of the national innovation policy agenda are increasingly taking into consideration SME constraints and potential in policy making and implementation. Although cross-country differences exist, government responses to the 2016 OECD survey on Science, Technology and Innovation (STI) Outlook indicate a clear move towards greater use of population-targeted[9] instruments over the last decade. And the trend towards more targeted approach in STI policy making is likely to strengthen in the five years to come (OECD, 2016[10]).

For example the integration of SME policy imperatives into innovation policies has been noticeable in the design of R&D tax incentives. R&D tax incentives have become a popular instrument in support of business innovation across the OECD area over the past decade, governments revising their tax schemes to make them more available and generous (Appelt et al., 2016[45]). R&D tax incentives are non-discretionary instruments by nature but have been increasingly geared towards SMEs. The introduction of carry-forward and refundable options aimed to compensate for insufficient tax liability of smaller and young firms. SMEs have been granted preferential tax deduction. And particular efforts have been dedicated to simplify tax schemes, increase predictability and reduce compliance costs (OECD, 2016[10]). The marginal tax subsidy rates for SMEs exceed 30% of the expense incurred in Canada, Portugal or Spain or up to 40% in France. Although SME shares in tax support for BERD vary significantly across countries, they tend to be aligned with SME share in BERD (OECD, 2018[46]). But in countries where refundable options are proposed, such as Austria, Canada, France, the Netherlands, Norway and the United Kingdom, SMEs capture a disproportionate share of tax support.

Despite the growing relevance of R&D tax concessions in funding business innovation, governments keep using direct funding, especially competitive grants, for supporting business R&D, particularly by SMEs (see Table 7.2). Direct funding schemes have become more market friendly, simpler to claim for and more competitive over the past years (OECD, 2016[10]). SMEs have got over 90% of direct government funding of BERD

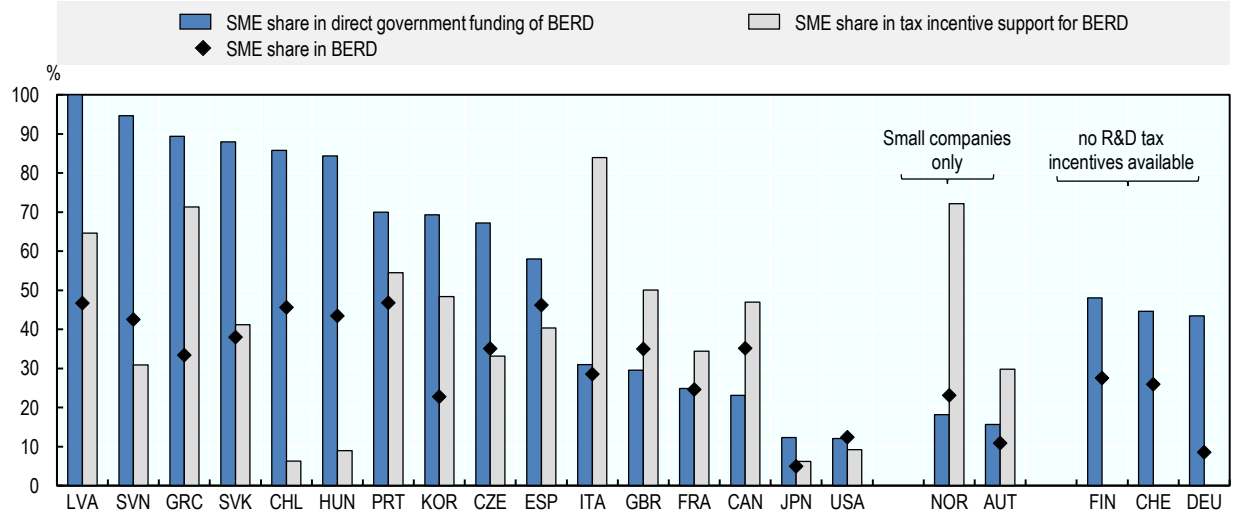
in Latvia and Slovenia in 2016 and over 70% in Chile, Greece, Hungary, Portugal and the Slovak Republic (Figure 7.6). Whether through tax incentives or direct support, SMEs have received more financial support in relative terms than what they have contributed to total business R&D expenditure. This is true for all countries to the notable exception of the United States where larger firms captured more support as compared to what they contributed.

Another example of shifts in innovation support policies towards more SME-targeted schemes relates to pre-commercialisation public procurement programmes (see the chapter on market conditions).

SME policy considerations are also pervading national innovation policy agenda as reflected in countries' strategic orientations and high-level documents (Table 7.2). SME contribution to innovation dynamics is a key axe of STI policy action in Belgium (Wallonia) through the *Smart Specialisation Strategy* (2015-19), in Chile through the *Innovation Plan* (2014-25), in Estonia through the *Entrepreneurship Growth Strategy* (2014-20), in Germany through the new *High-Tech Strategy* (since 2014) or in Norway through the *Action Plan for Entrepreneurship* (since 2015).

Figure 7.6. SMEs receive more public support to business R&D than what they spend on R&D

SME share as a percentage of BERD and government support for BERD in each category, 2016 or latest year available



Note: This is an experimental indicator. International comparability may therefore be limited, e.g. due to variations in SME definitions for business R&D vs. R&D tax relief reporting. For BERD and government-funded BERD, SME figures generally refer to enterprises with 1-249 employees (i.e. excluding firms with zero employees). However a number of countries have additional criteria to define SME status, for instance independence (e.g. Canada, United Kingdom). In Figure 7.6, SME definitions are harmonised across direct funding/BERD and tax support country by country. Therefore data on SME share of BERD in Figure 7.6 may not be comparable with the data presented in Figure 7.5. Countries are sorted by descending order of SME share in direct government funding of BERD.

Source: OECD (2019[47]), *OECD Time-series Estimates of Government Tax Relief for Business R&D*, http://www.oecd.org/sti/rd-tax-stats-tax-expenditures.pdf, based on OECD (2019[48]), *R&D Tax Incentive Indicators*, http://oe.cd/rdtax (accessed on 15 February 2019) and OECD (2019[49]), *Research and Development Statistics (RDS) Database*, http://oe.cd/rds (accessed on 15 February 2019).

StatLink http://dx.doi.org/10.1787/888933924932

Table 7.2. Innovation policies for SMEs: Selected country examples

Mainstreaming SME policy objectives in the innovation policy agenda		
Czech Republic	National Research, Development and Innovation Policy (2016-20)	Foresees new services and financial instruments (such as the National Innovation Fund) to help SMEs become more involved in R&D together with large multinationals.
Netherlands	Coalition Agreement (2017)	The agreement will drive government policy reforms in the years to come. Emphasis among other primary goals is given to growth in SMEs.
European Commission	European Innovation Council (EIC) (2017-20)	Supports top-class innovators, entrepreneurs, small companies and scientists for scaling up internationally. The EIC pilot earmarks EUR 2.7 billion in funding for the period 2018-20 via several channels including the SME Instrument and the Horizon Prizes. It will also offer new networking, mentoring and coaching opportunities as well as strategic advice for upgrading the European innovation ecosystem.
Direct SME-targeted funding		
Australia	Business Research and Innovation Initiative (2018-22)	Proposes a series of national policy and service-delivery challenges and invites innovative SMEs to develop solutions. Winners receiving grants of up to AUD 100 000 to test the technical and commercial viability of their proposed solutions over three months. The most successful solutions may then be eligible for another grant of up to AUD 1 million to develop a prototype or proof of concept over the next 18 months. AUD 25.5 million were earmarked to the project.
Estonia	Development Vouchers (2016-23)	Encourages experimental research by SMES: the voucher supports entrepreneurs in assessing the viability of an idea. It also aims to increase cooperation between SMEs and external innovation partners.
Ireland	Business Innovation Initiative (since 2016)	Grants in support of customer-focused process and organisational innovation.
Luxembourg	Innovation grants (since 2017)	Competitive grants for process and organisational innovation in SMEs. The funding covers costs of instruments and equipment, costs of contractual research, patenting and licensing as well as personnel, overhead and operating costs.
United Kingdom	Innovation Loans Pilot Programme (2017)	New financial products to support innovation. Innovate UK has launched a GBP 50 million Innovation Loans Pilot Programme end 2017 with a view to providing affordable, patient and flexible finance for later-stage innovation projects. The programme is particularly aimed at innovative SMEs. This is the first time Innovate UK offers an alternative form of innovation finance besides matched grant funding.
SME use of Intellectual Property Rights		
Austria	Patent Scheck (patent voucher) (2016)	Grant worth EUR 12 500 that helps small firms assess the patentability of their ideas with a patent examiner of a Patent office. If patentable, the grant then covers the costs of a professional patent attorney and application fees. About 80% of the beneficiaries so far were clients new to the IP-System.
Belgium (Federal Government)	Patent Box reform (2016)	Aims to make the regime more accessible to SMEs and encouraging licensing activities by smaller firms.
Spain	IP Strategic Plan (2017-20)	Foresees a number of actions for improving IP quality, transfer and internationalisation. SMEs and entrepreneurs are offered grants and subsidies to adopt national patent and utility models.
	Regional agreements for awareness campaigns	Agreements between regional governments and the Spanish Patent and Trademark Office for developing a network of regional centres that provide applicants with information on IPRs and their prosecution.
Switzerland	Assistance on patent search	The Federal Institute of Intellectual Property (IPI) provides export-oriented SMEs assistance in searching patents, guidance and expertise.

Scaling-up business innovation networks and involving SMEs

Connecting SMEs and entrepreneurs to national, subnational and international innovation networks is a key condition of their transformation and growth.

Industrial and cluster policies are preferential channels of policy intervention for technology upgrading and integration into GVCs (Kergroach, 2018[50]). Cluster policies

have long been implemented in OECD countries and non-OECD economies, with different features though, depending on the stage of development of a country (or a region) and the level of maturity of the cluster itself. The industrial cluster landscape is constantly evolving as a result of changes in market conditions, technologies, and competition. About one fifth (20%) of European clusters significantly changed their market position between 2008 and 2014 (Ketels and Protsiv, 2016[51]). Clusters that are increasingly exposed to global competition are also prompted to further specialised (OECD, 2016[10]).

National cluster policies are evolving worldwide with the emergence of a network-based development model along which clusters located in different areas and active in different industrial sectors are pushed to establish cross-cluster linkages domestically and internationally. This network-based approach often includes the strengthening of the cluster research component, stronger industry-science linkages, enhanced interdisciplinary capacity within the cluster and more cross-sectoral interactions (OECD, 2016[10]).

In this vein, the ten Baltic countries (Denmark, Sweden, Norway, Finland, Germany, Lithuania, Estonia, Latvia, Poland and Island) have jointly developed the *BSR Stars* project with a view to establishing the Baltic Sea Region (BSR) as a functional region with an internationally competitive position in a number of strategic areas. The BSR Stars project will link strong research environments, clusters and SME-networks from the different countries into new strategic alliances with a global potential. Government have relayed multilateral efforts with further cluster developments at national level (Table 7.3).

Governments are also active in deploying and connecting accelerators and incubators (Table 7.3).

Table 7.3. Strengthening SME access to innovation networks: Selected country examples

	Cluster policy	
Canada	Innovation Supercluster Initiative (ISI) (2017-20)	Aims to create technological leadership and boost regional innovation ecosystems. ISI supports new industry-led consortia that bring together SMEs, large firms and industry-relevant research institutions through high-value strategic investments and industry fund matching.
Estonia	Cluster policy reform (2016-2018)	Following the recommendations of the 2012 European Research Area and Innovation Committee (ERAC) peer-review, the government has intended to tackle the size-related limitations of the country by encouraging cross-sector co-operation between companies and between companies and research organisations. As a result, 10 clusters, some specialised in digitalisation and ICT services, have received EUR 10 million funding over 2016-18.
Germany	KMU-NEtC (2016)	Aims to promote ambitious R&D and innovation collaborations through networks and clusters with significant participation of SMEs. KMU-NetC foresees fostering the innovation strategies or technology roadmaps of German networks and clusters. KMU-NetC is new funding programme and part of the federal programme “Priority for the small business”.
	Innovation Forum SME (2016)	Allocates targeted funding to medium-sized firms as to encourage their collaboration with other companies, research organisations and public administration on a regional level.
Korea	New funding for corporate research centres (2017)	The Ministry of SMEs and Start-ups has allocated new funding for establishing corporate research centres through industry-academia-research institute cooperation, mainly targeting SMEs with weak technological capacity. The administration has also supplemented the R&D equipment at its Digital Design Innovation Support Centres and Test Product Manufacturing Support Centres in order to enhance manufacturing capability and the development of test products and support technological innovation among regional SMEs.
Latvia	Cluster Programme (2016-22)	Through a total funding of EUR 6 million, the new programme involves over 40 research and education institutions and aim to foster industry-science cooperation and improve clusters’ competitiveness, export and new product development.

Lithuania	INNOCLUSTER (2016-20)	Promote and accelerate cooperation between branches and sectors of the Lithuanian industry and enhance its international competitiveness.
	INNOCONNECT (2016-20)	Aims to foster international partnerships and networking through the European Business and Innovation Network and create opportunities for participating in international R&D initiatives and making contacts with international research, export or investor partners
Spain	New grants for consolidating clusters (2016)	New grants for consolidating clusters and supporting the digitalisation of SMEs through clusters in 2016.
	Accelerators and incubators	
Australia	Incubator Support Programme (2016)	Provides matched funding for developing new incubators and accelerators in regions or sectors with high innovation potential and boosting the existing ones. The programme also supports secondments of national or international expert advisers.
Austria	Global Incubator Network (GIN) (2016-18)	Matchmaking platform which connects start-ups, incubators, business angels etc. by sharing access to information and contacts. The GIN also offers expertise to Austrian start-ups willing to enter international markets as well as support to international start-ups and investors willing to enter the Austrian market.
Belgium (Flanders)	Support for Flemish start-ups in the US (2017)	Interest-free loans, coaching and guidance for helping Flemish start-ups to elaborate their activities on the US market via the Entrepreneurs Roundtable Accelerator in NY City.
Brazil	Support to Insert Researchers in Incubated Companies	Technological fellowships encourage the development of innovative products, processes and services by incubated companies or firms associated to Brazilian incubators.
Korea	K-Global Accelerator Programme (2017)	Aims to facilitate SME overseas expansion. 17 Centres for Creative Economy and Innovation (CCEI) were also launched across the country as from 2015 as to provide support to start-up ventures, including in the provision of expertise and resources.
Portugal	National Incubators Network (2016)	Aims to enhance collective efficiency between incubators and the entrepreneurship ecosystem.
	Incubation Voucher (Vale Incubação)	Provides EUR 5 000 to new enterprises for the acquisition of incubation services.
	Interface Programme	Includes support for Technological Interface Centers, Competitiveness Clusters, Collaborative Laboratories and Suppliers Club.
Spain	Entrepreneurial Nation Strategy and Startup Law (forthcoming)	Aims to promote start-up ecosystems through networks of accelerators and incubators, tax incentives for R&D and innovation and possible transfer of R&D tax claim from R&D performers to R&D investors.

Opening and protecting data and innovation assets

Governments have been increasingly promoting Open Government Data (OGD) approaches with a view to making the data generated by public administration available to the general public and offering firms, including SMEs, an opportunity to leverage large quantities of data for business purposes at relatively low cost (Ubaldi, 2013[52]; OECD, 2018[53]). The 2017 OECD Survey on Open Government Data 3.0 shows that creating economic value for the broad economy (e.g. new business opportunities for the private sector, facilitating business start-ups) is the main objective of open data policies and initiatives across OECD countries and partners (OECD, 2018[54]).

Countries reviewed under the 2017 OECD Survey on OGD are increasingly moving away from the test-and-learn approach adopted in the early stages of OGD development towards more structured and systematic dedicated strategy embedding action plans. Yet, open data policies appear to be mainly related to digital government and open government strategies and are less frequently included in overarching government agendas for public sector modernisation, innovation and economic growth, potentially limiting efficient implementation and economic benefits (OECD, 2018[54]).

In parallel, data protection is being reinforced while efforts are made to harmonise legislations across jurisdictions and help smaller firms navigate through different regulatory frameworks.

Trade secrets have been the subject of increased domestic and international policy attention and trade secret laws have been simultaneously strengthened in Europe[10] and the United States.

- The European Trade Secrets Directive (2016) aims to standardise existing and diverging national laws against the unlawful acquisition, disclosure and use of trade secrets (EC, 2016[55]). The new Directive is to bring into force in the course of 2018 and will enable companies to exploit and share their trade secrets with privileged business partners across the Internal Market. Under the new EU Directive, registering trade secrets on the blockchain could be considered as a "reasonable step (…) to keep [the information] secret".
- The United States strengthened trade secrecy protection through the Defend Trade Secrets Act of 2016 that creates federal civil cause of action and provides a choice between treating localised disputes under state laws or treating disputes under federal law (US Patent and Trademark Office, 2017[56]). Courts can protect trade secrets by enjoining misappropriation, ordering parties that have misappropriated a trade secret to take steps to maintain its secrecy, or ordering payment of royalties, award damages, court costs and attorneys' fees.

The EU is also engaging reforms of IPRs laws as part of its package of measures for creating a Digital Single Market.

- The Copyright Reform aims in particular at more cross-border access to content online, wider opportunities to use copyrighted materials in education, research and cultural heritage and a better functioning copyright marketplace.
- The planned Unitary Patent will offer uniform protection in up to 26 EU member states, and enact for patent holders an alternative pathway to the existing European and national patent systems, a centralised procedure at the EPO and a uniform litigation system (Unified Patent Court) that is poised to increase legal certainty at reduced costs.

SMEs are prompted to acquire and manage growing data stocks in a context of increased regulatory scrutiny, in particular with respect to data protection and confidentiality. Concerns about data privacy are likely to raise new barriers to smaller firms that have less internal capacity to deal with complex regulatory environment. The *General Data Protection Regulation* introduced by the European Union in May 2018 intends to harmonise data privacy laws across Europe with the explicit goal of protecting and empowering EU citizens' data privacy and reshaping the way organisations approach the issue.

In addition governments promote IPR use among SMEs through information, financial support and technical assistance (Table 7.1).

Other relevant aspects of SME access to innovation assets are related to:

- Institutional and regulatory framework conditions, e.g. simplification and transparency of administrative procedures for easing access to public support for business innovation and ensuring consistency and neutrality in competition, RIA for gaining knowledge on efficient SME innovation policies, land-use planning and the rise of a new generation of smart cities acting as innovation hub and catalyst, taxation of innovation equipment and highly skilled talents, efficient product market regulation enabling an optimal reallocation of innovation assets etc.
- Market conditions, e.g. first as a primary driver of innovation, market concentration and competition in digital industries, trade facilitation for importing knowledge-intensive capital, FDI-related policies and policies for fostering GVC integration, SME access to public procurement etc.
- Infrastructure, e.g. the deployment of high speed broadband, accessibility and affordability of digital platforms and networks, cybersecurity and the protection of data and privacy, smart mobility solutions for narrowing the distance to markets, energy supply for responding to just-in-time production requirements and meeting energy demand peaks, large-scale public investments in R&D on general purpose technologies etc.
- Access to finance, e.g. with regard to the funding of innovation asset investments, but also the use of innovation assets as collateral for accessing funding, venture capital markets and the financing of entrepreneurial ventures etc.
- Access to skills, e.g. adult skill gap in view of the digital transition, digital, transversal and soft skills including managerial skills for supporting organisational change and technological transformation, emerging skills needs, especially in new technology areas (artificial intelligence, big data analytics, data scientist), SME access to training systems, leveraging the potential of women and disadvantaged populations etc.

Notes

[1] In the following, the term of innovation assets will encompass technology and physical (or tangible) assets on the one hand, and knowledge-based capital (KBC), i.e. knowledge assets of an intangible nature including: i) computerised information (e.g. software and databases); ii) innovative property (e.g. patents, copyrights, designs and trademarks); and iii) economic competencies (e.g. brand equity, firm-specific human capital, networks of people and institutions, and organisational know-how) on the other hand. The KBC definition is drawn from (Corrado, 2005[4]) and (Andrews and Criscuolo, 2013[5]).

[2] https://www.wired.com/brandlab/2017/07/stepping-3d-printing-game-leveling-playing-field/. https://www.wired.com/story/ideas-jason-pontin-3d-printing/, accessed 17 September 2018.

[3] Wholesale and retail trade, construction and accommodation and food services account on average for about 50% of SME employment in OECD countries. These sectors are the primary sectors where SMEs concentrate (see Chapter 1).

[4]H2020 statistics, https://webgate.ec.europa.eu/dashboard/sense/app/93297a69-09fd-4ef5-889f-b83c4e21d33e/sheet/PbZJnb/state/analysis, accessed 17 September 2018.

[5] https://www.autm.net/resources-surveys/research-reports-databases/licensing-surveys/fy2016-licensing-survey/, accessed 17 September 2018.

[6] https://www.barclaysaccelerator.com/, accessed 16 September 2018.

[7] https://startups.microsoft.com/en-us/, accessed on 16 September 2018.

[8] https://stip.oecd.org/stip.html, accessed 17 September 2018.

[9] Population-targeted instruments are those targeted towards specific types of firms, especially SMEs or new technology-based firms.

[10] Within the EU, Sweden is the only Member State with specific legislation on trade secrets (EUIPO, 2017[31]). All the other Member States offer protection to trade secrets through different pieces of civil and criminal legislation. Austria, Germany, Poland and Spain rely on unfair competition law, while Italy and Portugal have specific provisions included in their Codes of Industrial Property. The Netherlands and Luxembourg use civil liability law with a quantification of damages in the form of loss suffered and foregone profits. In Ireland and the United Kingdom, trade secrets are protected by the common law relating to breach of confidence and/or equity and by contract and employment law. Most EU Member States have actually specific related provisions in national labour laws or in their Civil Codes.

References

Acs, Z. et al. (2009), "The knowledge spillover theory of entrepreneurship", *Small Business Economics*, Vol. 32/1, pp. 15-30, http://dx.doi.org/10.1007/s11187-008-9157-3. [5]

Almeling, D. (2012), "Seven Reasons Why Trade Secrets Are Increasingly Important", *Berkeley Technology Law Journal*, Vol. 27, p. 1091, http://dx.doi.org/10.15779/Z38SM4F. [37]

Almeling, D. et al. (2010), "A Statistical Analysis of Trade Secret Litigation in Federal Courts", http://www.fas.org/irp/ops/ci/docs/2002.pdf. (accessed on 18 July 2018). [38]

Andrews, D., G. Nicoletti and C. Timiliotis (2018), "Going digital: What determines technology diffusion among firms?", https://one.oecd.org/document/ECO/CPE/WP1(2018)8/en/pdf (accessed on 16 July 2018). [23]

Appelt, S. et al. (2016), "R&D Tax Incentives: Evidence on design, incidence and impacts", *OECD Science, Technology and Industry Policy Papers*, No. No. 32, OECD Publishing, https://www.oecd-ilibrary.org/science-and-technology/r-d-tax-incentives-evidence-on-design-incidence-and-impacts_5jlr8fldqk7j-en (accessed on 18 September 2018). [45]

Backer, K. et al. (2016), "Reshoring: Myth or Reality?", *OECD Science, Technology and Industry Policy Papers*, No. 27, OECD, Paris, https://www.oecd-ilibrary.org/science-and-technology/reshoring-myth-or-reality_5jm56frbm38s-en (accessed on 14 September 2018). [19]

Brant, J. (2014), "Trade Secrets: Tools for Innovation and Collaboration in Innovation", *Intellectual Property Series, International Chamber of Commerce*, https://cdn.iccwbo.org/content/uploads/sites/3/2017/02/ICC-Research-Trade-Secrets-english.pdf. [29]

CEFIC (2012), *Report on the Importance of Trade Secrets for Chemical Companies*, http://www.cefic.org/Documents/RESOURCES/Reports-and-Brochure/Report-on-the-Importance-of-Trade-Secrets-for-Chemical-Companies-2012.November.15.pdf. [39]

Cohen, W., R. Nelson and J. Walsh (2000), *Protecting Their Intellectual Assets: Appropriability Conditions and Why U.S. Manufacturing Firms Patent (or Not)*, National Bureau of Economic Research, Cambridge, MA, http://dx.doi.org/10.3386/w7552. [32]

Deloitte (2018), *2018 Retail, Wholesale and Distribution Outlook: An Industry in Transition*, https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/us-cb-retail-wholesale-distribution-outlook-2018.pdf (accessed on 29 July 2018). [17]

EC (2016), *Trade Secrets Directives*, European Commission, http://ec.europa.eu/growth/industry/intellectual-property/trade-secrets_en, accessed 15 June 2018. (accessed on 15 June 2018). [55]

EUIPO (2017), *Protecting Innovation through Trade Secrets and Patents: Determinants for EU Firms*, European Observatory on Infringements of Intellectual Property Rights, https://euipo.europa.eu/tunnel-web/secure/webdav/guest/document_library/observatory/documents/reports/Trade%20Secrets%20Report_en.pdf (accessed on 13 March 2019). [31]

European Patent Office (2017), *EPO SME case studies: Introduction*, http://documents.epo.org/projects/babylon/eponet.nsf/0/556F82120887EDB9C12581790043224B/$FILE/general_presentation_sme_case_studies_16.1.2018_en.pdf (accessed on 15 June 2018). [27]

Eurostat (2019), *Eurostat Community Innovation Survey (CIS-2016)*, https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20190312-1. [8]

Friedman, D., W. Landes and R. Posner (1991), *Some Economics of Trade Secret Law*, The Journal of Economic Perfpectives, Cambridge, MA and London, England, https://www.jstor.org/stable/1942702?seq=1#metadata_info_tab_contents. [30]

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, http://dx.doi.org/10.1080/09692290500049805. [42]

Hall, B. et al. (2014), "The Choice between Formal and Informal Intellectual Property: A Review", *Journal of Economic Literature*, Vol. 52(2), pp. 1-50, http://dx.doi.org/10.1257/jel.52.2.1. [34]

Hughes, A. and A. Mina (2011), *The Impact of the Patent System on SMEs A Report to the Strategic Advisory Board for Intellectual Property (SABIP)*, USPTO, https://www.uspto.gov/sites/default/files/aia_implementation/ipp-2011nov08-ukipo-1.pdf (accessed on 16 September 2018). [36]

Jankowski, J. (2012), "Business Use of Intellectual Property Protection Documented in NSF Survey", https://www.nsf.gov/statistics/infbrief/nsf12307/nsf12307.pdf (accessed on 6 June 2018). [33]

Kergroach, S. (2018), "National innovation policies for technology upgrading through GVCs: A cross-country comparison", *Technological Forecasting and Social Change*, http://dx.doi.org/10.1016/J.TECHFORE.2018.04.033. [50]

Ketels, C. and S. Protsiv (2016), *European Cluster Panorama 2016*, European Commission and the Center for Strategy and Competitiveness Stockholm School of Economics, http://ec.europa.eu/DocsRoom/documents/20381 (accessed on 19 September 2018). [51]

Kushida, K., J. Murray and J. Zysman (2011), "Diffusing the Cloud: Cloud Computing and Implications for Public Policy", *Journal of Industry, Competition and Trade*, Vol. 11/3, pp. 209-237, http://dx.doi.org/10.1007/s10842-011-0106-5. [25]

Mussomeli, A. and S. Gish (2016), *Industry 4.0 and the digital transformation in supply chains | Deloitte Insights*, https://www2.deloitte.com/insights/us/en/focus/industry-4-0/digital-transformation-in-supply-chain.html (accessed on 16 September 2018). [18]

OECD (2019), *OECD ICT Access and Usage by Businesses Database 2019*, OECD, Paris, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 15 February 2019). [24]

OECD (2019), *OECD Time-series Estimates of Government Tax Relief for Business R&D*, OECD, Paris, http://www.oecd.org/sti/rd-tax-stats-tax-expenditures.pdf. [47]

OECD (2019), *R&D Statistics Database, March*, OECD, Paris, http://www.oecd.org/sti/rds (accessed on 8 March 2019). [40]

OECD (2019), *R&D Tax Incentive Indicators*, OECD, Paris, http://oe.cd/rdtax (accessed on 15 February 2019). [48]

OECD (2019), *Research and Development Statistics (RDS) Database*, OECD, Paris, http://oe.cd/rds (accessed on 15 February 2019). [49]

OECD (2018), *Building business linkages that boost SME productivity*, http://www.oecd.org/industry/smes/Agenda-OECD-INADEM-workshop-Boosting-Business-Linkages.pdf (accessed on 6 June 2018). [41]

OECD (2018), *OECD Open Government Data Report*, https://one.oecd.org/document/GOV/PGC/EGOV(2018)4/CHAP1/en/pdf (accessed on 16 September 2018). [54]

OECD (2018), *OECD Time-series Estimates of Government Tax Relief for Business R&D*, http://www.oecd.org/sti/rd-tax-stats-tax-expenditures.pdf (accessed on 17 September 2018). [46]

OECD (2018), *Open Government Data*, http://www.oecd.org/gov/digital-government/open-government-data.htm (accessed on 6 June 2018). [53]

OECD (2018), *Strengthening SMEs and entrepreneurship for productivity and inclusive growth*, https://www.oecd.org/cfe/smes/ministerial/documents/2018-SME-Ministerial-Conference-Key-Issues.pdf (accessed on 17 July 2018). [13]

OECD (2017), "Enhancing the Contributions of SMEs in a Global and Digitalised Economy", *Meeting of the OECD Council at Ministerial Level*, https://www.oecd.org/mcm/documents/C-MIN-2017-8-EN.pdf (accessed on 6 June 2018). [44]

OECD (2017), "ICT Access and Use by Businesses (Edition 2017)", *OECD Telecommunications and Internet Statistics* (database), http://dx.doi.org/10.1787/58897a61-en (accessed on 29 July 2018). [16]

OECD (2017), *Key Issues for Digital Transformation in the G20*, https://www.oecd.org/g20/key-issues-for-digital-transformation-in-the-g20.pdf (accessed on 16 July 2018). [9]

OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264276284-en. [22]

OECD (2017), *OECD ICT Access and Usage by Businesses Database*, https://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 18 July 2018). [21]

OECD (2017), *OECD Science, Technology and Industry Scoreboard 2017: The digital transformation*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264268821-en. [12]

OECD (2017), *The Next Production Revolution: Implications for Governments and Business*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264271036-en. [15]

OECD (2016), *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sti_in_outlook-2016-en. [10]

OECD (2016), "Start-ups and innovative entrepreneurship Rationale and objectives", http://dx.doi.org/10.1787/5jz417hj6hg6-en. (accessed on 6 June 2018). [6]

OECD (2015), *Enquiries Into Intellectual Property's Economic Impact*, OECD Publishing, Paris, http://www.oecd.org/officialdocuments/publicdisplaydocumentpdf/?cote=DSTI/ICCP(2014)17/CHAP1/FINAL&docLanguage=En (accessed on 13 March 2019). [28]

OECD (2015), "Skills and Learning Strategies for Innovation in SMEs", https://one.oecd.org/document/CFE/SME(2014)3/REV2/en/pdf (accessed on 6 June 2018). [43]

OECD (2015), *The Innovation Imperative: Contributing to Productivity, Growth and Well-Being*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264239814-en. [3]

OECD (2013), *Skills Development and Training in SMEs*, OECD Skills Studies, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264169425-en. [11]

OECD (2011), *Intellectual Assets and Innovation: The SME Dimension*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264118263-en. [26]

OECD (2010), *SMEs, Entrepreneurship and Innovation*, OECD Studies on SMEs and Entrepreneurship, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264080355-en. [20]

OECD (2009), *Innovation in Firms: A Microeconomic Perspective*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264056213-en. [2]

OECD (1998), *Technology, Productivity and Job Creation: Best Policy Practices 1998 Edition*, The OECD Jobs Strategy, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264163416-en. [7]

OECD (forthcoming), *Data Analytics in SMEs - Trends and Policies*. [14]

OECD/Eurostat (2005), *Oslo Manual: Guidelines for Collecting and Interpreting Innovation Data, 3rd Edition*, The Measurement of Scientific and Technological Activities, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264013100-en. [1]

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://dx.doi.org/10.1787/9789264013100-en. [4]

Rujan, C. and D. Dussaux (2017), *Patents, trade and foreign direct investment in the European Union*, European Patent Office, http://documents.epo.org/projects/babylon/eponet.nsf/0/AD3C8DB869617089C12581D70055FF25/$File/patents_trade_fdi_en.pdf (accessed on 16 September 2018). [35]

Ubaldi, B. (2013), "Open Government Data: towards Empirical Analysis of Open Governmnet Data Initiatives"", *OECD Working Papers on Public Governance* 22, https://opendata-aha.net/open-data-a-roadmap-to-delivering-impact/. [52]

US Patent and Trademark Office (2017), *Trade Secret Policy*, https://www.uspto.gov/patents-getting-started/international-protection/trade-secret-policy (accessed on 12 June 2018). [56]

Web references (accessed 29 July 2018)

https://www.insider-trends.com/top-50-innovations-in-retail/.

https://www.wired.co.uk/article/six-learnings-future-retail-consumer.

https://www.wired.co.uk/article/moby-autonomous-shopping-store.

http://www.businessinsider.fr/us/chinas-hema-market-has-two-advantages-over-amazon-go-2018-2.

https://www.forbes.com/sites/springwise/2013/05/09/paying-with-kilometres-and-the-top-10-ideas-from-retail-over-the-last-12-months/#5c59196e77c1.

https://www.forbes.fr/technologie/amazon-go-chez-amazon-lintelligence-artificielle-supprime-les-caisses/.

https://www.usine-digitale.fr/article/amazon-go-bientot-a-san-francisco-et-chicago.N693694.

https://www.rte.ie/eile/brainstorm/2017/1003/909585-the-future-of-retail-15-things-coming-soon-to-a-store-near-you/.

https://www.huffingtonpost.com/danny-wong/nikeid-makes-100m-co-crea_b_652214.html?guccounter=1.

https://www.theverge.com/2016/1/19/10788758/amazon-dash-buttons-replenishment-service-ge-launch.

https://www.alibabacloud.com/solutions/retail.

https://technode.com/2018/02/14/alibaba-new-retail/.

https://www.sciencedirect.com/science/article/pii/S0022435911000340.

https://www.capgemini.com/2014/01/retail-business-models-for-the-future-the-convergence-of-physical-and/.

https://www.theverge.com/circuitbreaker/2018/1/3/16844300/amazon-patent-mirror-virtual-clothes-fashion.

https://www.retaildive.com/ex/mobilecommercedaily/how-macys-maximized-in-store-traffic-through-beacons-during-black-friday.

http://www.businessinsider.fr/us/macys-adds-in-store-functionality-to-app-2016-6.

https://www.techradar.com/news/meet-chip-australias-first-robotic-shopping-assistant.

https://money.cnn.com/2014/10/28/technology/robot-shopping-assistant-lowes/index.html.

https://www.theguardian.com/technology/2014/dec/08/robot-shop-assistant.

https://www.usine-digitale.fr/article/walmart-devoile-jetblack-son-assistant-shopping-haut-de-gamme.N701139.

https://www.dezeen.com/2018/03/27/walmart-patent-drone-shopping-assistant-robot-wearable-technology/.

https://www.irishtimes.com/business/technology/robot-shop-assistant-pepper-makes-us-debut-1.2757113.

https://www.recode.net/2017/1/4/14171436/softbank-robot-pepper-sales-brick-and-mortar-retail-ces.

https://www.softbankrobotics.com/emea/fr/robots/pepper.

https://www.bloomberg.com/news/articles/2017-02-16/-smart-mirrors-come-to-the-fitting-room.

http://www.outform.com/interactive-mirrors-the-future-of-retail/.

https://www.financialexpress.com/industry/making-of-a-smart-store/202090/.

https://digiday.com/marketing/retailtech2016-inside-ralph-laurens-connected-fitting-rooms/.

http://www.rfidjournal.com/articles/view?13758/.

https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/us-cb-wholesale-distribution-disrupted.pdf.

https://www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/us-cb-retail-wholesale-distribution-outlook-2018.pdf.

http://www.retailtechnology.co.uk/news/5375/rfid-based-inventory-intelligence-for-zara/.

http://www.archibat.com/blog/building-information-modeling-bim/.

https://www.lemonde.fr/economie/article/2017/11/07/le-boom-du-bim-chamboule-le-secteur-de-la-construction_5211108_3234.html.

https://www.societedugrandparis.fr/info/evenement/bim-world-2018-1715.

https://www.lemoniteur.fr/article/un-bim-d-or-pour-la-ligne-16-du-grand-paris-express.1497494.

https://www.accenture.com/fr-fr/insight-drones-construction-service.

https://www.thebalancesmb.com/drones-affecting-construction-industry-845293.

https://www.lemoniteur.fr/article/les-drones-au-service-de-la-construction.1399254.

https://www.thenbs.com/knowledge/drones-in-construction.

https://futureofconstruction.org/case/winsun/.

https://www.lemondeinformatique.fr/actualites/lire-le-chinois-winsun-imprime-des-maisons-en-3d-59961.html.

https://www.sciencedirect.com/science/article/pii/S0278431916302250.

https://www.bloomberg.com/news/articles/2012-10-25/airbnb-coursera-and-uber-the-rise-of-the-disruption-economy.

https://www.ft.com/content/36096064-e48e-11e6-9645-c9357a75844a.

https://www.business.com/articles/best-tablet-uses-restaurants/.

https://www.eater.com/2017/10/5/16428750/tablet-technology-restaurants-applebees-outback-steakhouse.

https://blog.zenchef.fr/innovation-tendance-restauration-2015/.

https://www.lesechosdelafranchise.com/developper-reseau-franchise/croissance-reseau/innovation/restauration-rapide-la-bataille-des-innovations-a-commence-53456.php.

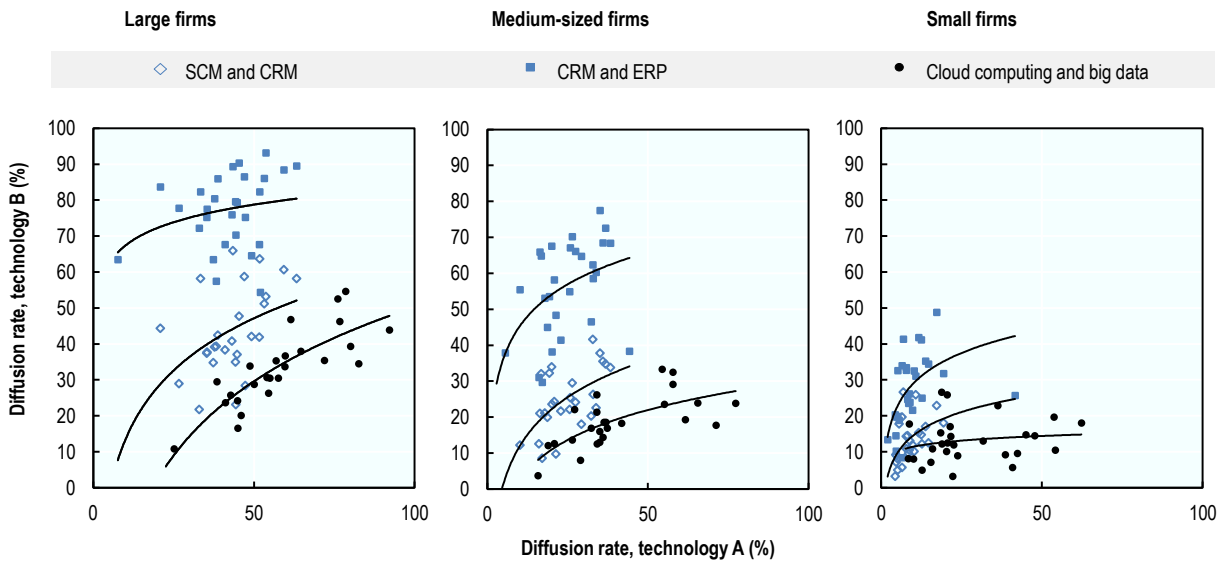
http://www.bpifrance.fr/A-la-une/Actualites/Innovation-Cuddl-up-connecte-les-restaurants-a-leurs-clients-28684.

https://www.oecd-ilibrary.org/industry-and-services/oecd-tourism-trends-and-policies_20767773.

https://www.oecd-ilibrary.org/science-and-technology/the-next-production-revolution_9789264271036-en.

Annex 7.A. The diffusion of digital technology packages

Annex Figure 7.A.1. Diffusion rate by firm size class, 2018 or latest year available



Note: SCM stands for supply-chain management, CRM for customer relationship management, ERP for enterprise resource planning. The diffusion rate refers to the percentage of firms using these software in 2018.
Source: OECD (2019[24]), *OECD ICT Access and Usage by Businesses Database 2019*, http://stats.oecd.org/Index.aspx?DataSetCode=ICT_BUS (accessed on 15 February 2019).

StatLink http://dx.doi.org/10.1787/888933924951

Part II. Country Profiles

Chapter 8. Methodology of the country profiles

Part II is composed of individual country profiles aiming to provide insights on SME performance and entrepreneurial trends in each country, and to present business conditions in countries, along with recent policy initiatives to foster business dynamics and support SMEs in innovating and scaling up. The structure of the country profiles follows the conceptual framework of Part I, and information is presented in three sections: i) national SME sector structure and performance; ii) SME access to strategic resources; and iii) SME business environment.

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.

The SME and Entrepreneurship (SME&E) Outlook country profiles provide a concise overview of SME sector structure, performance and business conditions in each OECD country and they present recent national policy initiatives implemented to foster business dynamics and support SMEs in innovating and scaling-up.

For benchmarking SME access to strategic resources and SME business environment, a broad range of indicators are used and presented in the form of indices. Benchmarking indices rank from 0 to 200 (0 being the lowest OECD value, 200 the highest and 100 the median value, i.e. the middle position among OECD countries for which data are available). The charts highlight the position and dispersion of the top five (high performing countries) and bottom five (low performing countries) OECD values, as well as the country's relative position vis-à-vis the median (dot). When data are not available, the dot, i.e. the country's position in the ranking, does not figure on the graph.

In some cases, where indicators reflect potential barriers to SME performance (costs, administrative burden etc.), the benchmark was reversed (and marked with *), so that, in these cases, when a country ranks high, the country effectively performs well as compared to the OECD median.

The SME&E Outlook 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 methodologies, there may be time gaps across indicators and data interpretation should be done with caution.

Purpose and structure

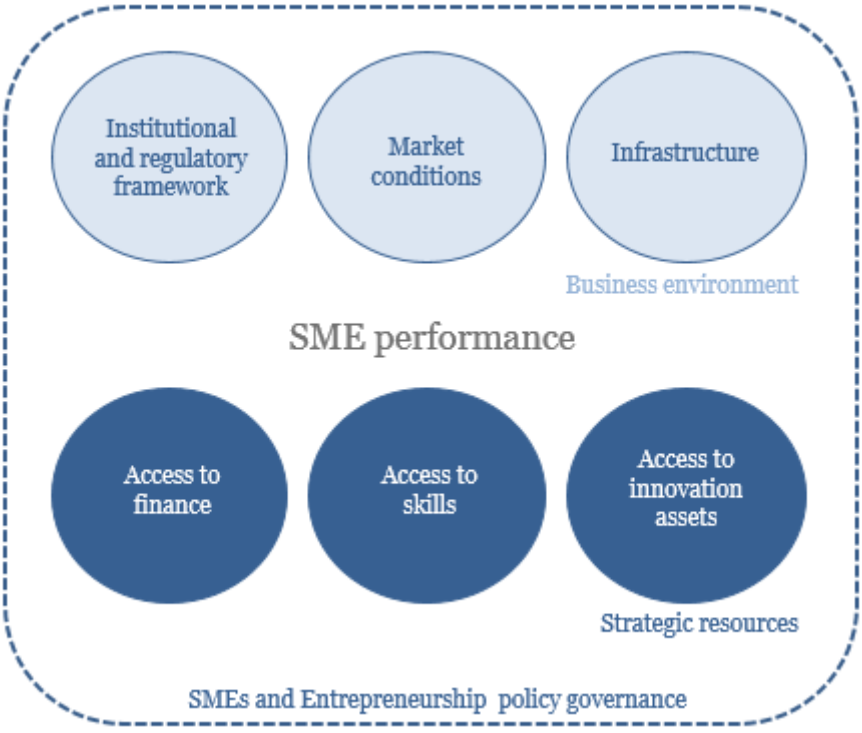
Part II of the SME and Entrepreneurship (SME&E) Outlook is composed of individual country profiles aiming to provide insights on SME performance and entrepreneurial trends in each country and to present recent policy initiatives implemented to foster business dynamics and support SMEs in innovating and scaling-up.

The structure of the country profiles follows the conceptual framework of the publication as described in the reader's guide at the forefront of the publication (Figure 7.7 and Figure 7.8). This conceptual framework is also applied in Part I that describes recent trends in SME business conditions and policy responses.

Information across the profiles is presented in three sections focusing respectively on: i) national SME sector structure and performance, ii) SME access to strategic resources and iii) SME business environment. The content of the country profiles is standardised and harmonised in order to enable international comparison.

Part II covers 36 OECD countries. An abridged version of the profiles is available in the publication, a full version with more statistical and benchmarking tools is available online. The online version also proposes profiles for several emerging economies for which data and policy information is available.

Figure 7.7. SME&E Outlook: conceptual framework



SME structure and business dynamics

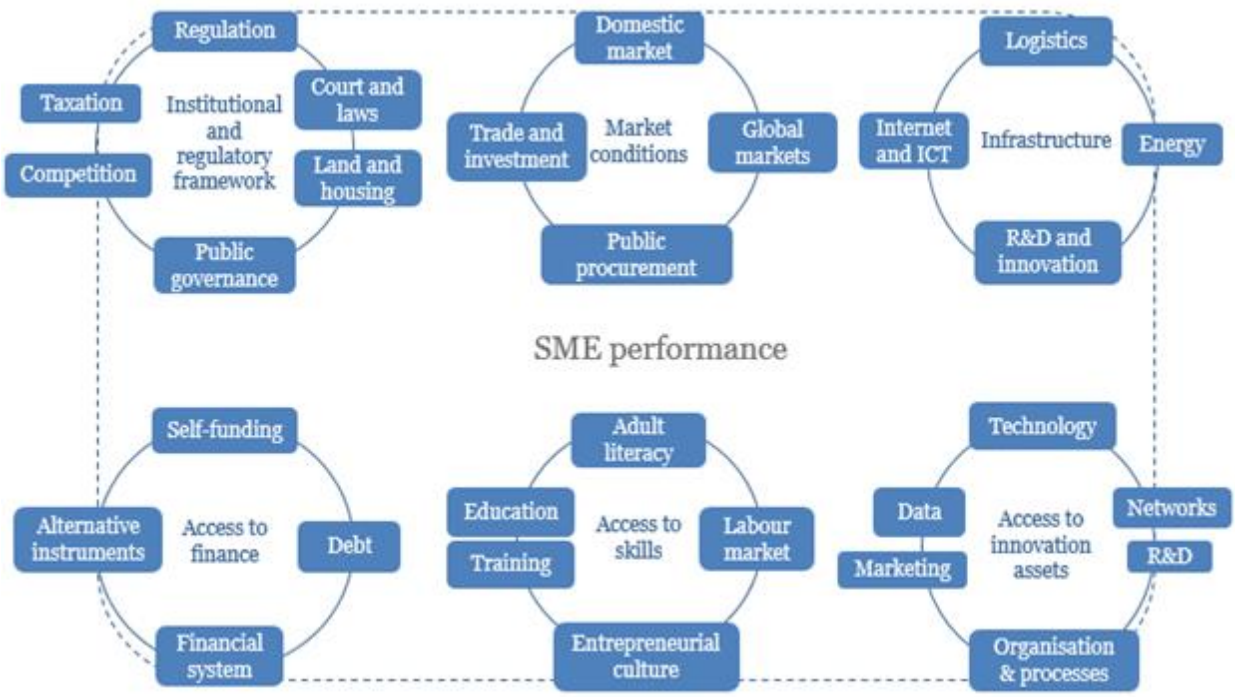
The first part of the country profiles presents, for a given country, the structure of and performance of the SME sector in terms of employment, value added, productivity and compensation of employees, and compares it with the OECD average (USA average in case of productivity). Recent trends in business dynamics, in particular enterprise creations and bankruptcies, are also commented, together with the evolution of job creation and destruction by enterprise births and deaths.

The analysis draws on the *OECD Structural and Demographic Business Statistics* (SDBS) database, which consists of official business statistics collected by the Statistics and Data Directorate in cooperation with national statistical offices and Eurostat; and the *OECD Timely Indicators of Entrepreneurship* (TIE) database, covering official business statistics and administrative data. The country profile of Canada makes also use of data from the *OECD Trade by Enterprise Characteristics* (TEC) database, which is a collection of official statistics compiled via the microdata linking of business and trade statistics.

Benchmarking SME business conditions: general approach and methodology

The country profiles are designed to provide a concise overview on SME business conditions in a particular country. Each dimension, e.g. access to finance, access to skills or market conditions etc., covers a range of SME policy relevant topics that are standardised in focus and contents for benchmarking purposes (Figure 7.8).

Figure 7.8. SME&E Outlook: detailed conceptual framework



As to cover the many different aspects that are relevant to SME business conditions, the SME&E Outlook built on work carried out across the OECD and beyond, including on measurement and indicators.

- The **benchmarking indicators** used to monitor SME business conditions are drawn from a broad range of primary OECD and non-OECD data sources. An inventory of indicators was conducted in the course of 2017-18 taking into account criteria of SME policy relevance, international comparability, regularity in data collection, country coverage and fair comparability over time. Indicators and primary data sources are presented in more details in Annex 8.A.
- **Policy information** was drawn from recent OECD and non-OECD exercises of policy information collection and major international reports, in the same vein as for Part I. The sources used for each country are presented at the end of each profile. Some are general resources covering a number of countries, especially OECD countries; others are more country-specific.

A data infrastructure was built and integrated into the OECD corporate data management system in order to gather, store and harmonise information. After consolidation, the

OECD SME 'data lake' is aimed to support future SME-related policy analysis and to evolve as needs evolve.

All indicators are presented in the form of **indices for benchmarking purposes** (OECD median=100).

- The country's values are compared to the median value observed in the OECD area, i.e. the middle position among OECD countries for which data are available. The use of the median avoids a statistical bias towards large players that skew the average, while still reflecting international rankings. The median has also the advantage over a simple ranking that it preserves the deviation between country values.
- The distance of the country's value from the OECD median value appears on the chart at a proportional distance from the median. This applies equally to all countries. In a simple ranking, the difference between two successive country values is 1 and the distance to the median is the rank.
- Indices are 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.

Given Xc,t the value for country *c* at time *t* and $Xmin,t$ the OECD minimum, $Xmed,t$ the OECD median and $Xmax,t$ the OECD maximum at time *t,* the country index of benchmark Ic,t is calculated as followed:

If $Xc,t > Xmed,t$ then

$$Ic,t = 100 + (Xc,t - Xmed,t)/(Xmax,t - Xmed,t) * 100$$

If $Xc,t < Xmed,t$ then

$$Ic,t = 100 - (Xc,t - Xmed,t)/(Xmin,t - Xmed,t) * 100$$

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, when data are not available, the dot, i.e. the country's position in the ranking, does not figure on the graph.

In some cases:

- Indicators were normalised to take account of the size of the economy (e.g. by GDP). This is for instance the case of electricity capacity.
- The country benchmark was reversed (and marked with *) for the indicators that are considered as measures of potential barriers to SME performance. This is for instance the case of all indicators related to costs of accessing strategic resources, administrative, regulatory or trade barriers, the indebtedness of economic actors that may weigh on final demand and market prospects, fear of failure etc. In these cases, when a country ranks high on an indicator that usually monitors a barrier to entrepreneurship or a weakness in the SME business environment, the country effectively performs well as compared to the OECD median.

SME access to strategic resources

Three thematic sections explore the conditions under which SMEs can access and make use of strategic resources (Figure 8.2). Smaller firms are typically at disadvantage as compared to larger firms in accessing funding, appropriate skills and innovation assets

(i.e. technology, data, business models and organisational practices, networks etc., either in their tangible or intangible forms). Yet financial capital, human capital and knowledge-based capital are key production factors and the determinants of firms' competitiveness in knowledge-based economies.

Access to finance

Accessing appropriate sources of finance across all stages of their life cycle is critical for SMEs to start, innovate and grow. Yet, SMEs remain undercapitalised and heavily reliant on straight debt. Recent evidence suggests that financial institutions have become even more risk-averse, placing an extra burden on high-risk SMEs or on firms without collateral.

This section on SME access to finance focuses on:

- SME self-funding capacity through profit;
- The state of national banking system (i.e. financial soundness, the scope of bank credit to the private sector) and the existence of an interest rate spread for SMEs;
- The effective access of SMEs to bank credit (including SME new lending, growth in SME outstanding loans, SME long-term loans, i.e. loans used to fund investment and growth needs rather than current operations) and potential barriers to SME bank credit in terms of cost (SME interest rate) and risk of rejection.
- The availability of venture capital to support SME development at different stages (i.e. early stage including seed and start-up phases, and later stage).

This section builds on the work carried out for the Financing SMEs and Entrepreneurs: an OECD Scoreboard as well as the G20/OECD High-Level Principles on SME Financing (OECD, 2018[1]). It also makes use of OECD Structural Business Statistics and data compiled for the OECD Entrepreneurship Financing Database. Indicators on national banking systems also come from the International Monetary Fund Financial Soundness Indicators and the World Bank (WB) Data Bank on Development (Annex 8.A).

Access to skills

SMEs face greater difficulties in identifying, attracting and developing skills than larger firms. Recent survey results also show that people are not more confident in their ability to start a business than in the past. Yet skills are key assets for technology and innovation absorption and for managing the organisational changes needed during the transition.

This section on SME access to skills focuses on:

- *Adult literacy and training* that reflect skills availability in the country and that is measured by adult educational attainment, adult skills for information and communication technologies (ICT), learning and creative thinking, and the access of workers' to on-the-job training.
- *Student proficiency* that reflects future skills potential in the country, and that is measured by the performance of 15-year-olds in collaborative problem-solving, mathematics and reading, as well as national graduation rate at tertiary level.
- *Entrepreneurial skills* that are measured by perceived capabilities, entrepreneurial intentions and fear of failure among working-age population.

This section builds on the work carried out in the framework of the OECD Programme for International Student Assessment (PISA) and the OECD Programme for International Assessment of Adult Competences (PIAAC), as well as the OECD Job Quality database and official data on education collected by the OECD and the UNESCO. Results of the last Global Entrepreneurship Monitor (GEM) adult population survey are also included (Annex 8.A.).

Access to innovation assets

Innovation results from a process of accumulation through which firms increase their stock of knowledge-based capital. SME face particular barriers in adopting new technologies or new organisational and marketing practices, in participating in technology-intensive activities or integrating innovative networks.

This section on SME access to innovation assets focuses on:

- *Technology* through SME acquisition of equipment and software, and SME adoption of high-speed broadband.
- *Organisation and processes* with SME use of new IT-enabled tools (e.g. big data analysis, cloud computing services, supply chain management) and SME adoption of new commercial practices (e.g. e-sales).
- *SME collaboration networks,* i.e. SME collaboration on innovation with the science base (universities and public research institutions), within supply chains (e.g. with suppliers) and within international networks (through cross-border participation in innovation collaborations).
- *SME R&D and innovation*, and the relative percentage of domestic SMEs performing research and development (R&D) or engaged in innovation activities.

This sections builds on several international data collection including OECD-Eurostat R&D surveys, Eurostat Community Innovation Survey and the OECD ICT usage by Businesses database.

SME business environment

Three thematic sections explore the business environment and framework conditions under which SMEs can do business and grow. SMEs are typically more dependent on their business ecosystem than larger firms. Smaller firms are more vulnerable to deficient framework conditions, market failures and economic shocks, while inefficient infrastructure hampers their access to markets and the strategic resources they need to operate.

Institutional and regulatory framework

Although regulatory barriers to entrepreneurship have declined over time, the complexity of regulatory procedures is still a major obstacle for SMEs and entrepreneurs. Costs of complying with administrative requirements remain comparatively higher for smaller businesses. Inefficient insolvency regimes limit the restructuring of viable firms and the second chance offered to entrepreneurs.

This section on institutional and regulatory framework focuses on:

- *Regulation* and looks into the level of administrative burdens on start-ups and the costs of starting a business or resolving insolvency, as well as efforts made to simplify procedures and strengthen the insolvency framework.
- *Justice, competition and taxation* through a range of dimensions, including the quality of judicial process, the cost of enforcing contracts, distortions induced by State involvement, barriers in service and network sectors and the time to comply with tax obligations.
- *Public governance efficiency,* proxied by the intensity of government debt, the adoption of regulatory impact assessment, the availability and relevance of participatory services on government websites and efforts to promote open government data.

This section builds on OECD work carried out for monitoring product market regulation, Measuring Regulatory Performance, the OECD Government at a Glance, as well as some WB indicators on Doing Business.

Market conditions

There is a large cross-country diversity in the opportunities and challenges for SMEs to access markets. Increased public attention has been given to levelling the playing field in recent years. Conditions for entering international and public markets, or accessing infrastructure, remain relatively difficult for smaller firms.

This section on market conditions focuses on:

- *Domestic market* and considers the size of the domestically-supplied demand as well as consumption and investment prospects, proxied by the debt of non-financial corporations and households.
- *Public procurement*, in particular, the size of domestic public procurement market, the provision of e-procurement functionalities that can ease access to tenders and contract management, and good practices in terms of payment of suppliers.
- *Trade and foreign direct investment,* the country's positioning in global value chains (i.e. the spread of its backward and forward linkages), trade restrictiveness on computer services, engineering and telecom services, trade facilitation practices and regulatory restrictiveness on foreign direct investment.

This section builds on OECD National Accounts, OECD Trade in Value Added (TiVA) database, the Services Trade Restrictiveness Indicators (STRI) database, OECD Trade Facilitation indicators and OECD FDI Regulatory Restrictiveness index, as well as work on public procurement carried out for the OECD Government at a Glance publication. In addition this section uses results of the latest WB Benchmarking Public Procurement report.

Infrastructure

Physical, digital and network infrastructure is the foundation of a dynamic business ecosystem. The quality of infrastructure is especially relevant for SME entry into distant markets and engagement in GVCs, or to secure their cost-efficient access to strategic resources.

This section on infrastructure focuses on:

- *Logistics and energy,* especially the intensity of investment in transport infrastructure, the quality of infrastructure (e.g. in terms of logistical performance, electricity capacity or energy supply reliability) and their accessibility in terms of cost.
- *ICT and internet*, the intensity of investments in ICT, the performance of digital infrastructure (measured by fixed and mobile broadband penetration rates and the level of digital security) and their accessibility in terms of cost.
- *R&D and innovation,* the intensity of domestic R&D investment, the performance of R&D infrastructure (proxied by its output in number of international patents and the density of its connections, i.e. industry-science linkages, inter-regional linkages and international linkages).

This section builds on a broad range of international data resources, including: for transport and logistics, the OECD International Transport Forum database, the WB Logistics Performance index and the WB Doing Business indicators; for energy, the International Energy Agency (IEA)'s electricity information and IEA energy prices and taxes, as well as WB Doing Business indicators; for digital infrastructure, OECD National Accounts, OECD Broadband statistics and the OECD ICT usage by business database; for R&D and innovation infrastructure, OECD work on R&D, science, technology and industry (STI) and intellectual property data, more specifically the R&D Statistics (RDS) Database, Main Science and Technology Indicators (MSTI) database and the STI Micro-data Lab. Regional data are drawn from an earlier version of the OECD Regions at a Glance report.

Caveats and caution in interpretation

The SME&E Outlook 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. Therefore there may be several years of time lag between SME performance data and SME business environment data. In some cases, data on business conditions are posterior to data on SME performance. This should be kept in mind when interpreting results. The cut-off date for the indicators on SME business conditions is mid-March 2019, except for the product market regulation indicators that were officially released later in Spring 2019.

Several analytical dimensions were not covered and may receive closer attention in the future when and where data allow. These include gender breakdown, industrial disaggregation or sub-national data for instance.

Some areas of interest may be unevenly covered by statistics as data in primary sources are not always available for all countries. This is the case of indicators on access to knowledge assets for non-EU countries.

Annex 8.A. Data sources and definitions

Annex Table 8.A.1. SME structure and performance

Employment	Share of SMEs in total employment (%)	Employment by enterprise size as a percentage of all persons employed in business economy. 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)
Value added	Share of SMEs in total value added (%)	Value added by enterprise size as a percentage of total business economy value added. 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 SDBS database
SME employment by activity	Share of SME employment in business employment by sector (%)	Employment in SMEs as a share of the total business employment by sector.	OECD SDBS database
New firm creations	Index, new enterprises creations in 2012=100	New enterprise creation, index 2012 =100. For the definition of enterprise creation see methodology in primary source.	OECD Timely Indicators of Entrepreneurship (TIE) database
Bankruptcies	Index, bankruptcies in 2012=100	Bankruptcies, index 2012='100.' For the definition of bankruptcies see methodology in primary source.	OECD TIE database
Labour productivity	Thousand USD, at constant exchange rate, 2010 base year	Value added by enterprise size per person employed, as a percentage of large enterprises; business economy.	OECD SDBS database
Compensation per employee	Thousand USD, at current exchange rate	Compensation of employees per employee, by enterprise size class; manufacturing.	OECD SDBS database
Job creation / destruction	Net job creation or destruction (% total employment)	Net change in employment by enterprise births and enterprises deaths and in incumbent firms. It is expressed as a percentage of total business economy employment.	OECD SDBS database
Job creation by births of enterprises, by sector	Sector share of job creation by enterprise births (%)	Distribution of employment created by enterprise births across main sectors.	OECD SDBS database
Top ten sectors by the SME exports	Share of SME exports in the sector (%)	Share of SME exports as a percentage of exports by all firms in the activity sector. (graph shown only for Canada)	OECD Trade by Enterprise Characteristics (TEC) database
SME exports in Canada and the United States	Share of SME exports in the sector (%)	Share of SME exports as a percentage of exports by all firms in the activity sector. (graph shown only for Canada)	OECD TEC database

Annex Table 8.A.2. Access to finance

Self-funding			
SME profit margins	Net operating surplus (% value added)	Net operating surplus of firms with less than 250 employees as a percentage of their value added. Industry (excluding construction) only. Data refer to 2016.	Structural Business Statistics - Business Demography Indicators
Banking system			
Financial soundness (capital/assets)	Regulatory capital to risk-weighted assets	This FSI is calculated using total regulatory capital as the numerator and risk-weighted assets as the denominator. Data are compiled in accordance with the guidelines of either Basel I or Basel II. It measures the capital adequacy of deposit takers. Capital adequacy and availability ultimately determine the degree of robustness of financial institutions to withstand shocks to their balance sheets. Data refer to 2017 or nearest year available.	IMF Financial Soundness Indicators
Domestic credit to private sector by banks	Domestic credit to private sector by banks (% of GDP)	Domestic credit to private sector by banks refers to financial resources provided to the private sector by other depository corporations (deposit taking corporations except central banks), such as through loans, purchases of non-equity securities, and trade credits and other accounts receivable, that establish a claim for repayment. For some countries these claims include credit to public enterprises. Data refer to 2017 or nearest year available.	WB Data Bank on Development Indicators
Interest rate spread for SMEs*	Interest rate spread, small firms versus large firms (%)	Measures the tightness of the market and the (positive or negative) correlation of interest rates with firm size. Increasing interest rate spread is likely to reduce SME access to finance. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2017.	Financing SME and entrepreneurship SB
Bank credit			
New SME lending	New SME lending (% of total new firm lending)	Measures the flow of bank loans and bank repayments over one year. As a percentage of total new lending, all firms. Data refer to 2016.	Financing SME and entrepreneurship SB
Growth of SME outstanding loans	Yearly growth rate of SME outstanding loans (%)	Measures trends in SME demand for and access to bank credit. SME outstanding loans are a stock indicator reflecting both new lending and bank loans that have accumulated over time along with loan repayments. Growth is calculated as yearly rate. Data refer to 2016-17.	Financing SME and entrepreneurship SB
SME long-term loans	Share of long-term loans for SMEs	Measures the debt structure of SMEs and whether loans are used to fund current operations rather than investment and growth needs. Long-term loans are loans for more than one year. Data refer to 2017.	Financing SME and entrepreneurship SB
SME real interest rate*	SME real interest rate, %	Captures the real interest rate paid by SMEs considering the impact of the inflation rate. Increasing SME real interest rate is likely to signal more difficult SME access to finance. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2017.	Financing SME and entrepreneurship SB
SMEs loan rejection rates	SMEs loan rejection rates (%)	Measures the relative number of SME credit applications who have not received the requested amount in full. Increasing SME loan rejection rates are likely to signal more difficult SME access to finance. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2017.	Financing SME and entrepreneurship SB

Equity funding			
Venture capital	Venture capital (% of GDP)	Venture capital investments (seed/start-up/other early stage and later stage venture) as a percentage of GDP. It excludes buyouts, turnaround and replacement capital, as these are directed at restructuring and generally concern larger enterprises. Data refer to 2016.	OECD Entrepreneurship Financing Database
Venture capital, early stage	Venture capital, early stage (% of GDP)	Venture capital investments at seed/start-up/other early stage as % of GDP. Data refer to 2016.	OECD Entrepreneurship Financing Database
Venture capital, later stage	Venture capital, later stage (% of GDP)	Venture capital investments at later stage as % of GDP. Data refer to 2016.	OECD Entrepreneurship Financing Database

Annex Table 8.A.3. Access to Skills

Adult literacy			
Adults at tertiary education level	Adults at tertiary education level (%)	Measures the percentage of adult population (25-64 years) having completed a tertiary level of education. Excludes vocational programmes. Data refer to 2017 or the nearest year available.	OECD Education Database - UNESCO
Adults withcore ICT skills	Adults without computer experience or core ICT skills (%)	Percentage of 25-65-year-old adults with no computer experience or failing the ICT core in the PIIAC survey (%). The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2015 or the nearest year available.	OECD Survey of Adult Skills in OECD Skills report 2016
Readiness to learn and creative thinking	Adult readiness to learn and creative thinking (%)	Captures the readiness of working-age adults (16-65 years old) to learn and for creative thinking. It relies on six items related to openness to new experiences and creative thinking. See Grundke et al 2017 for detailed methodology. Data refer to 2015 or the nearest year available.	OECD STI Scoreboard 2017 based on OECD Survey of Adult Skills data
Workplace training and learning	Job strain, training and learning, all workers (%)	Refers to the number of workers that reported receiving training in their jobs. Job quality database focuses on three key dimensions: i) earnings quality, ii) labour market security and iii) quality of the working environment. Job strain is defined as jobs where workers face more job demands than the number of resources they have at their disposal (as described in Chapter 5 of How's Life 2013). Two types of job demands are identified: i) time pressure which encompasses long working hours, high work intensity and working time inflexibility; and ii) physical health risk factors, such as dangerous work (i.e. being exposed to noise, vibrations, high and low temperature) and hard work (i.e. carrying and moving heavy loads, painful and tiring positions). Similarly, two types of job resources are considered, namely: i) work autonomy and learning opportunities which include workers' freedom to choose and change their work tasks and methods, as well as formal (i.e. training) and informal learning opportunities at work; and ii) Social support at work which measures the extent of which workers receive social support from colleagues and supervisors. The composite Job Strain index, thus, refers to those jobs where the workers face one demand but have no resources, or face two demands but have one or no resource. Data refer to 2015 or the nearest year available.	OECD Job Quality Database

Student proficiency			
Collaborative problem solving	Top performing students in collaborative problem solving (%)	Captures the capacity of students (15 years old) to engage in cognitive processing to understand and resolve problem situations where a method of solution is not immediately obvious. Scores from 0 (worst performance) to 600 (best performance). Share of top performers (i.e. students that achieved the highest level of proficiency - 5 and 6-) in total 15 year-old students. Data refer to 2017.	OECD Pisa (Programme for International Student Assessment)
Mathematics	Top performing students in mathematics (%)	Captures the capacity of students (15 years old) in mathematics. Scores from 0 (worst performance) to 600 (best performance). Share of top performers (i.e. students that achieved the highest level of proficiency - 5 and 6-) in total 15 year-old students. Data refer to 2015.	OECD Pisa (Programme for International Student Assessment)
Reading	Top performing students in reading (%)	Captures the capacity of students (15 years old) in reading. Scores from 0 (worst performance) to 600 (best performance). Share of top performers (i.e. students that achieved the highest level of proficiency - 5 and 6-) in total 15 year-old students. Data refer to 2015.	OECD Pisa (Programme for International Student Assessment)
Graduation at tertiary level	Graduation rate at tertiary level (%)	Graduation/entry rates represent an estimated percentage of an age group expected to graduate/enter a certain level of education at least once in their lifetime. Data are first-time graduation rates of less 30-year-olds and exclude internationally mobile students. Tertiary level includes both short- and long-cycle programmes at ISCED levels 5 to 8 (ISCED 2011). Data refer to 2016 or the nearest year available.	OECD Education Database - UNESCO
Entrepreneurial skills			
Perceived entrepreneurial capabilities	Perceived capabilities among adult population (%)	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who believe they have the required skills and knowledge to start a business. Scoring from 0 (low) to 100 (high). Data refer to 2017.	Global Entrepreneurship Monitor (GEM) - Adult Population Survey
Entrepreneurial intentions	Entrepreneurial intentions among adult population (%)	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who are latent entrepreneurs and who intend to start a business within three years. Scoring from 0 (low) to 100 (high). Data refer to 2017.	Global Entrepreneurship Monitor (GEM) - Adult Population Survey
Fear of failure*	Fear of failure among adult population (%)	Percentage of 18-64 population (individuals involved in any stage of entrepreneurial activity excluded) who indicate that fear of failure would prevent them from setting up a business. Scoring from 0 (low) to 100 (high). The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2017.	Global Entrepreneurship Monitor (GEM) - Adult Population Survey

Annex Table 8.A.4. Access to Innovation

Technology			
Equipment & software, small firms	Acquisition of machinery, equipment and software, small firms (%)	Share of innovative firms with [10-49] employees engaged in acquisition of machinery, equipment and software (%). Data refer to 2016.	Eurostat CIS survey + national innovation surveys
Equipment & software, medium firms	Acquisition of machinery, equipment and software, medium-sized firms (%)	Share of innovative firms with [50-249] employees engaged in acquisition of machinery, equipment and software (%). Data refer to 2016.	Eurostat CIS survey + national innovation surveys
High speed broadband, small firms	Fixed broadband connection, high speed, small firms (%)	Share of firms with [10-49] employees with a fixed broadband connection with at least a 100 Mbit/s download speed. All activities in manufacturing and non-financial market services. Data refer to 2018.	OECD ICT usage by businesses database
High speed broadband, medium firms	Fixed broadband connection, high speed, medium-sized firms (%)	Share of firms with [50-249] employees with a fixed broadband connection with at least a 100 Mbit/s download speed. All activities in manufacturing and non-financial market services. Data refer to 2018.	OECD ICT usage by businesses database
Organisation and processes			
Big data analysis, small firms	Firms having performed big data analysis, small firms (%)	Share of firms with [10-49] employees that have performed big data analysis. All activities in manufacturing and non-financial market services. Data refer to 2018.	OECD ICT usage by businesses database
Big data analysis, medium firms	Firms having performed big data analysis, medium-sized firms (%)	Share of firms with [50-249] employees that have performed big data analysis. All activities in manufacturing and non-financial market services. Data refer to 2018.	OECD ICT usage by businesses database
Cloud computing, small firms	Cloud computing services, small firms (%)	Share of firms with [10-49] employees that use cloud computing services. Cloud computing refers to ICT services over the Internet to access server, storage, network components and software applications. All activities in manufacturing and non-financial market services. Data refer to 2018.	OECD ICT usage by businesses database
Cloud computing, medium firms	Cloud computing services, medium-sized firms (%)	Share of firms with [50-249] employees that use cloud computing services. Data refer to 2018.	OECD ICT usage by businesses database
Supply chain management, small firms	Supply chain management, small firms (%)	Share of firms with [10-49] employees that share electronically supply-chain management (SCM) information with suppliers and customers. SCM information with suppliers and customers refer to the use of automated data exchange (ADE) applications. All activities in manufacturing and non-financial market services. Data refer to 2017.	OECD ICT usage by businesses database
Supply chain mgt, medium firms	Supply chain management, medium-sized firms (%)	Share of firms with [50-249] employees that share electronically supply-chain management (SCM) information with suppliers and customers. Data refer to 2017.	OECD ICT usage by businesses database

E-sales, small firms	E-sales, small firms (%)	Share of firms with [10-49] employees that sell goods or services over computer networks by methods especially designed for the purpose of receiving orders (i.e. webpages, extranet or electronic data interchange -EDI- but not orders by telephone, fax or manually types emails. Payments and delivery methods are not considered. All activities in manufacturing and non-financial market services. Data refer to 2018.	OECD ICT usage by businesses database
E-sales, medium firms	E-sales, medium-sized firms (%)	Share of firms with [50-249] employees that sell goods or services over computer networks. Data refer to 2018.	OECD ICT usage by businesses database
Innovation-collaboration networks			
With the science base	SMEs collaborating on innovation with higher education or public research institutions (% SMEs)	Innovation collaboration involves active participation with other organisations in joint innovation projects (i.e. those aimed at introducing a new or significantly improved product or process), but excludes pure contracting out of innovation-related work. It can involve the joint implementation of innovations with customers and suppliers, as well as partnerships with other firms or organisations. Measured as a percentage of product and/or process innovative SMEs. Data refer to 2016 for EU countries and 2014 for non-EU countries.	Eurostat CIS survey + national innovation surveys and OECD STI Scoreboard 2017
Within supply chains	SMEs collaborating on innovation with suppliers (% SMEs)	Innovation collaboration involves active participation with other organisations in joint innovation projects (i.e. those aimed at introducing a new or significantly improved product or process), but excludes pure contracting out of innovation-related work. It can involve the joint implementation of innovations with customers and suppliers, as well as partnerships with other firms or organisations. Measured as a percentage of product and/or process innovative SMEs. Data refer to 2016 for EU countries and 2014 for non-EU countries.	Eurostat CIS survey + national innovation surveys and OECD STI Scoreboard 2017
Within international networks	SMEs engaged in international collaboration for innovation (% SMEs)	International collaboration on innovation refers to active cross-border participation in innovation collaborations. Measured as a percentage of product and/or process innovative SMEs. Data refer to 2014.	OECD STI Scoreboard 2017
R&D and innovation			
R&D intensity, small firms	SMEs performing R&D, small firms (% all firms)	Business enterprise R&D expenditure (BERD) by size class, expressed as a % of total BERD. Small firms include firms with [10-49] employees. Data refer to 2017 or nearest year available.	Research and Development Statistics Database
R&D intensity, medium firms	SMEs performing R&D, medium-sized firms (% all firms)	BERD by size class, expressed as a % of total BERD. Medium-sized firms include firms with [50-249] employees. Data refer to 2017 or nearest year available.	Research and Development Statistics Database
Innovation, small firms	Innovative firms, small firms (%)	Share of innovative firms with [10-49] employees that have introduced any type of innovation (%). Data refer to 2016.	Eurostat CIS survey + national innovation surveys
Innovation, medium firms	Innovative firms, medium-sized firms (%)	Share of innovative firms with [50-249] employees that have introduced any type of innovation (%). Data refer to 2016.	Eurostat CIS survey + national innovation surveys

Annex Table 8.A.5. Institutional and regulatory framework

Regulations			
Administrative burdens on start-ups*	Administrative burdens on start-ups (index)	Component of the composite index "Barriers to domestic and foreign entry". Covers the administrative burden on joint-stock companies and personally-owned enterprises, as well as administrative burden related to licenses and permits procedures. Scores from 0 - least restrictive - to 6 - most restrictive. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018.	OECD Product Market Regulation Indicators
Simplification of regulatory procedures	Complexity of regulatory procedures (index)	Composite index "Complexity of regulatory procedures". Captures the government's communication strategy and efforts to reduce and simplify the administrative burden of interacting with the government. Scores from 0 - least restrictive - to 6 - most restrictive. Data refer to 2018.	OECD Product Market Regulation Indicators
Cost of starting a business*	Starting a business (cost in % of income per capita)	Captures the cost (in % of income per capita) for starting a business, registering property and to prepare, file and pay taxes. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018.	World Bank Doing Business Indicators
Strength of insolvency framework	Strength of insolvency framework (index)	Measures the insolvency law de jure. Calculated as the sum of the scores on 4 other indices: i) commencement of proceedings index (with a range of 0–3), ii) management of debtor's assets index (0–6), iii) reorganization proceedings index (0–3) and iv) creditor participation index (0–4). The strength of insolvency framework index ranges from 0 to 16, with higher values indicating insolvency legislation that is better designed for the rehabilitation of viable firms and the liquidation of nonviable ones. Data refer to 2018.	World Bank Doing Business Indicators
Cost of resolving insolvency*	Resolving insolvency (cost, % of estate)	Indicator on the actual cost (in % of estate) to close a business. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018.	World Bank Doing Business Indicators
Justice, competition and taxation			
Quality of judicial process	Quality of judicial process (index)	The quality of judicial processes index measures whether each economy has adopted a series of good practices in its court system in four areas: court structure and proceedings, case management, court automation and alternative dispute resolution. The index ranges from 0 to 5, with higher values indicating a more sophisticated and streamlined court structure. Data refer to 2018.	World Bank Doing Business Indicators
Cost of enforcing contracts*	Enforcing contracts (cost, in % claims)	Resources required to enforce contracts, in terms of costs in % of claim. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018	World Bank Doing Business Indicators
Distortions by state involvement*	Distortions by state involvement (index)	Composite index covering 1) public ownership, i.e. scope of state-owned enterprises (SOEs), government involvement in network sectors, direct control over business enterprises and governance of SOEs, 2) involvement in business operations, i.e. price controls and command and control regulation, and 3) design and assessment of regulations, i.e. assessment of regulations, stakeholder engagement and complexity of regulatory procedures.	OECD Product Market Regulation Indicators

		Scores from 0 - least restrictive - to 6 - most restrictive. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018.	
Barriers in service/network sectors*	Barriers in service/network sectors (index)	Component of the composite index "Barriers to domestic and foreign entry", measuring the regulatory protection of incumbents, e.g. legal barriers to entry or antitrust exemptions. Scores from 0 - least restrictive - to 6 - most restrictive. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018.	OECD Product Market Regulation Indicators
Time to comply with tax obligations*	Time to comply with tax obligations (hours per year required)	Hours per year required to comply with corporate income tax, labour taxes and mandatory contributions and VAT or sales tax) for a standardised medium-sized domestic company. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018.	World Bank Doing Business Indicators
Public-governance efficiency			
Government debt*	Government debt (% of GDP)	General government gross debt (i.e. across levels of government) as percentage of GDP. Debt is generally defined as all liabilities that require payment or payments of interest or principal by the debtor to the creditor at a date or dates in the future. All debt instruments are liabilities, but some liabilities such as shares, equity and financial derivatives are not debt. Debt is thus obtained as the sum of these liability categories, whenever available/applicable in the financial balance sheet of the general government sector: currency and deposits; debt securities; loans; and other liabilities (i.e. insurance, pension and standardised guarantee schemes, other accounts payable as well as, in some cases special drawing rights). The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2016 or nearest year available.	OECD Government at a Glance
Regulatory impact assessment	Regulatory Impact Assessment (index)	Composite indicator covering primary laws along: 1) methodology of RIA, 2) systematic adoption of RIA, 3) transparency of RIA, and 4) oversight and quality control of RIA. Scores from -0 (low) to 4 (high). Data refer to 2014.	OECD Measuring Regulatory Performance
E-participation	E-participation (EPI index)	Composite index that is derived as a supplementary index to the UN E-Government Survey. It extends the dimension of the Survey by focusing on the use of online services to facilitate provision of information by governments to citizens ("e-information sharing"), interaction with stakeholders ("e-consultation"), and engagement in decision-making processes ("e-decision making"). Qualitative assessment based on the availability and relevance of participatory services available on government websites. Score 0 (low) to 1 (high). Data refer to 2018.	UN E-Participation Survey 2018
Open government data	Open government data (index)	Open useful and reusable government data index. Composite index that measures government efforts in promoting data availability and accessibility and in stimulating data re-use outside and inside government. Based on the International Open Data charter principles and on the methodology described in Ubaldi, 2013 (http://dx.doi.org/10.1787/5k46bj4f03s7-en). Data refer to 2017.	OECD Government at a Glance

Annex Table 8.A.6. Market conditions

Domestic market			
Domestically-supplied demand	Domestic demand, share that is domestically supplied (%)	Domestic value-added embodied in domestic demand. Estimates of final demand in country c for industry i final goods and services, broken down by the value added originating from source industry j in source country s (based on TiVA: Origin of value added in final demand). Data refer to 2011.	OECD Trade in Value Added
Debt of non-financial corporations*	Debt of non-financial corporations (% of GDP)	Liabilities of non-financial corporations, including special drawing rights, currency and deposits, debt securities, loans, insurance, pension, and standardized guarantees, and other accounts payable, expressed as a % of GDP. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2016 or the nearest year available.	OECD National Accounts
Debt of households*	Debt of households and NPISHs (% of GDI)	Liabilities of households and the non-profit institutions serving households (NPISHs) sector, including special drawing rights, currency and deposits, debt securities, loans, insurance, pension, and standardized guarantees, and other accounts payable as a percentage of its gross disposable income. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2016 or the nearest year available.	OECD National Accounts
Public procurement			
Large public procurement market	Size of public procurement (% of GDP)	General government procurement spending as a percentage of GDP. Data refer to 2016 or the nearest year available.	OECD Government at a Glance
E-procurement functionalities	E-procurement functionalities (index)	Composite indicator covering the following areas: 1) Announcing tenders, 2) Electronic submission of bids (excluding by e-mails), 3) e-tendering, 4) Notification of award, 5) Electronic submission of invoices (excluding e-mails), 6) Ex post contract management. Scores from -0 (low) to 6 (high). Data refer to 2016 or the nearest year available.	OECD Government at a Glance
Payments of suppliers	Payment of suppliers (index)	Composite indicator that examines: 1) the procedure regarding suppliers' request for payment, 2) the time frame for the purchasing entity to process payment, 3) the time frame for suppliers to actually receive payment, 4) the interests or penalties available to suppliers in case of payment delays. Score from 0 (regulatory framework that shows significant room for improvement) to 100 (regulatory framework that closely aligns with internationally recognized good practices). Data refer to 2016 or the nearest year available.	WB Benchmarking Public Procurement
Trade and foreign direct investment			
Backward participation in GVCs	Backward participation in GVCs	Measured as foreign value-added embodied in a country's exports, as % of total gross exports of the exporting country. Data refer to 2009 or the nearest year available.	OECD STI Scoreboard 2017
Forward participation in GVCs	Forward participation in GVCs	Measured as domestic value-added embodied in partner countries exports, as % of domestic gross exports. Data refer to 2009 or the nearest year available.	OECD STI Scoreboard 2017

Trade restrictiveness: computer services*	Services Trade Restrictiveness (STRI), computer services (index)	Composite index that quantifies restrictions on trade in services across five standard categories: 1) restrictions on foreign entry, 2) restrictions on the movement of people, 3) barriers to competition, 4) regulatory transparency, and 5) other discriminatory measures. Scores from 0 - completely open - to 1 - completely closed. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2018 or the nearest year available	STRI Database (OECD; 2014, 2015)
Trade restrictiveness: engineering*	STRI, engineering services (index)	id.	STRI Database (OECD; 2014, 2015)
Trade restrictiveness: telecom services*	STRI, telecom services (index)	id.	STRI Database (OECD; 2014, 2015)
Barriers to trade facilitation*	Barriers to trade facilitation (index)	Captures the recognition of foreign regulations, use of international standards and international transparency of domestic regulation. Scores from 0 - least restrictive - to 6 - most restrictive. The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2013 or the nearest year available	OECD Trade Facilitation Indicators
FDI regulatory restrictiveness*	FDI regulatory restrictiveness (index)	Measures statutory restrictions on foreign direct investment. The FDI Index focuses on four types of measures: i) equity restrictions, ii) screening and approval requirements, iii) restrictions on foreign key personnel, and iv) other operational restrictions (such as limits on purchase of land or on repatriation of profits and capital). Score from 0 (no regulatory impediments to FDI in the sector) to 1 (restricts foreign investment in the sector). The indicator is treated as a potential barrier to SME performance and country benchmark has been reversed (and marked with *). Data refer to 2017 or the nearest year available	OECD FDI Regulatory Restrictiveness Index

Annex 8.B. Policy sources and general references

EC (2017), *SME Policy Database*, European Commission, https://ec.europa.eu/growth/smes/business-friendly-environment/performance-review_en#interactive-sme-database

EC/OECD (2018), *International Database on STI Policies – STIP Compass*, https://stip.oecd.org/stip.html.

EC/OECD (2018), *EC/OECD STIP Database 2018*, https://stip.oecd.org/stip.html.

OECD (2019), *Financing SMEs and Entrepreneurs 2019: An OECD Scoreboard*, OECD Publishing, Paris, https://doi.org/10.1787/fin_sme_ent-2019-en.

OECD (2018), *OECD Structural and Demographic Business Statistics Database*. For figures A, B, C, E, F and G.

OECD (2018), *OECD Timely Indicators of Entrepreneurship Database*. For figure D.

OECD (2018), *Financing SMEs and Entrepreneurs 2018: An OECD Scoreboard*, OECD Publishing, Paris, http://dx.doi.org/10.1787/fin_sme_ent-2018-en.

OECD (2018), *OECD Employment Outlook 2018*, OECD Publishing, Paris, http://dx.doi.org/10.1787/empl_outlook-2018-en.

OECD (2018), *Education Policy Outlook 2018: Putting Student Learning at the Centre*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264301528-en.

OECD (2017), *Entrepreneurship at a Glance 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/entrepreneur_aag-2017-en.

OECD (2018), *Final Summary Record of the 52nd Session of the OECD Working Party on SMEs and Entrepreneurship (WPSMEE)*, 23-24 April 2018, internal document (CFE/SME/M(2017)2/FINAL).

OECD (2017), *Small, Medium, Strong. Trends in SME Performance and Business Conditions*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264275683-en.

OECD (2017), *OECD Digital Economy Outlook 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264276284-en.

OECD (2017), *OECD Skills Outlook 2017: Skills and Global Value Chains*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264273351-en.

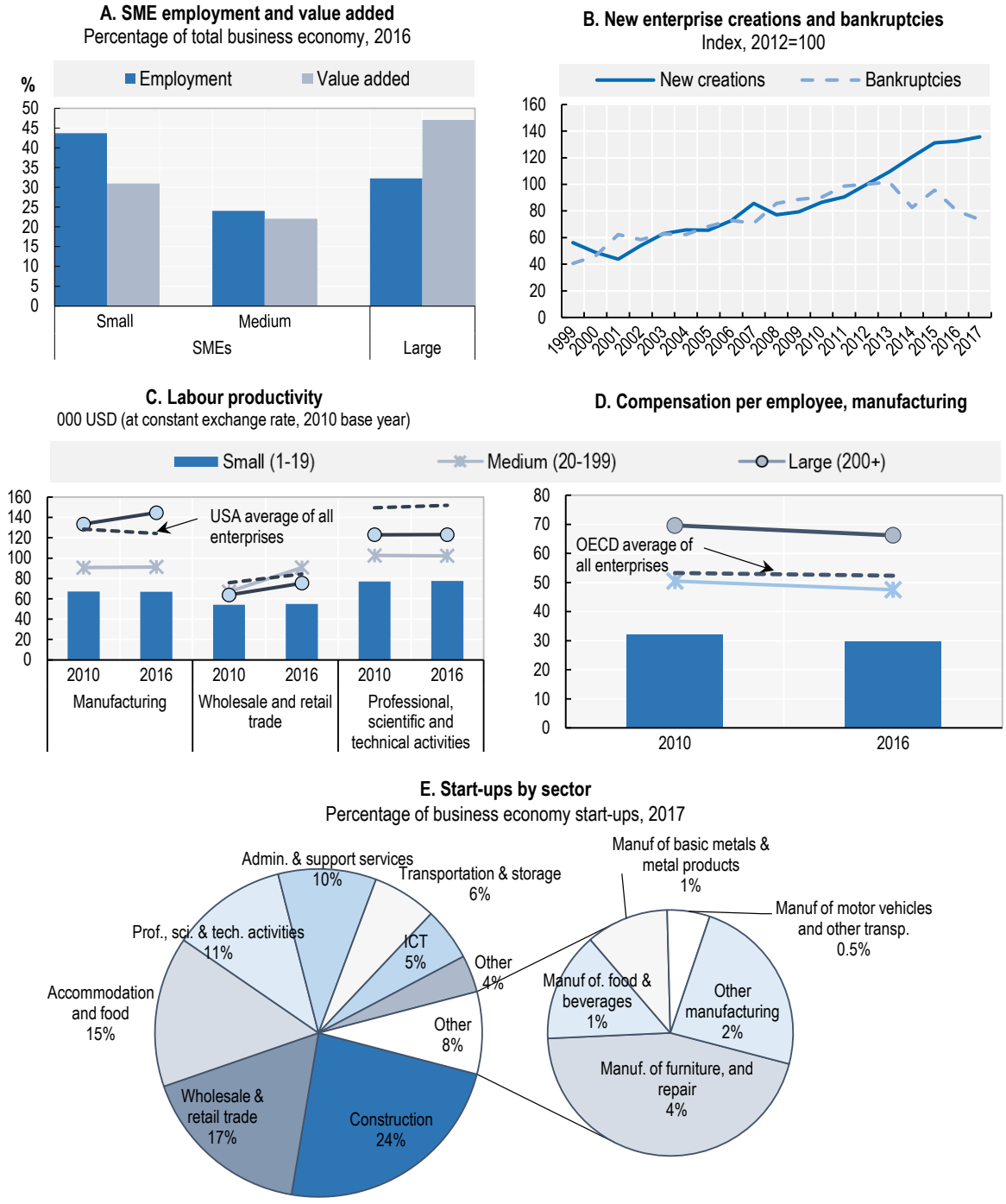
OECD (2017), *Government at a Glance 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/gov_glance-2017-en.

OECD (2016), *OECD Science, Technology and Innovation Outlook 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/sti_in_outlook-2016-en.

OECD (2015), *OECD Regulatory Policy Outlook 2015*, OECD Publishing, Paris, https://doi.org/10.1787/9789264238770-en.

Chapter 9. Australia

Figure 9.1. Structure and performance of the SME sector in Australia



Notes: Chart B. data refer to corporations only.
Sources: Charts A, C, D, E: *OECD Structural and Demographic Business Statistics database,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship database,* http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933924970

SME business conditions and access to strategic resources

Institutional and regulatory framework

*I*n Australia the cost for starting a business is among the most accommodative in the OECD. Past reforms cut red tape and business entry costs significantly. But the insolvency regime remains more stringent than the OECD median. The government is pursuing effort to reduce the regulatory burden on smaller firms. Since 2016, the Australian Small Business and Family Enterprise Ombudsman serves as an advocate for SMEs and plays a central role in designing SME-friendly federal laws. One of its first major outcomes is the conclusion of a Supplier Payment Code, engaging large businesses on a voluntary basis and bringing payment delays to less than 30 days. Australia also undertook a reform of insolvency laws in 2017, with a reduced default bankruptcy period (to one year instead of three) and a 'safe harbour' from personal liability for business owners.

Market conditions

Australia's big distances, its remoteness from global markets and the concentration of business activities in a small number of urban areas hamper competition and slow the diffusion of innovation. Significant reforms to the Competition Law were undertaken in 2017 with a view to limiting the misuse of market power and providing greater protection to small businesses and broader choice to consumers. An internal working group to the Australian Competition and Consumer Commission has been established to track disruption in markets and assess the impact of new business models and products. SME Export Hubs (2018-19) are also set up as local structures to enhance SME export capacities.

Infrastructure

Australia faces high costs of inland transport and difficult access to the outback. The National Policy Framework for Land Transport Technology (2016-19) promotes the uptake of emerging transport technology. The 2018 Infrastructure Priority List identified over AUD 55 billion of critical infrastructure investments with a focus on integrated public transport solutions and enhanced rail network capacity in the large cities.

Access to finance

Conditions for Australian SMEs to access bank finance are on par with the OECD median. The interest rate spread has however increased in recent years, reflecting a reassessment of SME lending risk, and businesses in the start-up or expansion phase face more difficulties. A Comprehensive Credit Reporting (CCR) system was introduced to improve mandatory SME credit information and the Open Banking initiative) aims to improve transparency in risk assessment by allowing entrepreneurs sharing their data with non-bank lenders. Australia also reformed its tax system in 2016 in order to incentivise investments in high-potential start-ups. Alternative financing solutions continue to grow and the government intends to promote innovative finance. Since 2016 a regulatory sandbox allows FinTech companies to test innovative solutions and a crowd-sourcing equity framework has been set up.

Access to skills

Australia ranks high among OECD countries in terms of adult literacy and student proficiency in core competences. Skills shortages are low relative to other OECD countries. However there are pockets of skills that are under-used, mainly due to over qualification and a low labour force participation of some populations (e.g. women, youth, indigenous persons etc.). The National Innovation and Science Agenda (2015) is a comprehensive plan for creating long-term cultural change and a globally focused innovation mindset for Australians. It contains proposals to increase student interest in ICT, STEM skills and women participation in S&T careers. The Youth Jobs PaTH programme (2018) also aims to raise employability of young and indigenous people.

Access to innovation assets

Australian SME uptake of new digital-enhanced practices, especially cloud computing services and e-commerce, is among the highest in the OECD area but there is room for improving SME participation in R&D. The Next Generation Technologies Fund (2016-26) earmarks AUD 730 million for accelerating R&D on defence strategic priorities. As part of it, the Small Business Innovation Research for Defence programme supports research undertaken by SMEs and the Defence Cooperative Research Centres strengthen industry-science linkages, particularly with SMEs, to increase research and innovation capability.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Australian Government (2018), *Infrastructure Australia : Annual Report to Parliament 2017-18*, https://infrastructureaustralia.gov.au/about/files/IA_Annual_Report_2017-18.pdf (accessed on 03 December 2018).

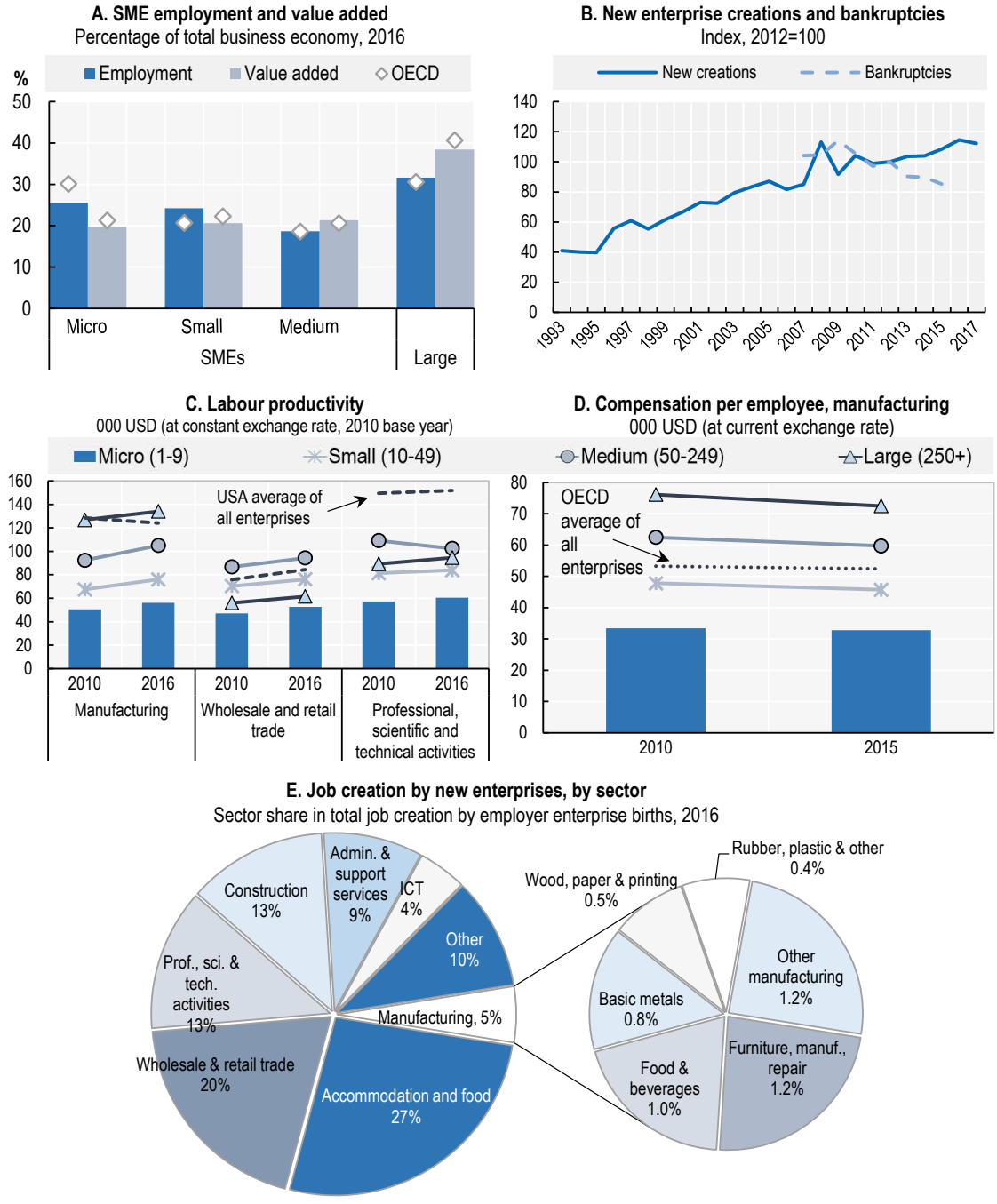
Infrastructure Australia (2018), *Report to Parliament 2017-18*, https://www.infrastructureaustralia.gov.au/about/files/IA_Annual_Report_2017-18.pdf.

OECD (2018), *Getting Skills Right: Australia*, Getting Skills Right, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264303539-en.

OECD (2017), *OECD Economic Survey: Australia*, OECD Publishing, https://doi.org/10.1787/19990146.

Chapter 10. Austria

Figure 10.1. Structure and performance of the SME sector in Austria



Sources: Charts A, C, D, E: *OECD Structural and Demographic Business Statistics database, http://dx.doi.org/10.1787/sdbs-data-en;* Chart B: Wirtschaftskammer Österreich (WKO) (creations) and OECD SME Scoreboard (bankruptcies).

StatLink http://dx.doi.org/10.1787/888933924989

SME business conditions and access to strategic resources

Institutional and regulatory framework

Austria shows stringent institutional and regulatory framework conditions, especially complex regulatory procedures, and underperforms in terms of the insolvency regime. The 2017 Insolvency Law Amendment Act allows for a full discharge of debts after a period of 5 years. Moreover, the 2017 Digital Roadmap sets out 150 measures for promoting e-government, open data, open government and open source. E-Foundation for instance allows sole proprietorships and single person private limited companies establishing entirely online via the business service portal (usp.gv.at) that also serves as a central platform for e-government services and one-stop shop for e-procurement. In addition, both, the 2017 Deregulation and Deregulation Principles Acts aim to reduce bureaucratic burdens.

Market conditions

Market conditions are hampered by regulation and a lack of competition in some sectors. Professional services remain strictly regulated in Austria and retail trade is impacted by the high number of licences and permits needed to engage in commercial activity. The small number of mobile network operators raises challenges for the broadband deployment. The 2016 Recognition and Evaluation Act eases the procedures for recognising professional qualifications obtained abroad. Since 2015, small facilities, especially for the retail sector, are exempted from authorisation procedures. SMEs are also eligible to an increasing number of licence exemptions when they open small business premises that adhere to health and safety rules. And the 2017 amendment of the Industrial Code abolishes fees and bureaucratic requirements for business license registration.

Infrastructure

Austria invests a high share of GDP in ICT, and its ICT infrastructure is above OECD standards in terms of security and affordability. However, fixed and mobile broadband penetration remains comparatively limited. In its “broadband offensive”, EUR 1 billion were earmarked over 2017-18 to generalise high-speed internet, including in all SMEs and schools by 2020, with matching funds by private operators. The Austrian 5G Strategy aims to speed up the deployment of 5G digital infrastructure, close the infrastructure gaps between urban and rural areas, improve energy efficiency with digital applications and promote smart traffic systems

Access to finance

New SME lending in Austria has been in continuous decline since 2009, except for a slight bump in 2011. Venture capital investments remain volatile, and crowdfunding is gaining importance. A comprehensive start-up package (with a total EUR 185 million for three years) was launched in 2016 with a view to promoting business angel, seed and pre-seed funding, university spin-offs and guarantees. The Financing Company for SMEs was also introduced in 2017 to improve SME access to venture capital. In addition the regulatory framework for alternative financing, especially crowdfunding, was reformed in 2015 and new standards raise investor protection.

Access to skills

The apprenticeship and skilled worker training are main features of the Austrian education system that has one of the highest OECD enrolment rates in vocational education with a strong enterprise-based component. The Federal Government is committed to raise the attractiveness and innovativeness of its apprenticeship system. By the summer of 2019, all apprenticeships will undergo a screening process with a view to better meeting the current economic standards. In parallel, despite recent improvements, few Austrian SMEs offer ICT training to their employees (35% in 2016). Since 2017, the SME Digital Programme provides a mix of support activities, events, webinars, diagnostic tools and training for raising the digital profile of SMEs.

Access to innovation assets

Austrian SMEs are active in R&D and innovation and well integrated into knowledge networks as compared to their OECD counterparts but they have been relatively slow in adopting ICT innovations. The new 2017 policy package for growth and employment offers 10% subsidies to SMEs investing on digitalisation. The 2016 Open Innovation Strategy aims to improve digital literacy among actors through new forms of co-operation. Pilot fabrics experiment Industry 4.0 production processes and help SMEs test technologies in partnership with large firms and research laboratories. In 2016, Austria also adopted a comprehensive Intellectual Property Strategy in order to enable SMEs better protect and exploit their IP. And in 2018, the tax incentive for in-house R&D increased from 12 % to 14 % to stimulate SME activities.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

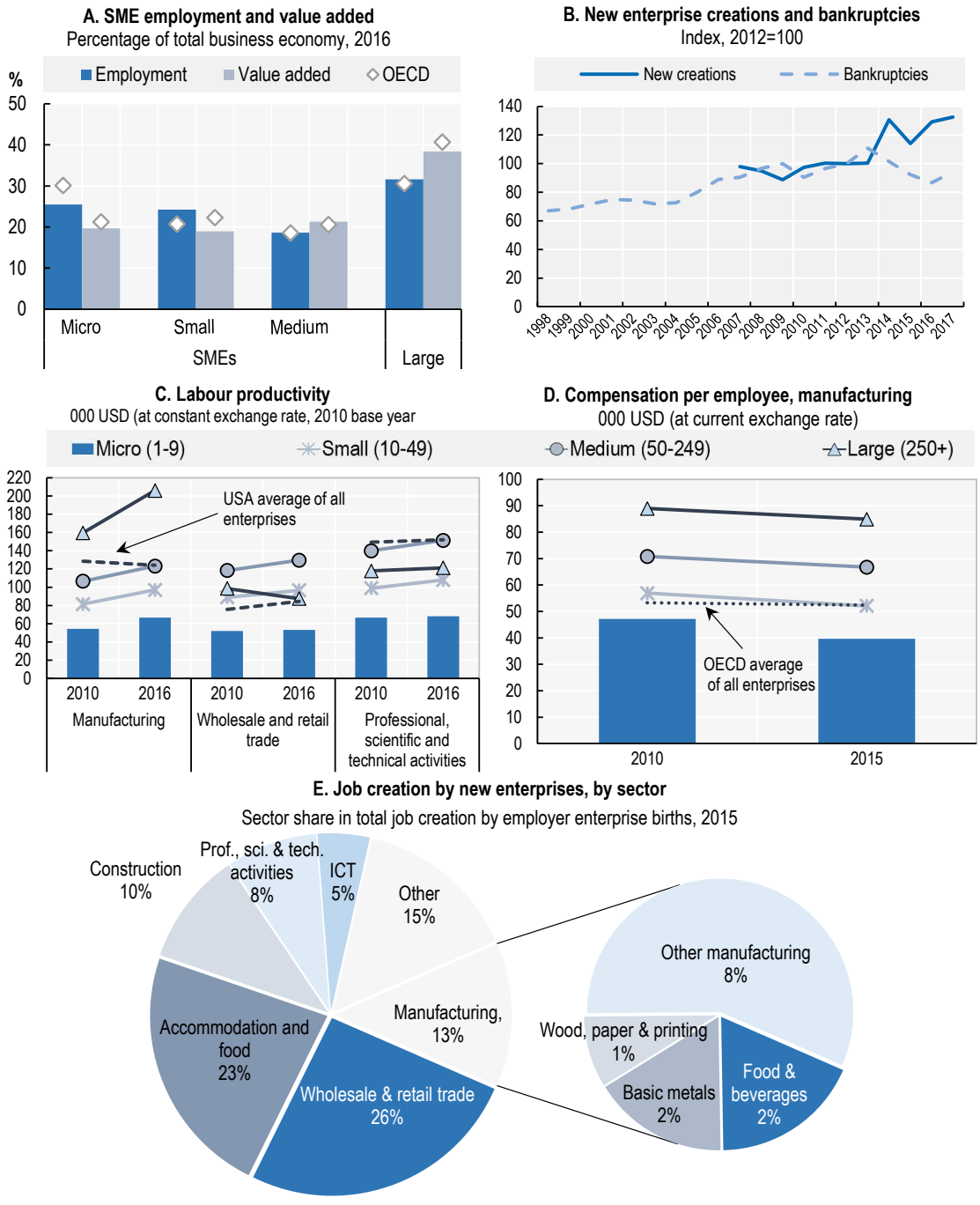
European Commission (2018), *2018 SBA Fact Sheet Austria*, https://ec.europa.eu/docsroom/documents/32581/attachments/2/translations/en/renditions/native.

European Commission (2017), *2017 SBA Fact Sheet Austria*, https://ec.europa.eu/docsroom/documents/29489 (accessed on 09 August 2018).

OECD (2017), *OECD Economic Surveys: Austria 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-aut-2017-en.

Chapter 11. Belgium

Figure 11.1. Structure and performance of the SME sector in Belgium



Sources: Charts A, C, D, E: *OECD Structural and Demographic Business Statistics database,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en.

StatLink http://dx.doi.org/10.1787/888933925008

SME business conditions and access to strategic resources

Institutional and regulatory framework

In Belgium, the administrative burden on start-ups is above the OECD median. In 2017, the Federal government introduced a plan to ease the regulatory burden for SMEs, totalling 120 measures. Every 6 months, a service within the Prime Ministers' office will monitor implementation, progress and impact. In addition, the administration operated a "tax shift" in 2016 with a view to alleviating corporate and labour tax burden on SMEs. Central to this plan is a gradual reduction in employers' social security contributions (SSC) from an average 33% in 2015 to 25% by 2019, an SSC exemption for SME first hire, and SSC reductions for the second to sixth hire, as well as for the recruitment of low-wage and underrepresented workers. Corporate income tax will also be gradually lowered with reduced rates for SMEs. In addition Easybrussels was set up in 2015 as Brussels administrative simplification agency. Its role is to disseminate the policy of administrative simplification within all the institutions of the Brussels-Capital Region. It sets out its actions for the coming years in the Administrative Simplification Plan (2015-20)

Market conditions

Belgium is a very open economy and attracts significant amounts of investments from multinationals. Its inward FDI stock accounted for 2.6% of OECD total in 2015, i.e. almost three times more than its share of OECD GDP. There are, however, some services (e.g. engineering) where trade restrictions remain high as compared to neighbouring countries. Finexpo, the federal SME export agency, developed a new instrument for Belgian SMEs that are first-time exporters of innovative goods, reimbursing between 80% and 100% of the incurred costs under certain conditions.

Infrastructure

The levels of public investment in infrastructure is below the OECD median, having fallen steadily from close to 6% of GDP in the early 1970s to just above 2% since 1990. The federal government has increased infrastructure investment in 2016 while regions also approved important infrastructure projects. Wallonia adopted a pluri-annual investment plan with main priorities on mobility, energy and digital investments (2018). ICT investments are high by OECD standards and Belgium joined EU cooperation on high-performance computing in 2017 with a view to building a pan-European digital infrastructure.

Access to finance

In Belgium, SME loans stock expanded steadily in recent years. In Flanders, the SME support mechanisms by PMV, a government body, were adjusted in 2016, accommodating crowdfunding activities. Flanders also set up the Spinn-off SOFI Fund in 2015 to invest in innovative growing spin-off companies. The ARKimedes II Fund supports start-ups and fast-growing SMEs with mezzanine, seed and early-stage funding. The Walloon region introduced a new fund in 2017 for digital start-ups providing convertible loans up to EUR 50 000 and co-investments with private actors up to EUR 250 000. The government of Brussels introduced crisis loans for sectors that were hit by the 2016 terror attacks.

Access to skills

Labour participation is below the EU average in Belgium, especially among youths, migrants and 55-64-year olds. At the same time, in 2017 vacancy rates were among the highest among EU countries suggesting a pronounced skills mismatch between labour demand and supply. The 2017 Law on "workable and flexible work" allows for more flexible worktime arrangements and aims to promote in-company training. The 2015 pension reform raised the statutory retirement age gradually and made early retirement conditions more stringent. A reform to unemployment benefits is under discussion, with the aim to strengthen incentives to enter the labour force.

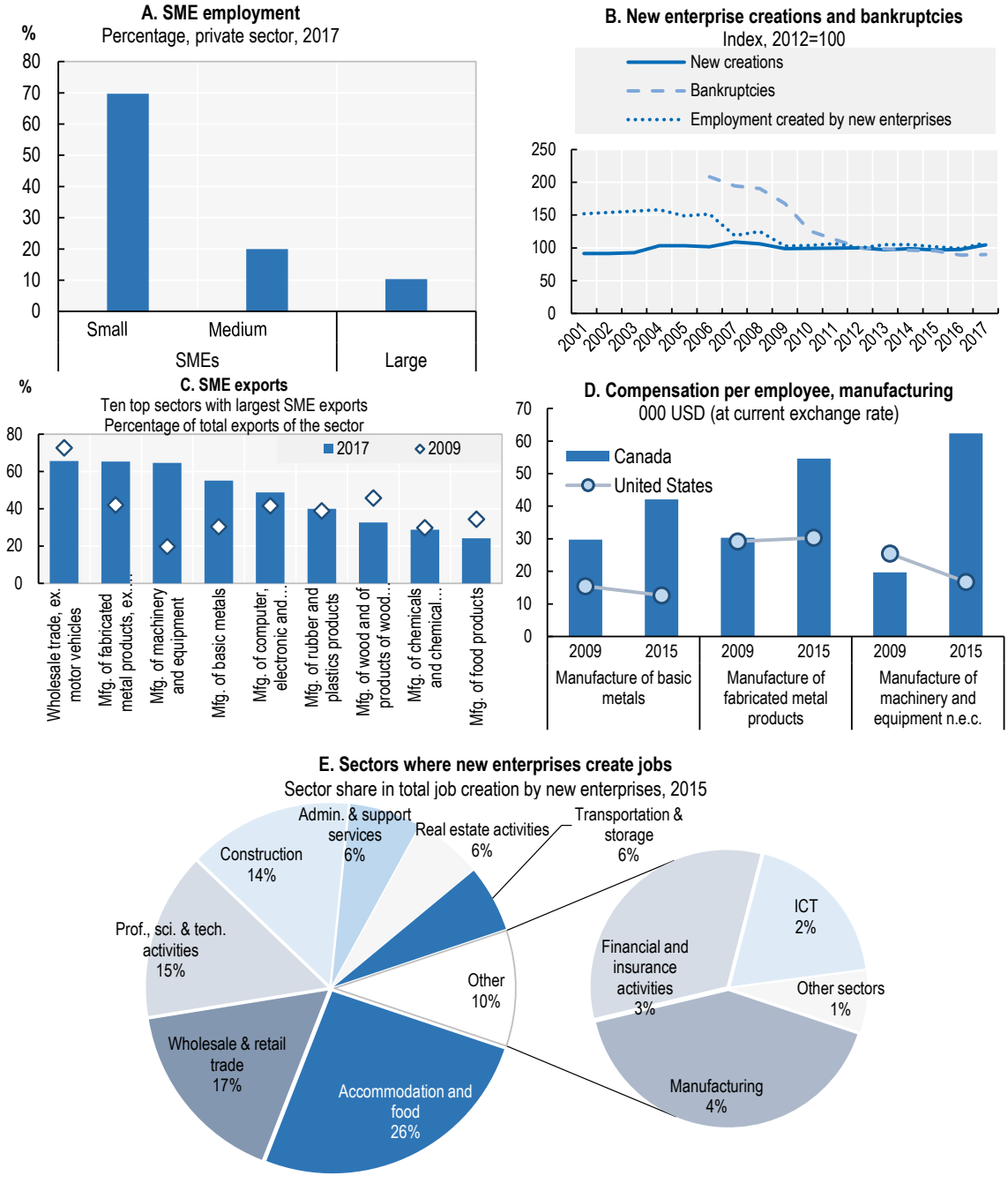
Access to innovation assets

In 2017, the Federal government introduced a tax allowance on innovation income, whereby Belgian companies and foreign affiliates established in Belgium are entitled to an 85% deduction of their intellectual property income from their corporate tax base. Regional authorities have also adopted their own innovation plan. The Green Impulse Fund was created under the Walloon Marshall Plan 4.0 (2015-19), to provide support to "eco-innovation." In addition, two investment companies (Invests, Novallia) were created and networks (Be Angels) supported to invest in spin-offs, start-ups and SMEs. The Smart Specialisation Strategy of Flanders, adopted in 2014, aims to provide more targeted support to leading clusters and eco-systems in the region. In July 2016, the government of the Brussels-Capital Region approved the new Regional Innovation Plan (PRI) (2016-20). In the plan, particular attention is paid to three strategic areas that reflect the strengths of the region: i) Health: personalised medicine, ii) Environment: green economy and iii) ICT: Digital economy.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

Chapter 12. Canada

Figure 12.1. Structure and performance of the SME sector in Canada



Sources: A. Statistics Canada, Labour Force Survey; and ISED (Innovation, Science and Economic Development Canada) calculations; https://www.ic.gc.ca/eic/site/061.nsf/eng/h_03090.html#point2 Source: B. *OECD Timely Indicators of Entrepreneurship Database 2018.* (http://dx.doi.org/10.1787/sdbs-data-en) *Source*: C, D. *OECD Trade by Enterprise Characteristics Database 2018.* (http://dx.doi.org/10.1787/sdbs-data-en). *Source: E. OECD Structural and Demographic Business Statistics Database 2018, Employer Business Demography dataset. Note*: A. Data exclude non-employer enterprises. Size classes are defined as small - 1 to 99 paid employees; medium - 100 to 499 paid employees; and large - 500 or more paid employees.

StatLink http://dx.doi.org/10.1787/888933925027

SME business conditions and access to strategic resources

Institutional and regulatory framework

Canada's regulatory environment presents mixed conditions: administrative burdens on start-ups are low, but the cost of starting a business is high. As of 2019, the small business corporate tax rate was reduced to 9%, compared with the standard federal corporate rate of 15%. At the same time, following public consultations in 2017, the federal government introduced measures designed to limit the use of the small business tax regime for tax planning purposes by high-income households.

Market conditions

In 2017, the government launched Innovative Solutions Canada, a new innovation procurement programme designed to support Canadian small businesses. In 2016, the government set up the CanExport programme which, through an initial budget of CAD 50 million over 5 years, provides financial support for a wide range of export marketing activities undertaken by SMEs that intend to export in high-growth emerging markets. The 2018 Fall Economic Statement committed an additional CAD 100 million over six years to CanExport. Through Budget 2018, Canada launched a comprehensive, whole-of-government Women Entrepreneurship Strategy (WES) to help reach the goal of doubling the number of women-owned businesses by 2025. The WES is comprised of a nearly $2-billion investment in programs and initiatives to advance four key action areas: helping women-led businesses grow; increasing access to capital; improving access to federal business innovation programming; and, enhancing data and knowledge. Access of women entrepreneurs to international markets is actively pursued within the frame of the WES through expanded access to export services, export opportunities and export finance.

Infrastructure

ICT investments in Canada are in line with the OECD median. To close the connectivity gap between urban and rural areas, the Broadband Fund of the Canadian Radio-television and Telecommunications Commission will provide up to CAD 750 million over 2019-24 for projects that build or upgrade infrastructure to provide fixed, satellite, and mobile wireless broadband Internet services.

Access to finance

Small business credit conditions have been stable since 2011: the small business interest rate was at 2011 level in 2016 and the small business 90-day loan delinquency rate had returned to pre-recession levels. Venture capital development has been a longstanding priority of the government. After the Venture Capital Action Plan launched in 2013, the Venture Capital Catalyst Initiative, announced in 2017, is investing CAD 400 million in late-stage business development. The Canadian Business Growth Fund, which is supported by Canada's leading banks and insurance companies, has a national mandate to provide long-term minority capital to entrepreneurs pursuing growth and expansion strategies.

Access to skills

Canada performs among the top OECD countries in education and skills-related indicators, including adult literacy and training. Support for skills training and

employment programming has been strengthened, under the amended Labour Market Development Agreements and the introduction of the new Workforce Development Agreements in 2017-18. The government has also launched a Global Skills Strategy, which includes a two-week standard for processing visas and work permits for foreign high-skilled workers coming to Canada on a temporary basis. Futurpreneur Canada, which provides young entrepreneurs financing, mentoring and support tools to start a viable business, received CAD 14 million over 2017-19.

Access to innovation assets

Canada's R&D spending in relation to GDP is below the OECD average and R&D intensity for mid-sized firms is below the OECD median. The Innovation and Skills Plan, launched by the 2017 federal budget, allocates new funding and resources to its ambitious targets of growing Canada's exports and clean technology sectors, and doubling the number of high-growth companies in Canada by 2025. The Plan includes a range of initiatives in support of Canadian businesses: Innovation.Canada.ca, an online one-stop-shop for coordinated and client-centric support; the Clean Growth Hub, a whole-of-government focal point for clean tech; the Innovation Superclusters Initiative that supports business-led innovation clusters; and the Accelerated Growth Service that provides high-potential firms with advisory services to access programs and support for growing their business.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

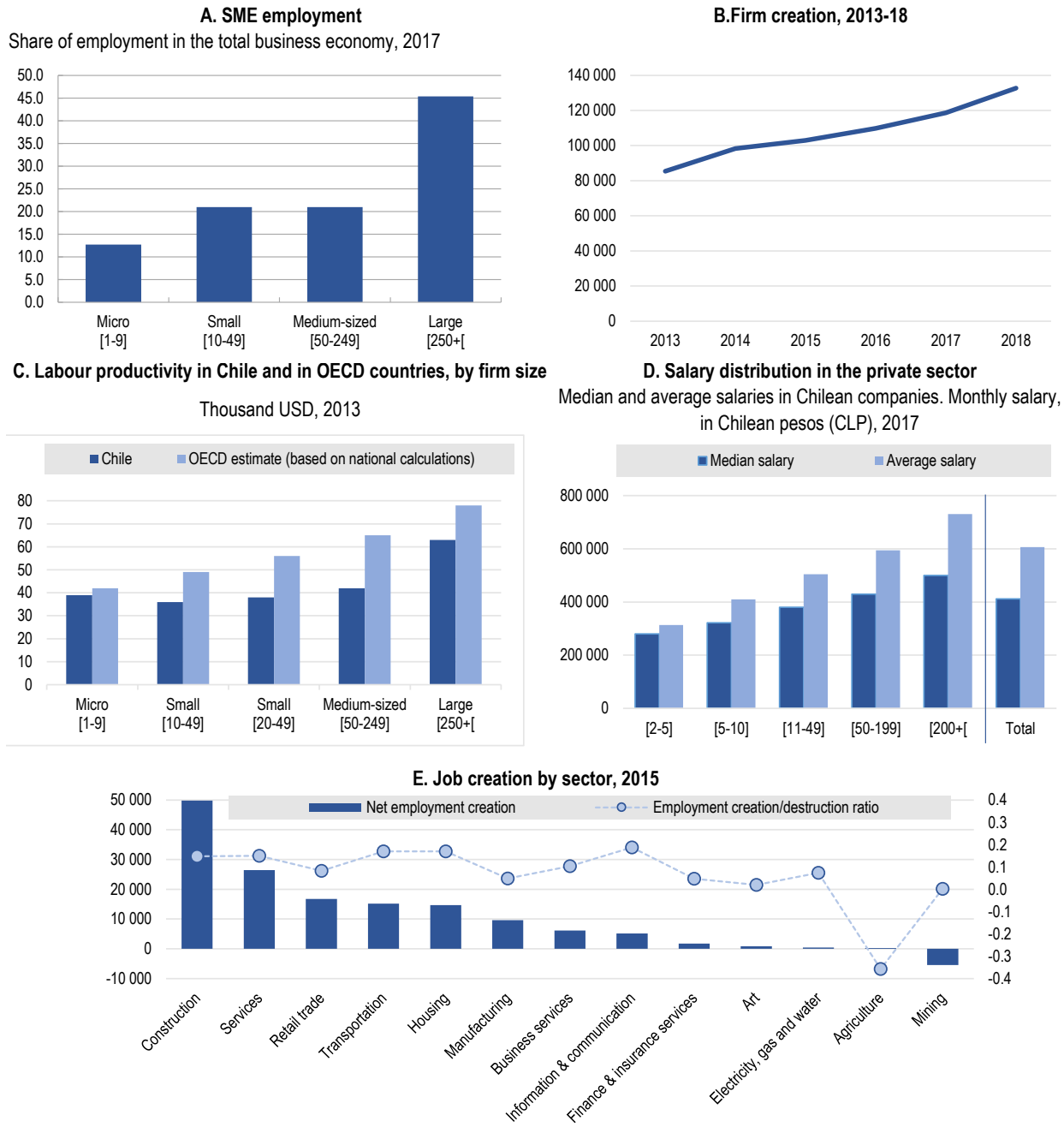
Government of Canada (2019), *CanExport*, http://international.gc.ca/trade-commerce/funding-financement/canexport/.

Government of Canada (2018), *CRTC Announces Details of the Broadband Fund*, https://www.canada.ca/en/radio-television-telecommunications/news/2018/09/crtc-announces-details-of-the-broadband-fund.html.

Government of Canada (2018), *Innovation Superclusters Initiative*, https://www.ic.gc.ca/eic/site/093.nsf/eng/home.

Chapter 13. Chile

Figure 13.1. Structure and performance of the SME sector in Chile



Note: Data on SME sector and performance for Chile are drawn from national sources and may not be comparable with OECD statistics that are presented in the other country profiles of this publication.
Source: Chile's Ministry of Economy, Development and Tourism based on the fourth longitudinal business survey 2015.

StatLink http://dx.doi.org/10.1787/888933925046

SME business conditions and access to strategic resources

Institutional and regulatory framework

Over the last two decades, Chile has put priority on making SME business environment more attractive. Since 2018, the government is developing Pymes.gob.cl, a new platform for easing SMEs and entrepreneurs' interactions with the State. The programme integrates *Tu Empresa En Un Día*, the main platform for starting up a company, with complementary services such as electronic signature, access to bank accounts or digital municipal permits. In addition, the Office of Productivity and National Entrepreneurship (OPEN) was created in 2018, following OECD recommendations on regulatory policy and productivity. OPEN was responsible for proposing a project of Productivity and Regulatory Coherence Reports to the legislature. Besides, the 2019 Law of Payment in 30 Days sets a mandatory period for invoice payment, including by the public sector. The Law applies interests to late payments and foresees measures for simplifying invoice collection such as the Electronic Dispatch Guide.

Market conditions

SME share in exports is particularly low in Chile (2% as compared to around 25% in the EU). Since 2016, a foreign trade facilitation unit coordinates public and private initiatives for trade promotion and SICEX, a digital single window, supports international trade transactions. The government has also limited the double taxation of service exports and exempted services used abroad from VAT. In 2016, the investment promotion agency, InvestChile, was reformed. 16 regional centres for SMEs were created through ProChile to ease access to foreign markets.

Infrastructure

Between 2010 and 2016, Chile experienced one of the most rapid adoption of mobile broadband in the OECD area, with an 8-fold increase in subscriptions per inhabitant. However, access to fixed broadband is low by OECD standards. Average connection speed (5 mb/s) is four times slower than in Korea (2017) and the urban-rural divide in broadband access is among the greatest in the area, with rural coverage at 57%. The Digital Agenda 2020 aims to improve access and effective use of digital infrastructure, e.g. by extending the optical fibre to all Chile or through specific programmes, such as training for SMEs.

Access to finance

After the post-crisis slowdown in access to finance, SME share in credit lending increased to 20.7% in 2017, the highest level of the decade, mainly driven by the demand of micro and small firms. Yet, credit conditions for SMEs have tightened in recent years due to more restrictive supply. Equity financing has a secondary role in SME financing landscape in Chile but several initiatives are in place for reinforcing venture capital supply and SME access to alternative instruments. In 2017, CORFO launched the SME Credit Programme to improve SME access to alternative sources of finance and non-bank financial intermediaries. Chile's Fintech Industry has experienced rapid growth over 2016-17, with over 70 companies offering diverse financial services to SMEs. Regulation for the industry is under development by the Ministry of Finance and the Financial Stability Council.

Access to skills

Low adult literacy levels weight on firms' productivity in Chile. In particular, Chile lags behind OECD countries in terms of skills for the future, with only 3% of graduates in ICT and 1% in natural sciences, maths and statistics. Few adults have opportunities to access workplace training, particularly women, rural or indigenous groups. The government launched the Professional Technical Training Strategy (2018-30), a roadmap for improving vocational training, and a National Qualification Framework is under development. Since 2016, grants support "free education" admission for vulnerable students and will be extended to higher income populations as from 2019.

Access to innovation assets

Chilean SME spend above the OECD median on R&D, especially small firms. However, their integration into innovation networks remains among the lowest of the area. The *PyMELab* CORFO programme aims to enhance regional innovation ecosystems by creating knowledge networks and increasing the participation of the regions in innovation projects with companies. In 2016, the government also established *EspacioPyme* under the Digital Agenda 2020 to promote SME technological adoption. The platform offers assistance in the selection, download and adaptation of software to specific business requirements. *Digitaliza Tu Pyme* is also a new programme seeking to increase SME sales, lower their costs and improve their relationship with customers and suppliers, through digital technologies.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Camara de Comercio de Santiago (2017), *eCommerce en Chile se aproximará los US$5.000 millones en 2018*, http://www.eisummit.cl/wp-content/uploads/2018/02/Comunicado-Final-eCommerce-Innovation-Summit-2017.pdf (accessed on 15 November 2018).

Ministerio de Economía Fomento y Turismo (n.d.), *EspacioPyme*, https://www.espaciopyme.cl/ (accessed on 15 November 2018).

Ministerio de Economía, Fomento y Turismo (n.d.), *Productivity for Inclusive Growth 2014-2018 Roadmap*, http://www.conferenciaproductividad.cl/wp-content/uploads/2016/12/Productivity-for-inclusive-growth.pdf (accessed on 15 November 2018).

Ministerio Secretaria General de Gobierno (2018), *Modernización Tributaria: ¿Cómo será el trato preferente para las pymes?*, Gobierno de Chile, http://www.msgg.gob.cl/wp/index.php/2018/08/23/modernizacion-tributaria-como-sera-el-trato-preferente-para-las-pymes/.

MNE Tax (2018), *Sweeping Chile Tax Reform Plan Proposes Tax on Digital Services, Restores Corporate Tax Integration*, https://mnetax.com/sweeping-chile-tax-reform-would-restore-corporate-tax-integration-tax-digital-services-29828.

OECD (2018), *Chile*, OECD Publishing, Paris, https://doi.org/10.1787/fin_sme_ent-2018-18-en.

OECD (2018), *OECD Economic Surveys: Chile 2018*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-chl-2018-en.

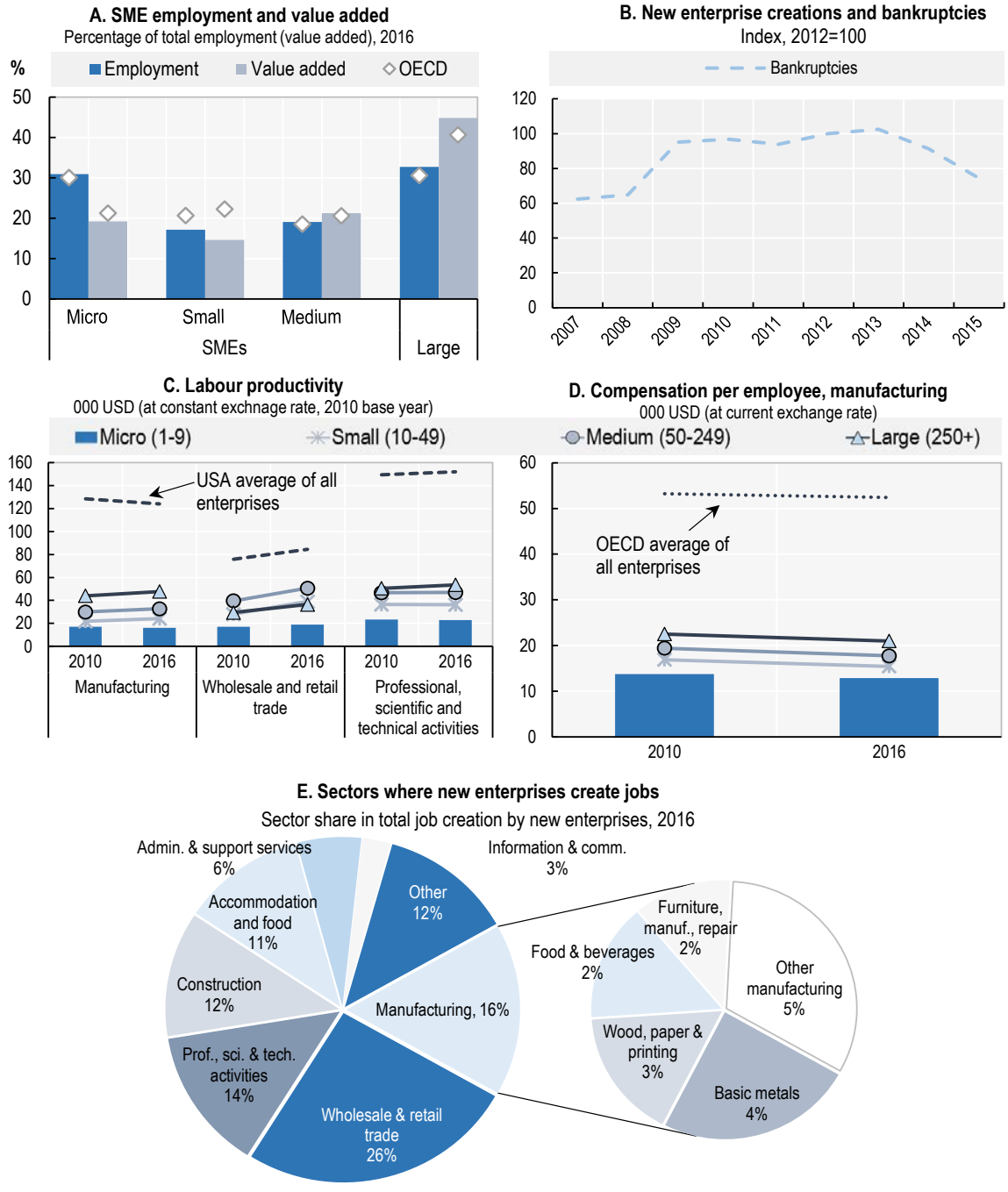
OECD (2016), *Regulatory Policy in Chile: Government Capacity to Ensure High-Quality Regulation, OECD Reviews of Regulatory Reform*, OECD Publishing, Paris, https://doi.org/10.1787/9789264254596-en.

OECD/UN (2018), *Production Transformation Policy Review of Chile: Reaping the Benefits of New Frontiers*, OECD Development Pathways, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264288379-en.

Servicio Nacional de Capacitación y Empleo (n.d.), *Programa +Capaz*, http://www.sence.cl/601/w3-printer-503.html (accessed on 15 November 2018).

Chapter 14. Czech Republic

Figure 14.1. Structure and performance of the SME sector in the Czech Republic



Sources: A, B, For creations (employer enterprise births), *OECD Structural and Demographic Statistics Database 2018*; for bankruptcies, Financing SMEs and Entrepreneurs 2018: *An OECD Scoreboard*; Chart C, D: *OECD Structural and Demographic Business Statistics Database 2018*, http://dx.doi.org/10.1787/sdbs-data-en; Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925065

SME business conditions and access to strategic resources

Institutional and regulatory framework

A series of measures have been introduced since 2008 to reduce the administrative burden on SMEs. However, procedures remain complex, and the cost of enforcing contracts is one of the highest in the EU. An extensive amendment to Act No. 182/2006 Coll. on Insolvency came into effect in 2017. It fundamentally changes many aspects of insolvency proceedings, including a so-called "insolvency cap" that shifts the emphasis when assessing the inability to pay debts to the real liquidity of the entrepreneur, thus helping debtors defend themselves more effectively in the event of unjustified insolvency petitions against them.

Market conditions

Several support services to SMEs are available for internationalisation. In 2016, the Czech Trade agency launched three programmes, 'NOVUMM, NOVUMM KET & DESIGN', all of which support SMEs in taking part in exhibitions and fairs abroad in priority sectors, including key enabling technologies and design. In 2017, an amendment to the Czech Labour Code became effective that aims at limiting administrative demands imposed on employers, relating in particular to so-called Home Office (teleworking), holiday leave, and the transfer of employees to another job.

Infrastructure

The National Research, Development and Innovation Policy of the Czech Republic 2016-20 aims to ensure consistency across strategies and programmes, with more emphasis on applied research. In addition, a new evaluation framework (*Metodika 2017+*) for R&D support is expected to be fully implemented by 2020. Since 2016, the ICT and Shared Services programme offers grants to businesses specialised in ICT, software development, big data and cloud solutions to enhance their competitiveness on global markets. In 2016, the 'Low carbon technologies' (*Nízkouhlíkové technologie*) programme was introduced, which supports Czech SMEs in introducing innovative technologies in the fields of e-mobility, energy management and utilisation of secondary raw materials.

Access to finance

The financing environment for Czech SMEs has continued to improve since the crisis. Loan rejections fell from 17.6% in 2013 to 3.2% in 2016, and SME interest rates have more than halved since 2008. However, equity funding and venture capital (VC) investments remain underdeveloped. In 2017, the first programmes supporting VC were introduced in co-operation with the European Investment Fund (EIF), along with the EXPANSION programme, which provides SMEs with guarantees and preferential loans. In 2018, the Czech-Moravian Guarantee and Development Bank launched VADIUM, which gives small entrepreneurs up to CZK 50 million guarantee for bids in public tenders.

Access to skills

Skills shortages in the workforce remain a policy priority for the Czech government, with vacancies at employment offices increasing more than seven-fold over 2010-2018 and a persistent skills mismatch on the labour market, including high shares of under-skilled

workers. At the end of 2016, a new call for applications to the 'training centres' support programme (*Školicí střediska*) was launched in order to create new centres and modernise existing ones for the benefit of SMEs. The Czech Republic is also returning to a dual education system that supports polytechnic education, introduces modern technology into teaching in primary and secondary education and should produce graduates of technical secondary schools.

Access to innovation assets

The percentage of Czech SMEs selling online and turnover from e-commerce are above OECD average. At the same time, SMEs lack the ability to innovate in-house or introduce non-tech innovations. The government has a range of tools to support innovation, including regional innovation vouchers, proof-of-concept funding and streamlined support for applied research projects. The launch of a National Innovation Fund was suspended in 2018, but the government still plans to support innovative start-ups through seed and development finance, as well as to strengthen links between firms and research institutions, albeit with a heavier reliance on private VC funds. The TREND programme was approved end 2018 with a total CZK 15 billion budget for 8 years (of which CZK 10 billion of state support) in order to increase the competitiveness of R&D performing companies and start-ups.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

API (2016), *Školicí střediska – Výzva II*, Agentura Pro Podnikani a Inovace, https://www.agentura-api.org/programy-podpory/skolici-strediska/skolici-strediska-vyzva-ii/.

Euroactiv (2018), *Národní inovační fond nebude, české startupy ale zoufat nemusí*, https://euractiv.cz/section/all/news/narodni-inovacni-fond-nebude-ceske-startupy-ale-zoufat-nemusi/.

European Commission (2017), *2017 SBA Fact Sheet Czech Republic*, https://ec.europa.eu/docsroom/documents/29489 (accessed on 10 August 2018).

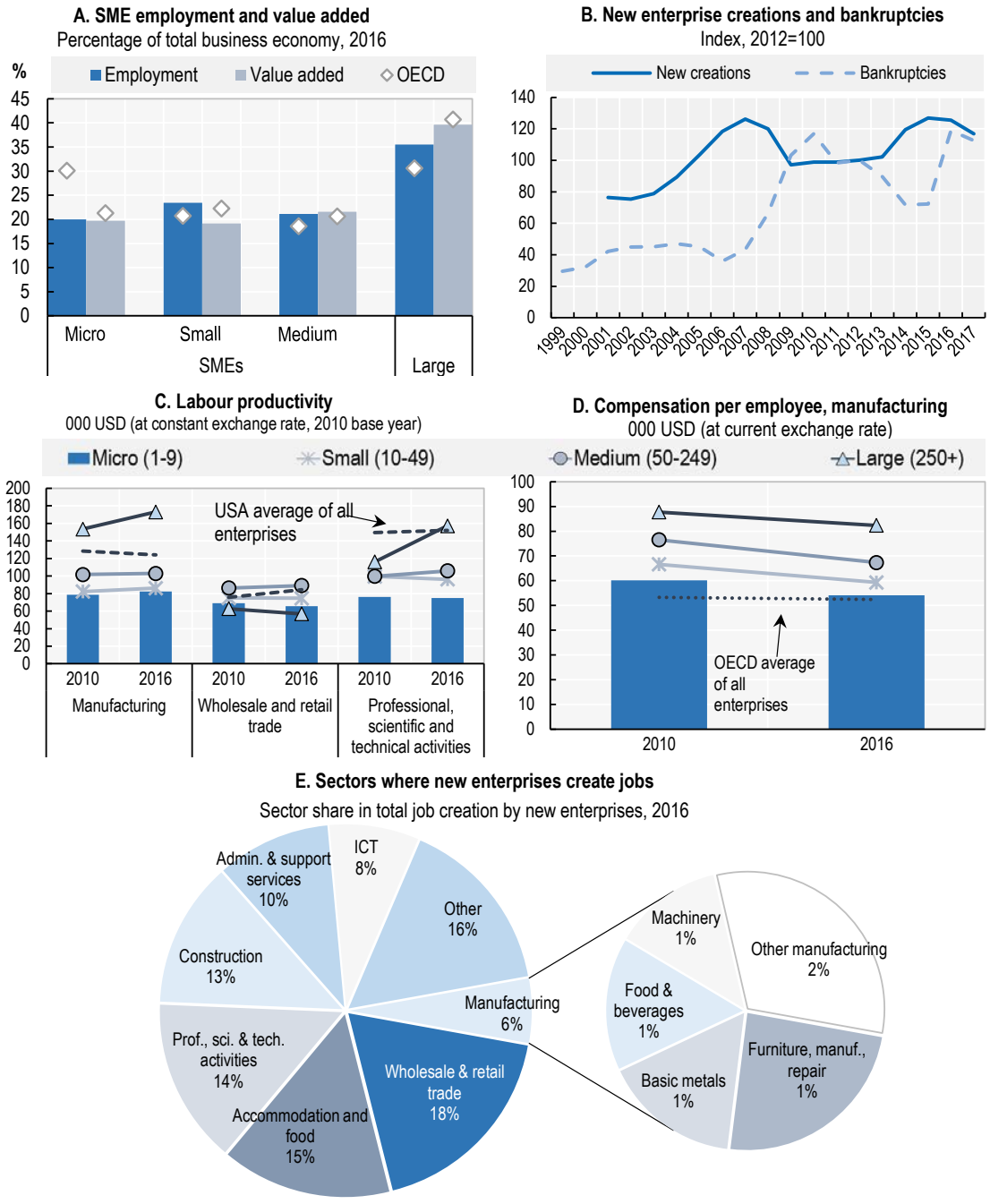
OECD (2018), *OECD Economic Surveys: Czech Republic 2018*, http://dx.doi.org/10.1787/888933790182.

OECD (2017), *Going for Growth 2017 - Czech Republic Country Note*, http://www.oecd.org/eco/growth/going-for-growth-2017/ (accessed on 10 August 2018).

TaylorWessing (2016), *Extensive Amendment to Labour Code in the Czech Republic*, https://czech-republic.taylorwessing.com/en/extensive-amendment-to-labour-code-in-the-czech-republic.

Chapter 15. Denmark

Figure 15.1. Structure and performance of the SME sector in Denmark



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018*, http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925084

SME business conditions and access to strategic resources

Institutional and regulatory framework

The business environment is extremely SME-friendly in Denmark, that ranks above OECD median in many dimensions. The Implementation Council was introduced in 2015 to oversee the implementation of EU legislation into Danish law with a view of minimising extra expenses for SMEs. Moreover, the government strengthened an existing plan to reduce burdensome regulation for businesses and save up to EUR 533 million by 2020. All new pieces of legislation are also subjected to a Regulatory Impact Assessment (RIA) on compliance costs for businesses which includes an SME test.

Market conditions

Denmark is 3rd on the World Bank's Ease of Doing Business ranking 2018. The Danish Business Authority (DBA) manages an e-government business initiative, and building on the Modern IT platform launched in 2015, it launched in 2018 a new customer-centric portal for company registration, data maintenance, distribution, analysis and supervision. Danish companies have a strong presence in global markets, with the share of SMEs exporting online doubling from 5% to 10% from 2009 to 2015. The Export Credit Agency issued 493 guarantees to Danish companies in 2016. The 2016 Public Procurement Act makes requirements for bidding companies more flexible and incentivises the splitting of public contracts in smaller lots, making it easier for SMEs to participate.

Infrastructure

The quality of Danish infrastructure is above the EU average for railroad, roads, and in particular for air transport and port infrastructures, which are among the best in Europe. Regarding the ICT infrastructure, the government's goal is to make 100 Mbps download and 30 Mbps upload speeds available for all households and businesses by 2020, making Denmark a frontrunner in the field. Moreover, the "Digital Enhancement of SMEs" is a core pillar of the government's 2018 digital strategy, including targeted initiatives (e.g. the Danish GTS facilities, where SMEs have access to testing of new technologies).

Access to finance

Start-ups and SMEs face much higher obstacles in accessing financing than their European peers. In particular, the cost of borrowing for small loans and the rejection rate of loans applications are both higher than the EU average. Policies are in place to face these challenges: the amount of growth loan guarantees offered by the Danish Growth Fund increased sharply from DNK 174 million in 2007 to DKK 470 million in 2015. And in 2018, the European Investment Fund (EIF) and the Danish Growth Fund entered into a new guarantee agreement worth DKK 1.6 billion, which will allow a further increase in financing for SMEs.

Access to skills

Denmark performs above average in adult literacy and training, as well as in student proficiency, but ranks below the OECD median in terms of entrepreneurial intentions and perceived capabilities. A Technology Pact has been established (DKK 95 million over 2018-21) to support the Government's objective to get more people interested in technical

and digital skills at all levels of education, to get more people to educate themselves within it, and to get more people employed where these skills are under high demand. In addition, the national pool of regional funds allocates DKK 35 million to improve digital skills among managers in SMEs.

Access to innovation assets

SME uptake of digital technologies is high in Denmark and SMEs have closer linkages with knowledge networks than in most OECD countries. However, SME participation in R&D and innovation activities remain a challenge. The 2018 Strategy for Denmark Digital Growth (DKK 80 million over 2018-21) includes a digital transformation and e-commerce scheme that aims to provide SMEs with a better overview of technological opportunities and standards in robotics, digital and innovation systems, and that offers funding for innovation projects. In 2016, the Danish Government established the Production Panel 4.0, later renamed Digital Growth Panel, to support the digital transition in the economy, and in particular SMEs.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Danish Business Authority (2018), *Our Digital Journey: E-government Initiatives for Businesses*, Presentation by Morten Uhrskov at the OECD Working Party on SMEs and Entrepreneurship, Paris, October 2018.

Danish Government (2018), *Strategy for Denmark's Digital Growth*, Ministry of Industry, Business and Financial Affairs, https://em.dk/english/publications/2018/strategy-for-denmarks-digital-growth (accessed on 23 August 2018).

European Commission (2019), *SBA Factsheet 2018 - Denmark*, https://ec.europa.eu/docsroom/documents/32581/attachments/8/translations/en/renditions/native.

European Commission (2018), *Digital Single Market - Country Information Denmark*, https://ec.europa.eu/digital-single-market/en/country-information-denmark.

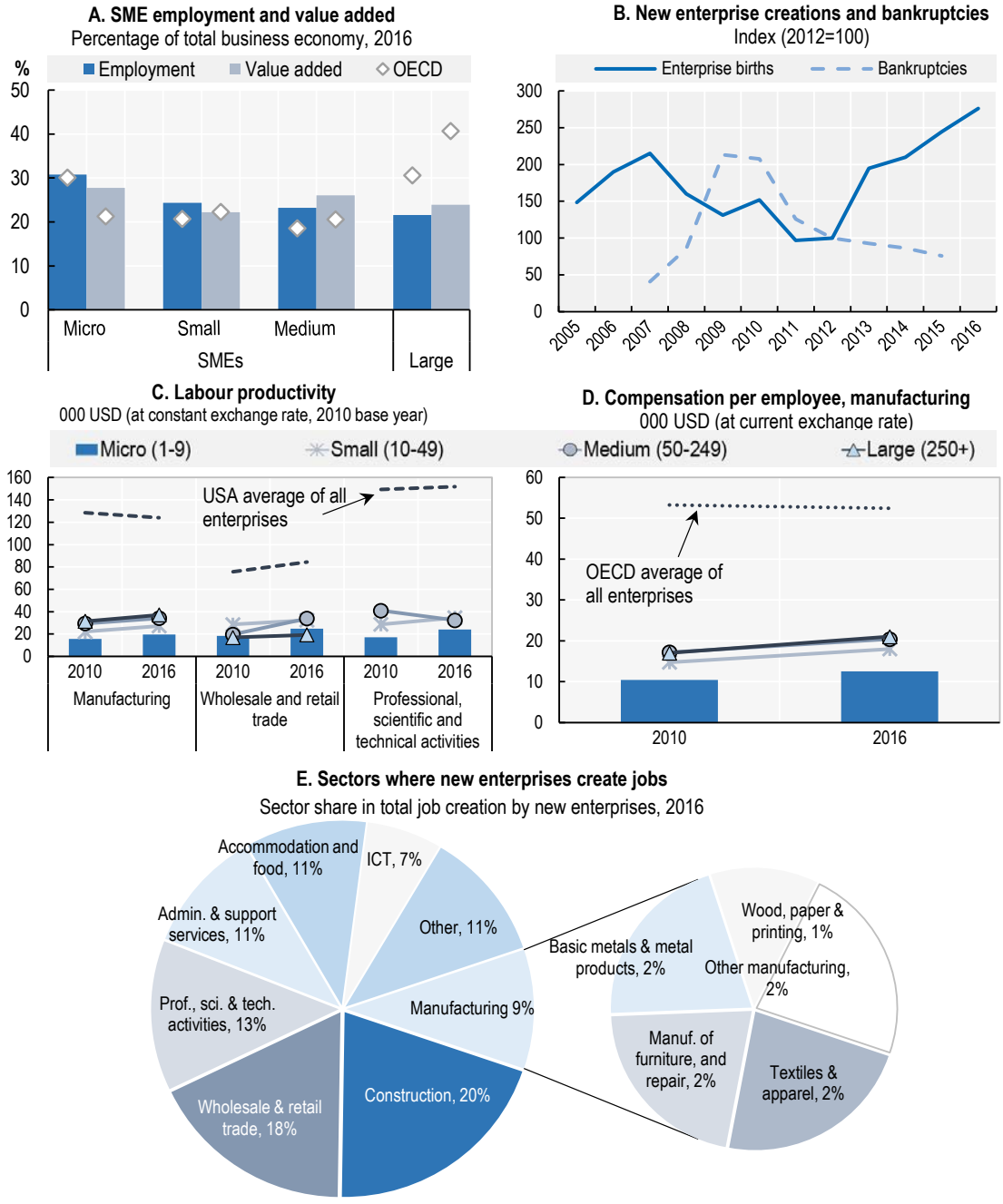
European Commission (2018), *SBA Factsheet 2017 - Denmark*, https://ec.europa.eu/docsroom/documents/29489/attachments/8/translations (accessed on 23 August 2018).

European Commission (2017), *Denmark - Country Information - Mobility and Transport*, https://ec.europa.eu/transport/facts-fundings/scoreboard/countries/denmark/investments-infrastructure_en.

OECD (2018), *Denmark - Economic Forecast Summary (May 2018)*, http://www.oecd.org/economy/denmark-economic-forecast-summary.htm (accessed on 23 August 2018).

Chapter 16. Estonia

Figure 16.1. Structure and performance of the SME sector in Estonia



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: For creations (employer enterprise births), *OECD Structural and Demographic Business Statistics Database 2018;* for bankruptcies, Financing SMEs and Entrepreneurs 2018: *An OECD Scoreboard;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925103

SME business conditions and access to strategic resources

Institutional and regulatory framework

In Estonia, cost for starting a business and time to comply with taxes are among the most supportive in the EU. Estonia has made continued efforts at simplification and digitalisation over the past decade. The government is actively reducing administrative burden through its Zero-Bureaucracy project initiated in 2015. A notable new initiative is the introduction of an entrepreneurship account programme for individual entrepreneurs: revenues up to EUR 25 000 are taxed a flat 20% rate (and 40% above this threshold) without having to submit declarations. Another example is the Reporting 3.0 programme which will automate business reporting from 2018 onwards, transferring information directly from accounting software to tax and statistics services. The initiative is expected to reduce accounting time and costs of SMEs by up to 20%.

Market conditions

Estonia's regulation is quite welcoming to foreign direct investment. The government has rolled out measures to attract foreign investors as part as its programme in support of start-ups and scale-ups, Startup Estonia. Estonia also aims to facilitate access to the Estonian market and public services by foreign entrepreneurs through the creation of an "e-residency" status, an international first. Estonia's public procurement market is close to the OECD median in size. The Support for Innovative Public Procurement programme introduced in 2016 is expected to increase the capacity of SMEs to meet the innovation demand of the public sector.

Infrastructure

The Estonian government aims to invest 1.3% of GDP in infrastructure development over 2018-20. Areas of investment include the road and railway systems as well as the broadband network. Indeed, in spite of consistent investments over the past decade, the overall quality of infrastructure (transport, communication and energy) is still considered to be around the OECD average.

Access to finance

SME access to credit has increased in recent years in Estonia and new SME lending, albeit below pre-crisis levels, was among the highest in the OECD in 2016. The government supports SMEs through guarantees rather than loans and the volume of guarantees has increased over the past decade – albeit with large yearly variations – amounting to EUR 61 million in 2017. Availability of venture capital (VC) was on par with the OECD median in 2016, and at its highest level ever in Estonia. The EstFund fund of funds was introduced in 2016 to further increase VC investment, in particular for SMEs. Set up jointly by the government and the European Investment Fund, it will invest EUR 60 million into VC funds, to be complemented by private investors (up to EUR 40 million). Investments began at the end of 2017.

Access to skills

Estonia has a good skills base and students are better equipped than most of their OECD counterparts. However, Estonia is at the median when it comes to ICT skills proficiency and tertiary educated workforce, and human resource development is a government priority. A programme aimed at improving the ICT skills of the labour force has recently

been introduced, along with updated university curricula incorporating new technologies. In addition, the 2014 R&D and Innovation Strategy aims to increase the number of PhDs to 300 graduates a year by 2020.

Access to innovation assets

Estonian SMEs tend to be active in R&D and innovation with performance on par or above the OECD median. They are particularly well integrated into collaborative innovation networks, with the highest level of connections to international networks in the OECD. To further facilitate co-operation between SMEs and public R&D institutions, the "ADAPTER" online platform was established in 2016. Funded by the European Regional Development Fund, the platform is a joint project of the six main public universities; it acts as a one stop shop allowing SMEs and others to find R&D partners and access services offered by any of the institutions involved. It is managed by the Ministry of Education and Science and operates with a budget of EUR 700 000.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

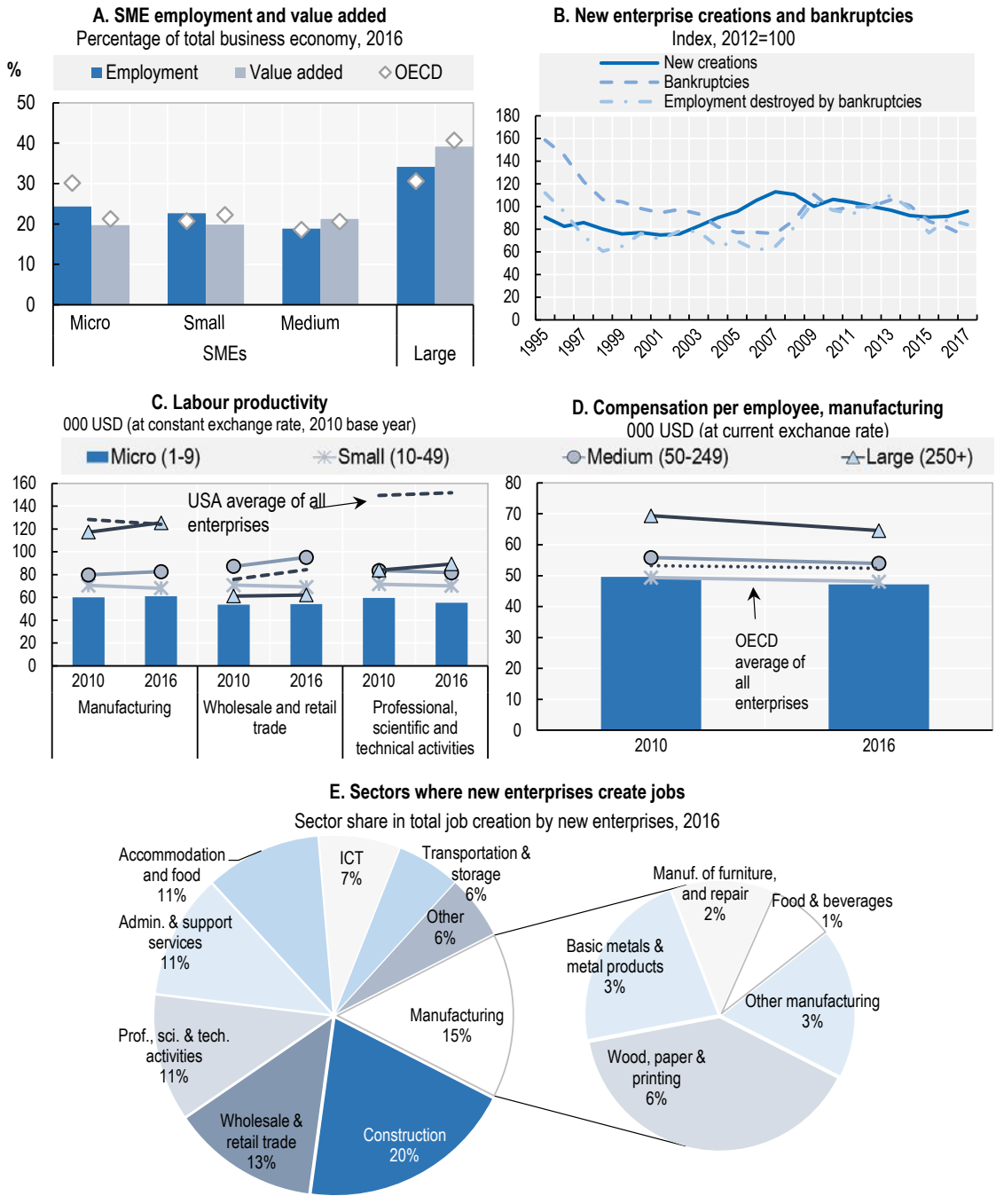
References

EC (2017), *2017 SBA Fact Sheet Estonia*, European Commission, https://ec.europa.eu/docsroom/documents/29489/attachments/9/translations/en/renditions/pdf

OECD (2017), *OECD Economic Surveys: Estonia 2017*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-est-2017-en.

Chapter 17. Finland

Figure 17.1. Structure and performance of the SME sector in Finland



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018,* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925122

SME business conditions and access to strategic resources

Institutional and regulatory framework

Finland presents a business friendly regulatory environment by OECD standards, with strong insolvency framework and contract enforcement regime and relatively low tax compliance costs. On December 2015, the independent Council of Regulatory Impact Analysis was established at the Prime Minister's Office to improve the quality of new legislation and assess the impact of government proposals. The 2017 annual review of the Council revealed that the impact on enterprises represented the most common area for improvement in impact assessments in draft government proposals.

Market conditions

Sustained international demand has benefited Finnish SMEs in computer programming and consultancy, which is the largest subsector for SMEs in the country. In 2018, the merge into the new Business Finland of existing programmes to support SME internationalisation aimed to smoothen and enhance their services. A new Law on public procurement came into force in January 2017 to simplify bureaucracy, increase transparency and allow contracting authorities to better take into account quality, innovativeness and responsibility of bidders. The reform is expected to enhance the chances of SMEs in competitive bidding.

Infrastructure

The quality of Finland's transport infrastructure is high by EU standards, with the timeliness of shipments showing marked improvements between 2014 and 2016. Finland has also a well-developed internet infrastructure in place with the second-highest wireless broadband subscription rate among OECD countries. In 2016, the “Implementation plan to promote high-speed broadband connections” was introduced. The national broadband scheme supports the construction of fibre networks in areas that lack business incentives to build high speed networks. Finnish authorities advise local municipalities on how to set up entities to partner with other government bodies and/or private partners and the central government provides part of the funding.

Access to finance

Bank lending to Finnish SMEs has expanded steadily over 2015-17, with the economic upswing contributing to an increased demand for SME finance. In 2015-16, Finnvera, the public financing company, increased its risk-taking capacity to finance start-up, growth companies and companies expanding their international operations. In 2017, the European Commission adopted the SME initiative programme in Finland. The programme will provide guarantees to financial intermediaries that give loans to SMEs, and are expected to unlock over EUR 360 million of fresh loans for Finnish businesses.

Access to skills

Finland scores well on adult literacy and training and student proficiency. Hourly wage costs in Finland are relatively high in the EU context and unemployment is above the OECD average. In 2016, the Competitiveness Pact between the government and the social partners was introduced, which lowered unit labour costs by about 4% in 2017. The social partners have also moved from a system of national-level collective agreements

towards a more decentralised system with collective agreements at the sectoral level and local-level bargaining, allowing lower wage growth in sectors with considerable competitive pressure and/or limited productivity gains. Furthermore, the duration of unemployment benefits was reduced by 100 days and requirements for the unemployed to seek a job tightened.

Access to innovation assets

In 2018, several institutions providing support to promote innovation, exports and investment to SMEs were merged into Business Finland. This newly created one-stop shop aims to improve government responsiveness to business needs and facilitate SME networks. It provides support to research and technology development, including for start-ups and SMEs, and addresses SMEs' difficulties in commercialising innovations by combining direct unconditional funding with guaranteed loans conditional on success.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Business Finland (2018), *Efforts of Finnvera, Finpro and Tekes in Promoting Internationally Oriented SMEs*, Impact Study, Report 3/2018, https://www.businessfinland.fi/globalassets/julkaisut/efforts_of_finnvera_finpro_tekes.pdf

EC (2019), *Country Information - Finland*, European Commission, https://ec.europa.eu/digital-single-market/en/country-information-finland

EC (2017), *2017 SBA Fact Sheet Finland*, European Commission, https://ec.europa.eu/docsroom/documents/29489/attachments/10/translations/en/renditions/pdf

EC (2017), *Finland Adopts the SME Initiative: Easier Access to Funding for Start-ups and Small Businesses*, European Commission, https://ec.europa.eu/regional_policy/en/newsroom/news/2017/01/24-01-2017-finland-adopts-the-sme-initiative-easier-access-to-funding-for-start-ups-and-small-businesses

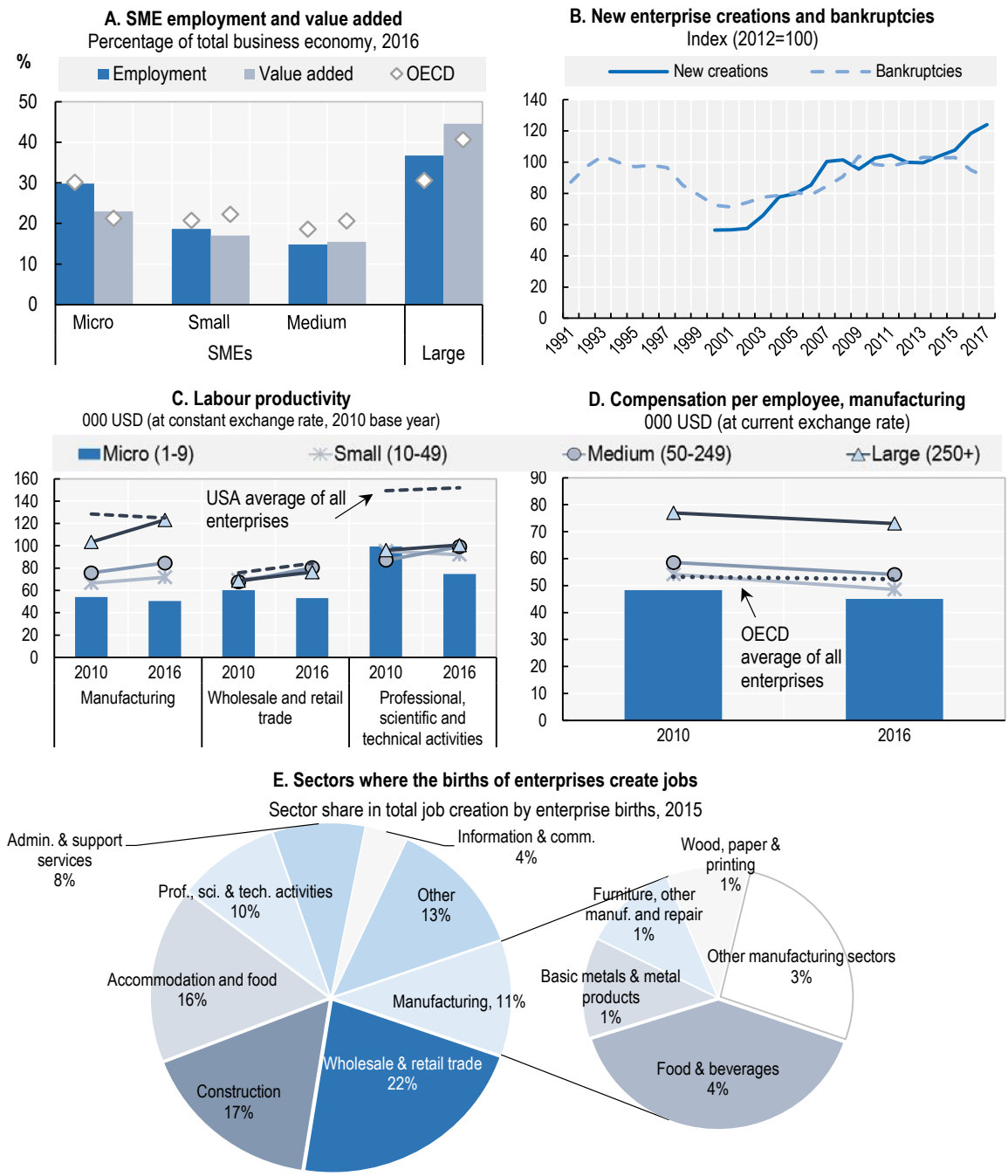
EC (n.d.), *Finland - Country Information - Mobility and Transport*, European Commission, https://ec.europa.eu/transport/facts-fundings/scoreboard/countries/finland/investments-infrastructure_en

Finnish Council of Regulatory Impact Analysis (2018), *Annula Review 2017*, https://vnk.fi/documents/10616/7861578/Finnish+Council+of+Regulatory+Impact+Analysis+Annual+Review+2017/5b9b4fd4-aa89-4700-b292-fa11b7d3cc43?version=1.1.

OECD (2017), *OECD Reviews of Innovation Policy: Finland 2017*, OECD Reviews of Innovation Policy, OECD Publishing, Paris, https://doi.org/10.1787/9789264276369-en.

Chapter 18. France

Figure 18.1. Structure and performance of the SME sector in France



Note: Data refer to the creation of sociétés. See: www.insee.fr/fr/metadonnees/definition/c1798.
Sources: Charts A, C, D: *OECD Structural and Demographic Statistics Business Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en*;* Chart B: *OECD Timely Indicators of Entrepreneurship database, 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart E: *OECD Structural and Demographic Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925141

SME business conditions and access to strategic resources

Institutional and regulatory framework

Although the cost for starting a business remains low in France, administrative burdens and procedures constrain entrepreneurial activities. Insolvency regimes could also be better designed for rehabilitating or liquidating firms. France Experiment was relaunched in 2018 in order to simplify legislative texts and administrative procedures. The 2018 Finance Bill introduces a major tax overhaul with a reduction of corporate tax to 25% by 2022 (stable rate at 15% for SMEs). The tax regime of microenterprises has also been simplified to benefit more entrepreneurs. A Plan for increasing the social benefits of self-employed was launched in 2017 with a view to encouraging firm creation. A new Justice reform (2018-22) also aims to simplify and accelerate court procedures.

Market conditions

Market opportunities for SMEs are sizeable in France. A large share of the domestic market is domestically supplied, public procurement is significant despite long payment delays and trade procedures and facilitation are efficient. The government launched its Trade Strategy in 2018 with a view to nurturing a culture of export and reorganising the export support system. Bpifrance has become the contact point for SMEs to access export guarantees and funding; the range of instruments has been enlarged while the procedures have been streamlined. The application of the 2014 EU directives on public procurement that aim to simplify and secure SME participation also came into force in 2016.

Infrastructure

France's investments in ICT is high and fixed broadband widespread. Transport and energy infrastructure perform slightly above OECD median but research infrastructure is uneven, strong inter-regional networks co-existing with weaker industry-science and international networks. As part of its Grand Investment Plan (2018-22), the government earmarked EUR 3.5 billion to support scientific excellence, consolidate world-class universities, and boost the research system. The revision of the Research Infrastructure Roadmap in 2018 also aim to achieving greater capacity.

Access to finance

There is a good flow of bank financing for French SMEs, thanks to a robust banking system, low interest rates and easing credit conditions. Alternative sources are on the rise, with venture capital investments on par with the OECD median. The government has recently focused on boosting investments in new risky projects and SME modernisation. Since 2017, the SME Innovation Account proposes tax breaks to business angels for reinvesting capital gains in innovative firms. Bpifrance, the SME development bank, introduced in 2016 two medium-term instruments that complement bank loans and cover SME financial needs during their digital transition. Development Loans (up to EUR 50 000) support investments by very small firms. The EUR 2.2 billion Industry for the Future Loans finance the transformation of industrial SMEs.

Access to skills

France has an educated adult population showing strong entrepreneurial intentions but unemployment rate is persistently high at over 9% and training opportunities for

reskilling workers could be strengthened. In 2017-18, the government engaged in a series of reforms with a view to renewing the French social model, focusing on vocational education and labour regulation. The Investment Skills Plan (2018-22) allocates EUR 57 billion for the training of two million jobseekers, while efforts are made to improve the attractiveness of apprenticeship and the insertion of young workers in fast-changing industries. A major reform of the French Labour Code also aims to increase labour market flexibility and social dialogue.

Access to innovation assets

French SME access to innovation assets is on par with the OECD median except for the adoption of high-speed broadband or cloud computing services. In 2018, an online platform France Num was launched in co-operation with regions, showcasing sectoral models of digitalisation and providing micro-firms and SMEs with self-assessment tools, guidance and financing solutions. A strong policy focus is also given to increasing the number of medium-sized firms and scaling-up firms through domestic and global innovation networks. The 2018 "Pacte PME" Law foresees inter alia boosting investment in innovation.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

EC (2017), *2017 SBA Fact Sheet France*, European Commission, http://ec.europa.eu/DocsRoom/documents/26562/attachments/11/translations/en/renditions/native

Direction Générale des Entreprises (2018), *FranceNum*, https://www.francenum.gouv.fr/ (accessed on 06 Septembre 2018).

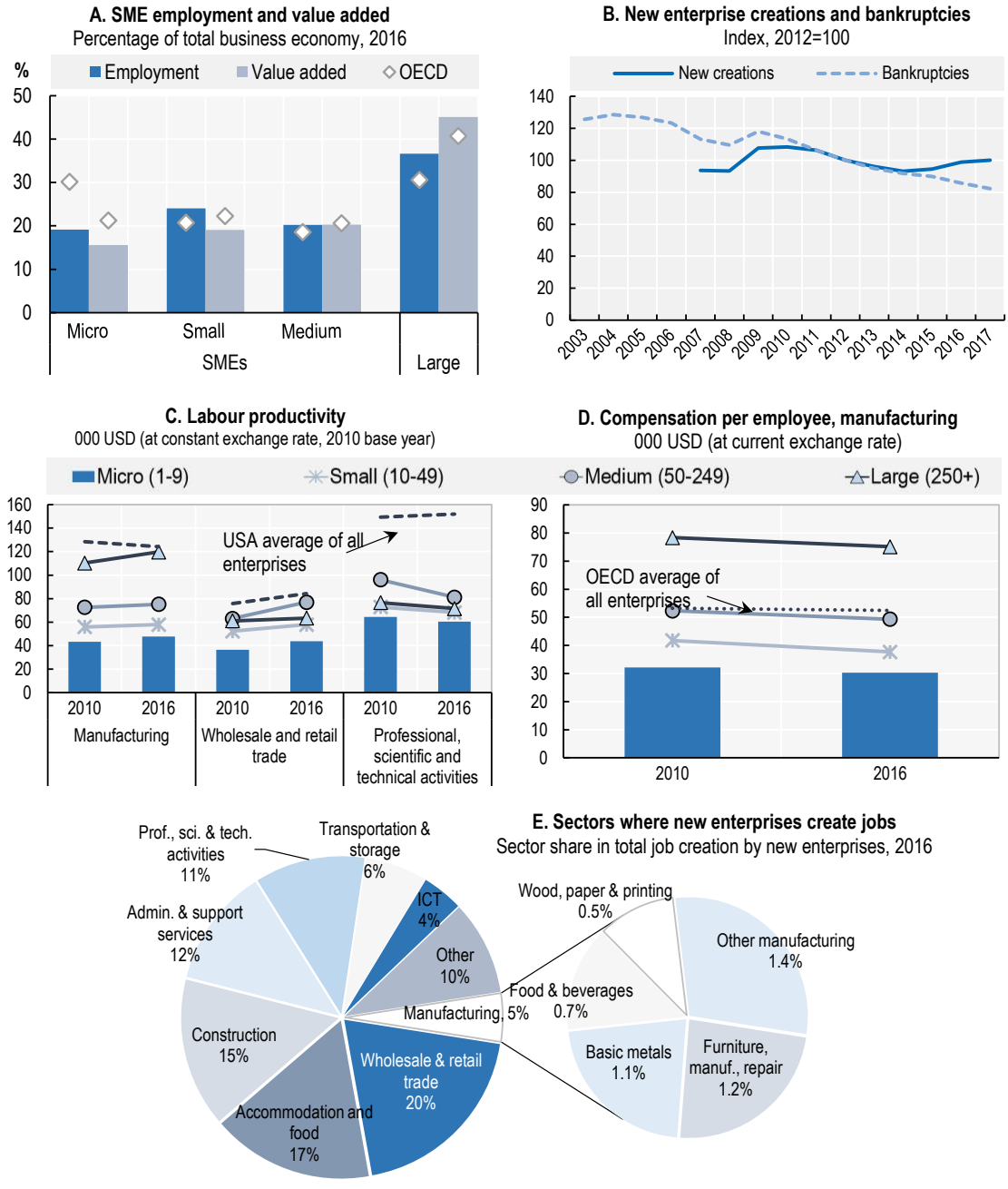
Le Gouvernement (2018), *Pacte PME (Plan d'Action pour la Transformation et la Croissance des Entreprises)*, https://www.pactepme.org/ (accessed on 06 September 2018).

Le Gouvernement (2018), "Stratégie du Gouvernement en matière de commerce extérieur", Roubaix, 23 février 2018, https://www.gouvernement.fr/sites/default/files/document/document/2018/02/dossier_de_presse_-_presentation_de_la_strategie_du_gouvernement_en_matiere_de_commerce_exterieur-_23.02.2018.pdf.

Le Gouvernement (2018), *Transformation de l'apprentissage, de la formation professionnelle et de l'assurance chômage*, https://www.gouvernement.fr/action/transformation-de-l-apprentissage-de-la-formation-professionnelle-et-de-l-assurance-chomage (accessed on 06 September 2018).

Chapter 19. Germany

Figure 19.1. Structure and performance of the SME sector in Germany



Sources: Charts A, C, and D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925160

SME business conditions and access to strategic resources

Institutional and regulatory framework

Germany offers a supportive regulatory framework with above-OECD median performance in reducing administrative burden on start-ups, simplifying procedures and strengthening insolvency regime. While further administrative simplification could help alleviate burden on new and existing firms, e-government remains less widespread in Germany than in other OECD countries. Steps were recently taken to establish nationwide uniform online services while expanding the scope of services. Legislation in late 2016 laid the framework for such upgrading of e-government services, including the Online Access Improvement Act that stipulates that the central and local governments must offer their administrative services online within five years and make them accessible via centralised administrative portals at the national or Länder level.

Market conditions

SMEs are slightly above the OECD median in terms of their forward participation in global value chains, i.e. value-added embodied in the exports of partner countries. The government is trying to improve the competitive position of SMEs in domestic and foreign markets through the umbrella brand *Mittelstand Global*, which was launched in 2016. Support includes a cross-industry SME market development programme and export initiatives in key areas of the future such as energy, environmental technology, civil security technology and services, and healthcare.

Infrastructure

Germany has a strong performance according to most R&D metrics, and the federal government continues to strengthen the infrastructure for innovation and R&D. In 2016, the German Federal Ministry of Education and Research launched the funding programme "KMU-NetC" to promote ambitious R&D and innovation collaborations through networks and clusters. Priority is given to networks and clusters that have a concentration of SMEs. The objective of the initiative is to promote new ideas, new applications and new business models, and improve the dissemination and use of research results and model solutions among SMEs.

Access to finance

Access to finance appears to be improving for SMEs. Rejected bank loan applications fell in 2017 but the cost differential of borrowing for small loans relative to large loans increased slightly. However, interest rates remain very low for SMEs in absolute terms. Equity investments from professional business angels and venture capital all improved slightly in 2017. Several measures have been introduced recently to promote equity financing for start-ups at different stages of development, including government-funded venture capital funds that match private investment. In addition, "KfW Capital", a new private equity entity of the national promotional bank KfW, has been launched in 2018. KfW Capital will invest up to EUR 200 million per year, mainly in German and European venture capital funds.

Access to skills

Skills in SMEs are relatively strong in Germany and several initiatives such as "SME-Digital" have been launched to further strengthen skills, particularly digital skills. However, self-perception of entrepreneurial capabilities remains lower than the OECD median and women are much less likely to report having entrepreneurship skills than men (34.3% vs. 49.1%, 2013-17). The federal government is working to address this gender gap, including through the promotion of role models to encourage women's entrepreneurship. The initiative *FRAUEN unternehmen* was launched by the Federal Ministry of Economy and Energy and extended for two years in 2017 following positive evaluations.

Access to innovation assets

SMEs with fewer than 250 employees spend less on R&D than the OECD median. To boost the R&D and innovation performance of SMEs, the Federal Ministry of Education and Research (BMBF) developed a new SME Strategy in 2016: "Give Way to SME Programme for More Innovation in Small and Medium-Sized Enterprises". The strategy contains a number of new measures for SMEs, including *Innovationsforen Mittelstand,* which aims to support collaborations between SMEs and other companies, research organisations, and public administration to promote their innovative capacities and the development of new products.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

European Commission (2018), "SBA Factsheet 2018 -- Germany", available at: https://ec.europa.eu/docsroom/documents/32581/attachments/12/translations/en/renditions/native

Federal Ministry for Economic Affairs and Energy (2014), Digital Agenda 2014 – 2017, available at: https://www.digitale-agenda.de/Content/DE/_Anlagen/2014/08/2014-08-20-digitale-agenda-engl.pdf?__blob=publicationFile&v=6

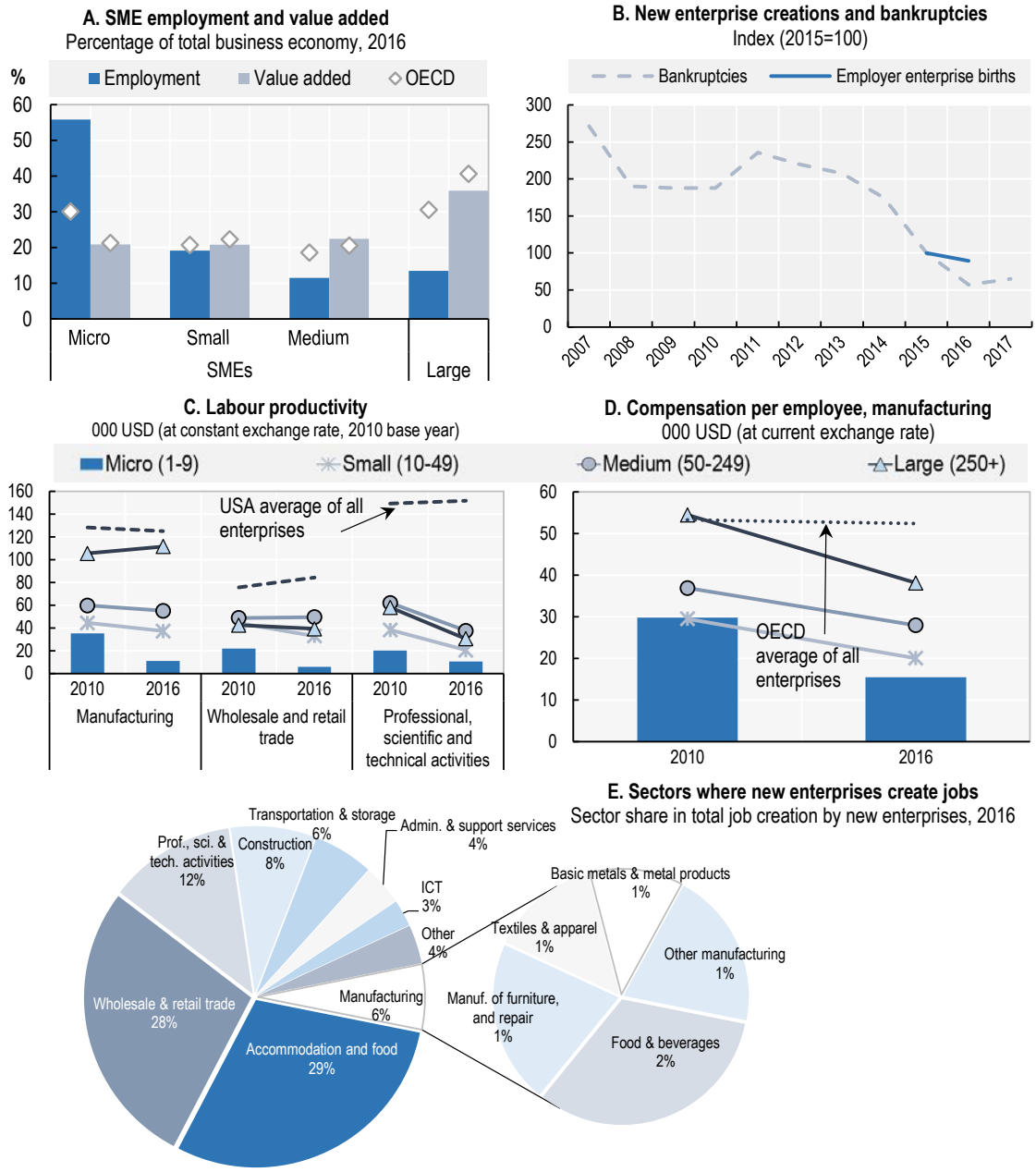
Kugler, A. et al. (2017), "Choice of Majors: Are Women Really Different from Men?", Working Papers, National Bureau of Economic Research, Cambridge.

OECD (2018), OECD Economic Surveys: Germany 2018, OECD Publishing, Paris., http://dx.doi.org/10.1787/eco_surveys-deu-2018-en.

The World Bank (2018), Doing Business 2018 Reforming to create jobs, World Bank Publications, Washington D.C.

Chapter 20. Greece

Figure 20.1. Structure and performance of the SME sector in Greece



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B*:* For enterprise births, *OECD Structural and Demographic Business Statistics Database 2018,* Employer Business Demography dataset; for bankruptcies, Financing SMEs and Entrepreneurs 2018: *An OECD Scoreboard;* Chat E: *OECD Structural and Demographic Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925179

SME business conditions and access to strategic resources

Institutional and regulatory framework

Over the last decade, Greece undertook extensive legislative reforms to reduce administrative burdens on SMEs and improve insolvency regime, which are currently in line with the OECD median level. As the complexity of procedures and debt restructuring remain major problems for many Greek companies, in 2017 'Extrajudicial Debt Settlement mechanism' for businesses was strengthened, with the simplification of procedures for the settlement of debts up to EUR 50 000 to banks, tax authorities and social security institutions. In addition, the general business registry's electronic one-stop shop was established in 2018, leading to a 70% reduction in registration costs.

Market conditions

The internationalisation performance of Greek SMEs remains one of the weakest in the EU with less than 10% of Greek SMEs currently exporting. In 2018, in the framework of the EU Operational Programme Competitiveness, Entrepreneurship & Innovation (EPAnEK 2014-20), a new measure was introduced to strengthen and support the export orientation of manufacturing SMEs, in particular to non-EU countries. Through the Hellenic Fund for Entrepreneurship and Development S.A., the government co finances direct loans to export-oriented SMEs, and the Greek Export Credit Insurance Organization (OAEP) provides short-term and long-term export credit insurance to SMEs.

Infrastructure

Poor intermodal connections and low quality of logistics affect the competitiveness of Greek businesses, with import and export lead time above the OECD average. Since 2017, a new legislative framework sets stronger rules for state-funded infrastructure projects. The performance of Greece in the digital infrastructure is uneven, with relatively low mobile broadband penetration. The Next Generation Access (NGA) programme aims to the deployment of fast and super-fast broadband technologies in rural areas with support from EU funds.

Access to finance

Credit conditions in Greece have not recovered to the pre-crisis levels. In 2017, 23% of Greek SMEs reported finance as their most pressing problem against the EU28 average of 7%, and the number of SMEs applying for bank financing more than halved between 2010-2017. To enhance credit conditions for SMEs, several financial instruments with funding from EU structural funds have been implemented. In 2017 two new funds were established which provide financing under loan and guarantee systems, namely, the Intermediate Entrepreneurship Fund and the Western Macedonian's Regional Development Fund. These initiatives complement the EU COSME 2014-20 programme, as well as Entrepreneurship Fund II and the Energy Saving Fund, established in 2016 and backed by the European Structural Investment Funds.

Access to skills

Despite high education participation rates, the mismatch between the labour market and education system is significant, and Greek workers are among the most likely to report

being over-qualified for their jobs among OECD countries. Adults also lack opportunities to re-skill via on the job-training or professional courses. The public employment service (OAED) is being reformed to improve matching between employers' needs and the provision of skills. Training and certification programmes are offered since 2017 to increase workers' skills and competences in the private sector.

Access to innovation assets

The innovation performance of Greek SMEs is in line with the OECD median, while medium-sized firms exhibit a sub-par performance in R&D. Greek SMEs benefit from a good integration into knowledge networks but lag in knowledge-based capital investment. In 2016, EquiFund was established. Managed by the European Investment Fund, it participates in funds investing in strategic sectors for the Greek economy, supports innovation investments, technology transfer and the commercialisation of R&D outcomes, and provides early stage and scale-up funding for innovative entrepreneurs. The 2016 Start-up, Spin-Off, Spin-Out programme fosters the creation of knowledge-intensive start-ups.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

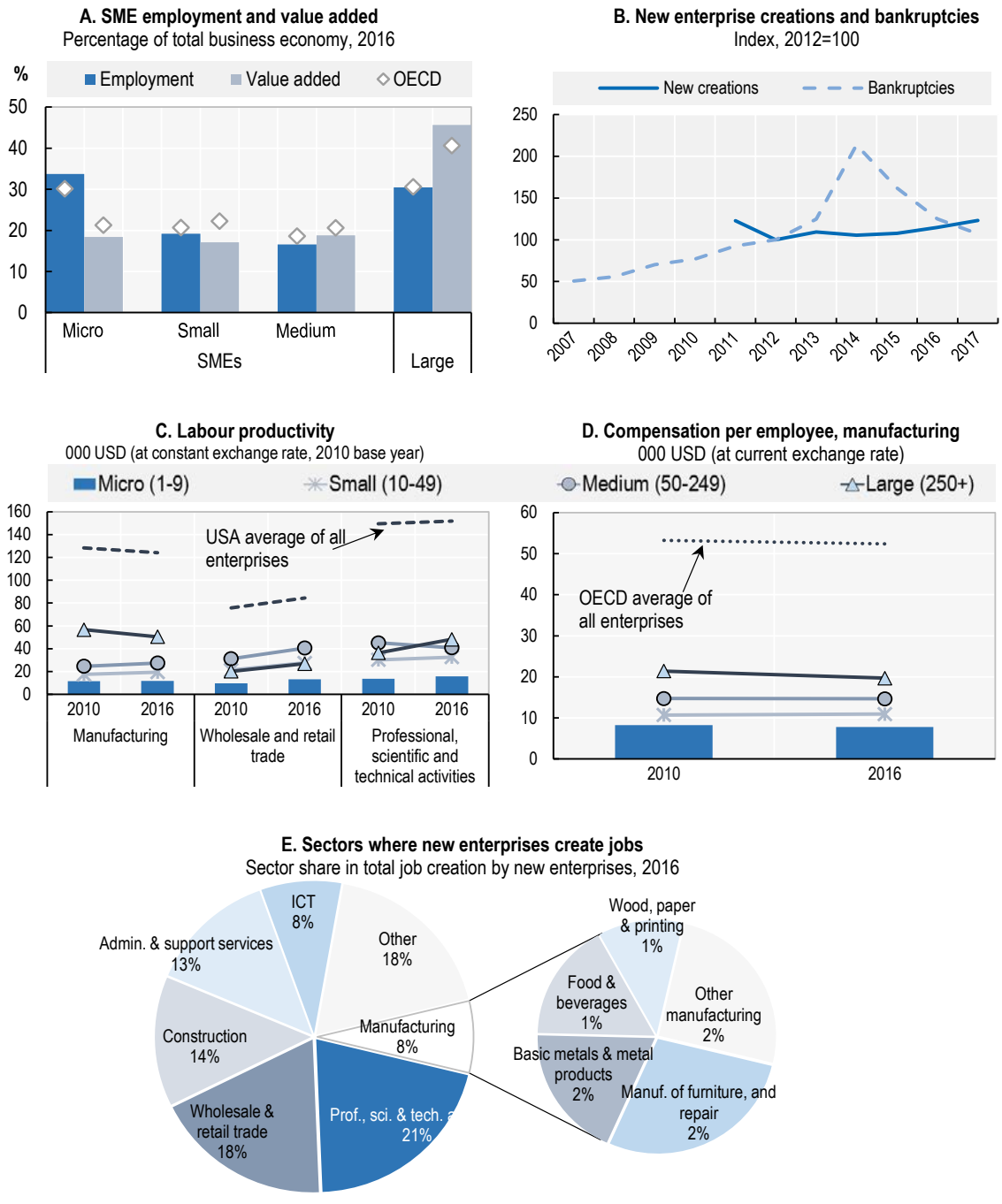
European Commission (2018), *2017 SBA Fact Sheet Greece*, https://ec.europa.eu/docsroom/documents/29489/attachments/13/translations/en/renditions/pdf (accessed on December 2018).

European Commission (2018), *Greece*, https://ec.europa.eu/docsroom/documents/30683 (accessed on December 2018).

OECD (2018), *OECD Economic Surveys: Greece 2018*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-grc-2018-en

Chapter 21. Hungary

Figure 21.1. Structure and performance of the SME sector in Hungary



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: For creations, *OECD Timely Indicators of Entrepreneurship Database 2018;* for bankruptcies, Financing SMEs and Entrepreneurs 2018: *An OECD Scoreboard;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018,* Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925198

SME business conditions and access to strategic resources

Institutional and regulatory framework

The complexity of the Hungarian institutional and regulatory environment affects SMEs and has been a major target for reform. Also, Hungary ranks poorly for digital public services. The Public Administration and Public Service Development Strategy (2014-20) aims to reform administrative procedures. Initiatives include the expansion of online cash registers connected to tax authorities for services and business activities mainly provided by SMEs. The government is planning to create an Enterprise Web Portal as a single entry point to all public support programmes to SMEs. In 2018, a digital post service for businesses was introduced to facilitate the dialogue between government and businesses.

Market conditions

While backward participation in GVCs by Hungarian firms is well developed, with the electronics and automotive sectors attracting substantial FDIs, forward participation is relatively low. The Supplier Development Programme supports consortiums where larger companies facilitate SMEs for developing high value-added products, increasing productivity and using Industry 4.0 technologies. Also, the share of domestic value-added in exports has been falling over time. A National Info-Communication Strategy and the Digital Success Programme aim to promote digital export development. Since 2016 incentives are in place for SMEs to hire or buy expertise through mentor networks. To foster SME participation in public markets, since 2016, the Public Procurement Authority cooperates with FIVOSZ (Young Entrepreneurs Association Hungary) on raising awareness, training and consulting services.

Infrastructure

ICT investments and mobile broadband penetration are low in Hungary, compared to OECD levels. In 2017, the 5G Coalition was formed to incentivise the spread of 5G technologies, while the Superfast Internet Programme (2016) aims to provide high-speed network connection to the entire country. Measures to improve the energy performance of SMEs have also been implemented, with tax incentives for electric car purchases by SMEs introduced in 2016.

Access to finance

Since the 2008 recession, the volume of SME loans dropped in Hungary from the peak of 24.3% of GDP (2009) to 19.5% (2016). Data on new SME lending point to strong volatility and weakened confidence in the credit market. And about two-thirds of new SME loans are short-term which is high by international standards. The Central Bank has played a pivotal role in supporting SME access to finance, notably through the Funding for Growth Scheme (FGS, 2013-17) and the Market-based Lending Scheme (2016-19). A new version of the FGS, the FGS-Fix, will favour long-term lending by replicating the conditions of the previous versions (i.e. zero interest rate of refinancing funds for banks that lend to SMEs at a capped interest rate of 2.5%), but for long-term loans. The venture capital market is also improving, notably with the JEREMIE programme since 2008 and several new funds and the recapitalisation of the Széchenyi Capital Fund since 2017.

Access to skills

Adult literacy and workforce training are low by OECD standards. 23% of the adult population had attained tertiary education, below the OECD average of 34% (2016). And only 15% of SME workers participate in continuous vocational training (2015, Eurostat). With a more technology-driven economy, the government has stepped up efforts to upgrade the workforce skills and foster entrepreneurship through innovation in the education sector. In 2016, vocational high schools launched the European Money Week and established courses on entrepreneurship and financial literacy, while higher education institutions started providing practice-oriented courses and mentoring for start-ups.

Access to innovation assets

Hungarian SME participation in R&D and networks is on par with the OECD median but few of them actually innovate. A specified Programme identifies the fast growing innovative companies and offers them mentoring and training. The government has also launched the funding Prototype, Product, Technology and Service Development programme and a programme for Enhancing the competitiveness of SMEs through adaptive technological innovation. The Competitiveness and Excellence Cooperation Programme supports research consortiums on digital production technology, agricultural innovation and biotech development.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

European Commission (2018), *2018 SBA Fact Sheet, Hungary*, https://ec.europa.eu/docsroom/documents/32581/attachments/14/translations/en/renditions/native.

European Commission (2018), *DESI Report 2018 - Telecoms Chapters: Hungary*, https://ec.europa.eu/digital-single-market/en/news/desi-report-2018-telecoms-chapters.

European Commission (2018), *Digital Economy and Society Index (DESI) 2018 Country Report Hungary*, http://ec.europa.eu/information_society/newsroom/image/document/2018-20/hu-desi_2018-country-profile_eng_B4406CA5-96ED-7301-4ADE21CA97CA133A_52227.pdf (accessed on 15 November 2018).

European Commission (2017), *2017 SBA Fact Sheet, Hungary*, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwjAqL-m9dPeAhVLWxoKHZWHAhwQFjAAegQICRAC&url=http%3A%2F%2Fec.europa.eu%2FDocsRoom%2Fdocuments%2F26562%2Fattachments%2F14%2Ftranslations%2Fen%2Frenditions%2Fnative&usg=A (accessed on 15 November 2018).

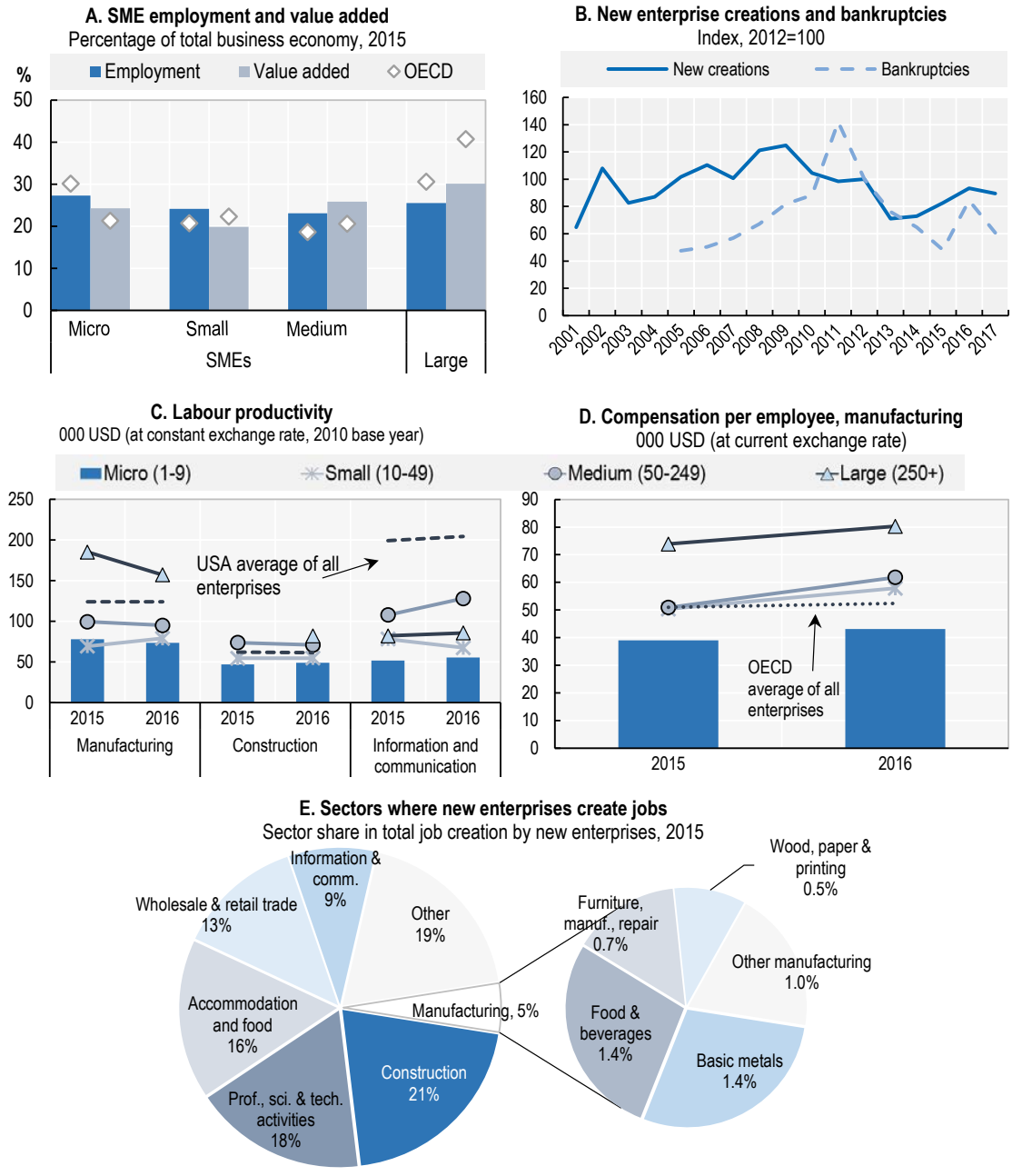
European Commission (2017), *Europe's Digital Progress Report (EDPR) 2017 Country Profile Hungary*, https://ec.europa.eu/digital-single-market/en/news/europes-digital-progress-report-2017 (accessed on 15 November 2018).

OECD (2017), *Hungary: Public Administration and Public Service Development Strategy, 2014-2020*, OECD Public Governance Reviews, OECD Publishing, Paris, https://doi.org/10.1787/9789264286535-en.

OECD (2016), *OECD Economic Surveys: Hungary 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-hun-2016-en.

Chapter 22. Iceland

Figure 22.1. Structure and performance of the SME sector in Iceland



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship database 2018;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925217

SME business conditions and access to strategic resources

Institutional and regulatory framework

Considering the size of its economy and administration, Iceland does not generally issue SME-specific policies. Relative improvements in the burden of administrative procedures have been observed, such as a decrease in the number of tax payments per year from 26 in 2008 to 21 in 2017. However, this is still almost twice the average of high-income OECD countries. In 2016, the Icelandic Committee on Trade Procedures and e-Commerce was appointed to implement a National Interoperability Framework in line with the EU Digital Agenda. The aim is to improve the e-commerce, transparency and user-friendliness linked to e-government procedures and criteria, and simplify administrative and trade procedures for businesses.

Market conditions

Returning to financial normality and establishing prudential economic policies has been Iceland's priority since the 2008 financial crisis. Capital controls were lifted as of March 2017 after the introduction of a series of gradual measures, such as a bill in 2016 allowing all current account transfers and halting limits to foreign exchange purchases and real estate investments, and the possibility since early 2017 to transfer deposits and securities to and from Iceland. The devaluation of the króna after the crisis facilitated the emergence of the tourism industry. International tourists have quadrupled since 2010, reaching ca. 1.75 millions in 2016, boosting investments in the related industries and new businesses openings.

Infrastructure

Iceland ranks first for internet usage among OECD countries, with 98% of Internet users in 2016. The Rural Fibre Project was launched in 2016 to bring fibre networks to 5.500 remote households and businesses, with approximately 1.500 households remaining in 2018. Works to renovate and expand the Keflavik airport to meet increasing demand are also ongoing in 2018, resuming investments in infrastructure after the neglect during the years of the crisis.

Access to finance

Following the 2008 banking crisis, access to finance in Iceland has improved in recent years, with no significant liquidity shortages reported for SMEs. The removal of the majority of capital control measures is expected to enhance business financing and investment. Alternative forms of finance have started to emerge besides banking, such as the VC fund Crowberry dedicated exclusively to women, established in 2016. In addition at the end of 2016, the InnovFin SME Guarantee agreement between the Icelandic Arion Bank and the European Investment Fund was announced, to fund SMEs and small mid-caps aiming at innovative products and services. The Nordic Investment Bank and Landsbankinn's seven-year loan programme for SMEs finance and environmental projects was launched in 2017.

Access to skills

Several governmental and private initiatives are taking place in Iceland to foster the entrepreneurial ecosystem and attract talented workers. The 2016 Innovation Bill allows

foreign specialists a 25% tax break in the first three years of employment, while Northstack, a tech and startup community set up in 2015, has launched the tech sector job board in 2018 to attract international tech labour. Clusters facilitating contacts and exchanges among entrepreneurs are also emerging. The recently opened Tourism Cluster House provides a facility where entrepreneurs, startups and large companies operating in the same industry can network, and where veteran entrepreneurs assist new entrepreneurs..

Access to innovation assets

Iceland relies substantially on international funding and SMEs for its business R&D: in 2015, 35% of related expenditures were funded from abroad and 90% of business R&D was undertaken by SMEs. Incentives for R&D were included in the 2016 Innovation Bill, including tax credits for innovation with an annual ceiling. From 2019, annual ceilings are planned to be removed to establish a more competitive environment for innovation, so that a 20% R&D tax credit will be applied without limitations.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

European Commission (2016), *2016 SBA Fact Sheet: Iceland*, https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwj4x8zD-NPeAhWpzIUKHTAUBpEQFjAAegQICBAC&url=https%3A%2F%2Fec.europa.eu%2Fdocsroom%2Fdocuments%2F22382%2Fattachments%2F17%2Ftranslations%2Fen%2Frenditions%2Fnative&usg (accessed on 15 November 2018).

European Investment Bank (2018), *EIB to Support Isavia in Development of Keflavík Airport*, http://www.eib.org/en/infocentre/press/releases/all/2018/2018-046-eib-to-support-isavia-in-development-of-keflavik-airport.htm (accessed on 15 November 2018).

European Investment Fund (2016), *EIF and Arion Bank sign EUR 107 Million Agreement for Innovative Icelandic Businesses*, http://www.eif.org/what_we_do/guarantees/news/2016/innovfin_arion_bank.htm (accessed on 15 November 2018).

Hillenius, G. (2018), *Iceland Fibre Network Focuses on Final 1500 Remote Sites*, https://joinup.ec.europa.eu/news/rural-fibre-100-mbs (accessed on 15 November 2018).

Hróbjartsson, K. (2018), *"Iceland is Sold Out" and the Competition for Tech Talent*, http://northstack.is/index.php/2018/06/07/iceland-is-sold-out-and-the-competition-for-tech-talent/ (accessed on 15 November 2018).

Invest in Iceland (n.d.), *Incentives and Support*, https://www.invest.is/doing-business/incentives-and-support (accessed on 15 November 2018).

Isavia (n.d.), *Masterplan 2014-2050.Keflavik International Airport*, https://www.isavia.is/media/1/kef-masterplan-hq-final_web.pdf (accessed on November 2018).

Lár, K. (2016), *"Innovation Bill" Passed in Parliament*, http://northstack.is/index.php/2016/06/03/innovation-bill-passed-in-parliament/ (accessed on 15 November 2018).

Nordic Investment Bank (2017), *NIB and Iceland's Landsbankinn Start New SME Facility*, https://www.nib.int/who_we_are/news_and_media/news_press_releases/2112/nib_and_iceland_s_landsbankinn_start_new_sme_facility (accessed on 15 November 2018).

Nordic Startup Bits (2016), *Crowberry Capital has Sights Set on Early Stage Startups in the Nordics*, http://www.nordicstartupbits.com/2016/12/26/crowberry-capital-sights-set-early-stage-startups-nordics/ (accessed on 15 November 2018).

Norðurskautið (2017), *Crowberry Capital is the Newest VC Fund in Iceland.*, https://us10.campaign-archive.com/?u=d20ac91f13450162e051a383c&id=abc8b1721e (accessed on 15 November 2018).

OECD (2017), *Highlights from the OECD Science, Technology and Industry Scoreboard 2017 - The Digital Transformation: Iceland*, http://www.oecd.org/iceland/sti-scoreboard-2017-iceland.pdf (accessed on 15 November 2018).

OECD (2017), *OECD Economic Surveys: Iceland 2017*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-isl-2017-en.

Romei, V. and H. Murphy (2017), *Boom, Bust and boom Again: Iceland's Economy in Charts*, https://www.ft.com/content/26270ef4-0a35-11e7-97d1-5e720a26771b (accessed on 15 November 2018).

Sigfusson, T. (2018), *The Idea Behind the Cluster House*, http://www.sjavarklasinn.is/en/the-idea-behind-the-cluster-house/ (accessed on 15 November 2018).

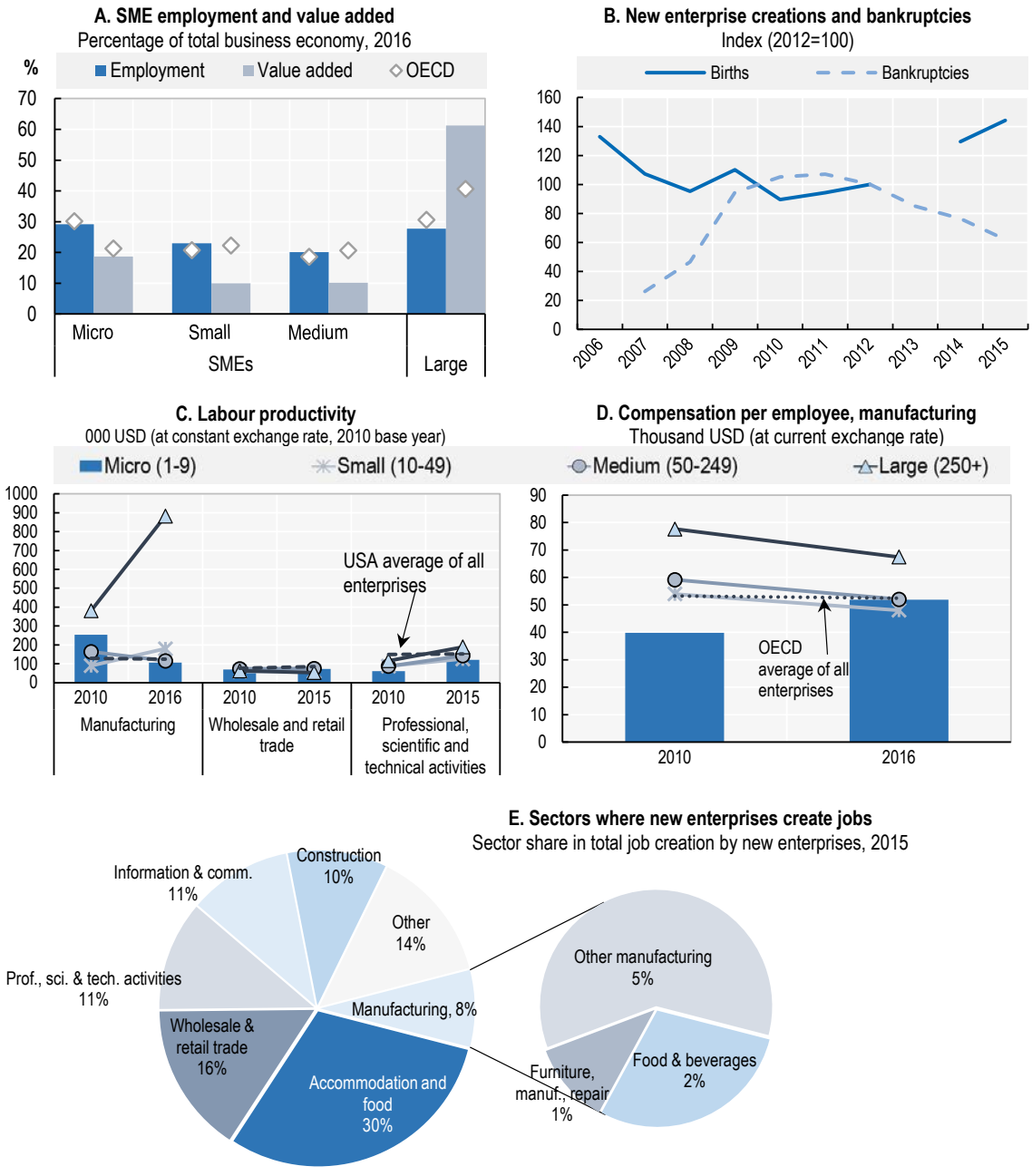
Sigurdardottir, R. (2018), *Iceland Spending $1 Billion on Boosting Airport Capacity*, https://www.bloomberg.com/news/articles/2018-01-15/booming-iceland-has-airport-spending-1-billion-on-capacity (accessed on 15 November 2018).

The Central Bank of Iceland (2016), *New Policy Instrument to Temper and Affect the Composition of Capital Inflows*, https://www.cb.is/publications/news/news/2016/06/04/New-policy-instrument-to-temper-and-affect-the-composition-of-capital-inflows/ (accessed on 15 November 2018).

World Bank Group (2018), *Economy Profile of Iceland*, World Bank, Washington, DC, https://openknowledge.worldbank.org/handle/10986/28718 License: CC BY 3.0 IGO.

Chapter 23. Ireland

Figure 23.1. Structure and performance of the SME sector in Ireland



Source: A, C, D. OECD Structural and Demographic Business Statistics Database 2018, http://dx.doi.org/10.1787/sdbs-data-en; *Source: B. For creations (employer enterprise births), OECD Structural and Demographic Business Statistics Database 2018; for bankruptcies, OECD Timely Indicators of Entrepreneurship Database 2018. Source*: E. OECD Structural and Demographic Business Statistics Database 2018, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925236

SME business conditions and access to strategic resources

Institutional and regulatory framework

Ireland is among the ten most competitive countries in the world when it comes to business regulation and red tape according to World Bank data. Ireland scores particularly well in terms of starting a business, paying taxes and protecting minority investors. The eGovernment Strategy (2017–20) aims to further improve access to and interaction with government services by businesses (and citizens). It aims, in broad terms, to comply as much as possible with the following general principles of the EU eGovernment Action Plan, i.e. 1) Digital by Default, 2) Only Once Principle, 3) Inclusiveness and Accessibility, 4) Openness and Transparency, 5) Cross-border by Default, 6) Interoperability by Default, 7) Trustworthiness and Security.

Market conditions

The Irish Government actively promotes foreign direct investment (FDI), and it has been very successful in attracting investments from foreign companies, especially from the US, to the benefit of the overall economy. IDA Ireland has overall responsibility for promoting and facilitating FDI, while Enterprise Ireland promotes joint ventures and strategic alliances between indigenous and foreign companies. In 2017, 455 meetings were scheduled between Irish exporters and multinationals during a two-day Enterprise Ireland/IDA Ireland "Global Sourcing" initiative. The purpose was to provide SMEs with opportunities to become suppliers to these companies, as well as to stimulate collaboration more generally.

Infrastructure

Broadband access remains sketchy outside of Dublin and other urban areas, limiting SME potential in more rural and remote areas of Ireland. In recognition of the importance of broadband access, the Government's National Broadband Plan (NBP) aims to ensure that all businesses (and citizens) have access to high speed broadband irrespective of their geographical location. The plan, launched in 2012 was considerably updated in December 2015, to focus attention and channel government resources to regions where commercial investment is unlikely to materialise otherwise (around 30% of the country).

Access to finance

Access to finance remains problematic for many Irish SMEs, as comparative business survey data across the OECD illustrates. Interest rates charged to SMEs in May 2018 stood at 4%, almost twice the EU average and the use of personal guarantees appears to be more widespread. In view of the planned exit of the UK, Irelands's foremost trading partner, from the EU, the Brexit Loan Scheme was lauched in March 2018 providing loans to eligible SMEs ranging from EUR 25 000 to EUR 1.5 million at an interest of 4% or below. Furthermore the Future Growth Loan Scheme announced in Budget 2019 will make a fund of up to EUR 300 million available to SMEs for terms of 8-10 years. The scheme will support long-term, strategic investment in a post-Brexit environment. Finance provided under the scheme will be competitively priced and have favourable terms, with loans of up to EUR 500 000 unsecured. The scheme is to be launched in early 2019 and will sit alongside the Brexit Loan Scheme as part of a suite of Brexit supports.

Access to skills

Ireland is a strong innovator and its relative innovation score in the European Innovation Scoreboard has improved between 2010 and 2017. The government introduced "Innovation 2020" in December 2015, a five-year strategy on R&D, science and technology with annual progress reports to monitor if key performance indicators are moving in the right direction. A key ambition of the Strategy is to increase total investment in R&D in Ireland, led by the private sector, to 2.5% of GNP. The establishment of private-public partnerships is a central part of achieving this goal.

Access to innovation assets

Ireland does well on innovation and its performance has increased relative to the EU average between 2010 and 2017. Nonetheless, the Irish Government introduced "Innovation 2020" in December 2015, a five year strategy on research and development, science and technology with annual progress reports to monitor if key performance indicators are moving in the right direction. A key ambition of the Strategy is to increase total investment in R&D in Ireland, led by the private sector, to 2.5% of GNP. The establishment of private-public partnerships is a central part of achieving this goal.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Department of Communications, Energy and Natural Resources (2015), *National Broadband Plan - Connecting Communities*, https://www.dccae.gov.ie/documents/Updated%20Strategy%20December%202015.pdf.

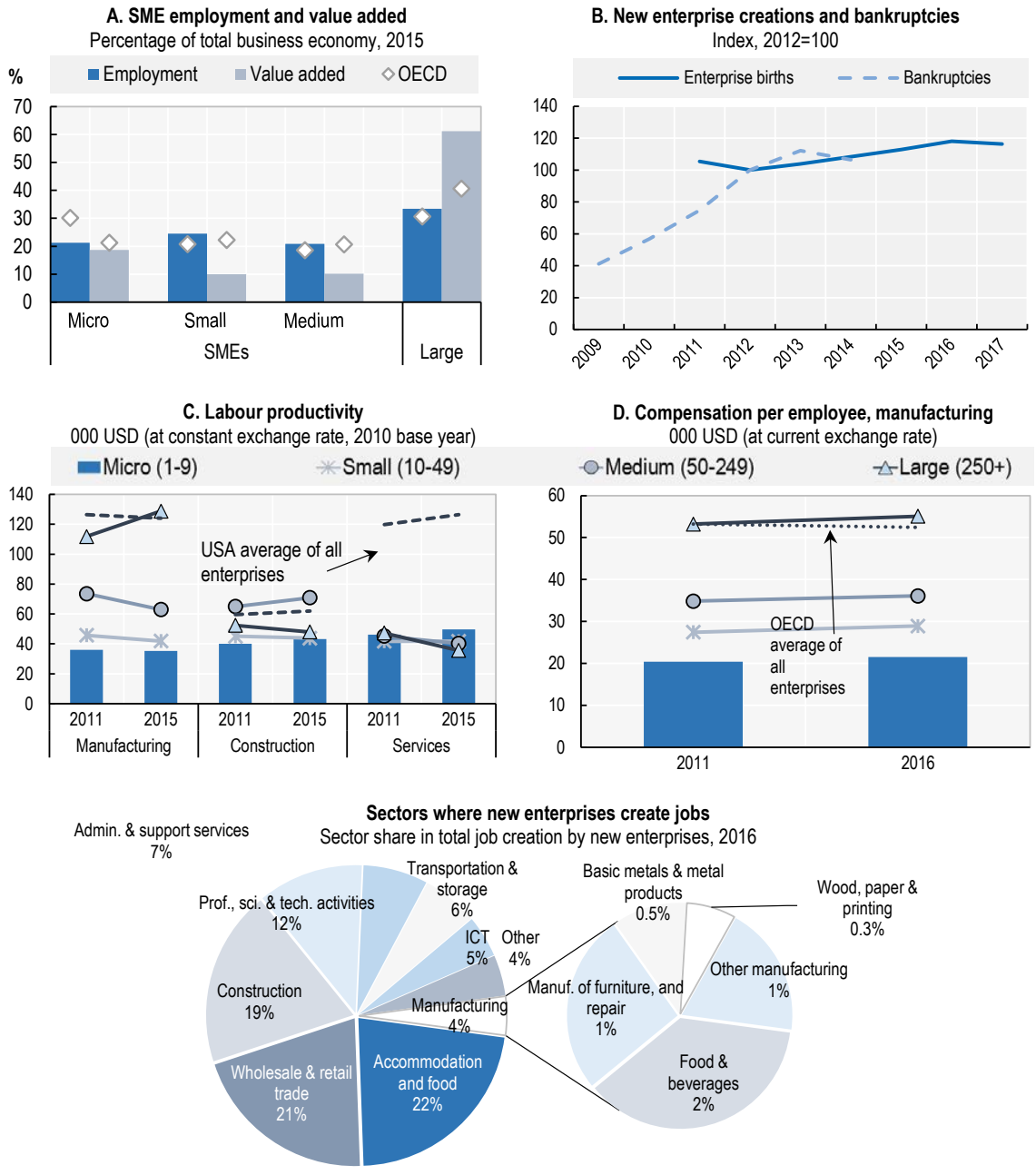
Department of Public Expenditure and Reform (2017), *eGovernment Strategy 2017–2020*, https://egovstrategy.gov.ie/wp-content/uploads/2017/07/eGovernment-Strategy-2017-2020.pdf.

EC (2018), *Ireland*, European Innovation Scoreboard 2018, European Commission, https://ec.europa.eu/docsroom/documents/30686.

Interdepartmental Committee on Science, Technology and Innovation (2015), *Innovation 2020 - Excellence, Talent, Impact - Ireland's Strategy for Research and Development, Science and Technology*, https://dbei.gov.ie/en/Publications/Publication-files/Innovation-2020.pdf.

Chapter 24. Israel

Figure 24.1. Structure and performance of the SME sector in Israel



Notes: Chart A, Data cover 05-82 of ISIC Rev.4. Employment data refer to employees; Charts C, D. Data for Israel exclude information for non-employer enterprises.

Sources: A, C, D. *OECD Structural and Demographic Business Statistics Database 2018.* (http://dx.doi.org/10.1787/sdbs-data-en) *Source:* B. For creations (employer enterprise births), *OECD Structural and Demographic Business Statistics 2018*; for bankruptcies, *Financing SMEs and Entrepreneurs 2018: An OECD Scoreboard. Source*: E. OECD Structural and Demographic Business Statistics 2018, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925255

SME business conditions and access to strategic resources

Institutional and regulatory framework

Israel's business environment suffers from high levels of bureaucracy, and there is room to lower regulatory burdens. Regulatory Impact Assessments are mandatory since 2016, and the government has committed to cutting the regulatory burden on businesses by 25% by 2019. The impact of new laws on competition is now assessed as well. In addition, a new law aims to simplify the cumbersome licensing and permit system by making it more difficult for municipalities to add local requirements on top of national ones. Israel has also engaged several land-use planning reforms to streamline construction procedures and address housing market congestion.

Market conditions

In Israel the lack of competition and high non-tariff barriers in many sectors, notably electricity and food, push prices up. The government plans to increase domestic market exposure to imports via the Internet and bring regulation for imports in line with most OECD countries. Moreover, with a view to leveraging the large public procurement market, the Israeli government has taken steps for streamlining and standardising tender procedures, encouraging staff professionalisation and centralising e-procurement. The 2017 Morality of Payments to Suppliers Law fixes the maximum period within which payments to suppliers can be made and increases transparency in payments.

Infrastructure

Israel has invested heavily in R&D and ICT but the country still suffers from an infrastructure deficit, especially in public transport and clean energy. The 2017-2018 Budget introduced tax incentives to foster investments in the gas network and the adaptation of business premises to this energy source. Several public transport projects are also underway. A high-speed rail link was opened between Jerusalem and Tel Aviv in 2018. The government plans to finance the construction of a light inter-city rail system between 2019 and 2023 for a total cost of NIS 60 billion (4.9% of GDP), in part through public-private partnerships. The same budget will serve to improve bus transport in Tel Aviv.

Access to finance

Venture capital investment in Israel hit an all-time high in 2017 (USD 5.2 billion), which goes almost entirely to the high-tech software and Internet industries. Alternative sources are on the rise as other industries seek financing, and a new market for peer-to-peer (P2P) loans has been growing. Debt credit conditions are more constrained: 95% of bank credit to SMEs is provided by five major banking groups. The government has adopted a series of measures for enhancing competition in the banking industry and lowering SME financing costs. A Credit Data Law (2016) improves data accessibility with a new central database. A 2017 Law raises competition in credit card markets, and a state-guaranteed SME fund was set up in 2016 to expand credits available. A 2017 Law regulates P2P lending, and the same year Israel enacted crowd-financing regulations for R&D firms and SMEs.

Access to skills

There is a wide dispersion of skills in Israel in terms of adult competencies, with weak outcomes among Arab and Ultra-Orthodox communities. Deficiencies in the education and the vocational education and training system create labour mismatches. There are also signs of skills shortages in the high-tech industry. In 2016, the government introduced a pilot apprenticeship programme and increased expenditure on job training programmes to strengthen participation. The National Programme for Increasing Skilled High-Tech Workforce (2017) plans both long-term efforts (e.g. by raising graduate cohorts in high-tech professions by 40%) and short-term actions to optimise the existing potential (e.g. by developing Coding Bootcamps).

Access to innovation assets

Israel has achieved a remarkable performance in the high-tech sector, but performance has weakened since 2010, mainly due to skills shortages. The new Israel Innovation Authority (2016) brings together science and industry policy agenda to foster innovation diffusion, close the innovation gap among non-high-tech SMEs, modernise traditional industries and help firms grow. The tax regime for high-tech companies changed in 2016, with a reduced CIT rate on intellectual property income. A new e-commerce programme was also set up in 2017 to encourage SMEs to open digital shops.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Kuczera, M., T. Bastianić and S. Field (2018), *Apprenticeship and Vocational Education and Training in Israel*, OECD Reviews of Vocational Education and Training, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264302051-en.

OECD (2018), *OECD Economic Surveys: Israel 2018*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-isr-2018-en.

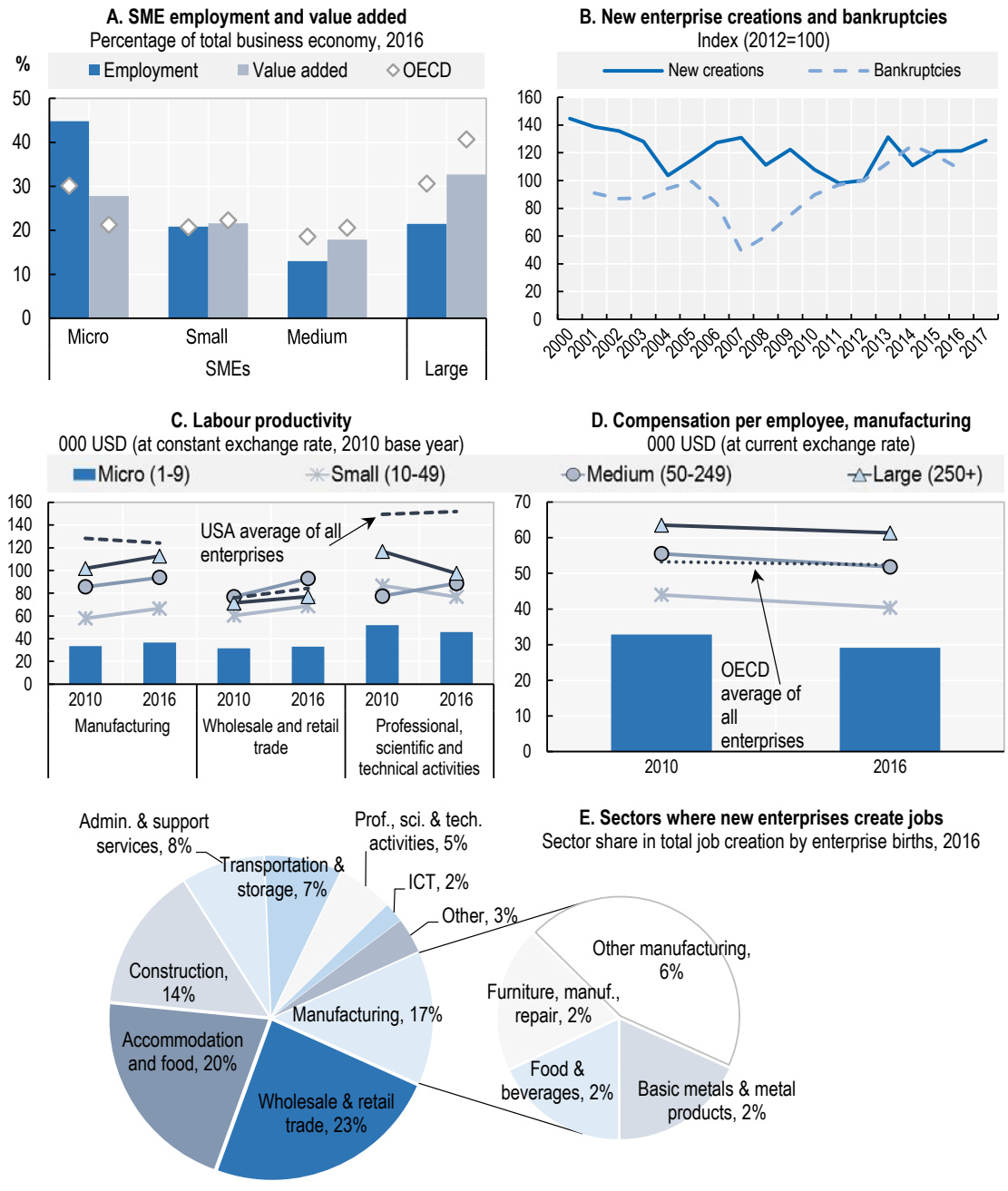
OECD (2016), *SME and Entrepreneurship Policy in Israel 2016*, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264262324-en.

Note for Israel

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.

Chapter 25. Italy

Figure 25.1. Structure and performance of the SME sector in Italy



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B*: OECD Timely Indicators of Entrepreneurship Database 2018;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925274

SME business conditions and access to strategic resources

Institutional and regulatory framework

In recent years, Italy has made progress in opening up markets to competition, although there is still room to address regulatory bottlenecks which curb competition in professional services, lower barriers relating to state controls and improve efficiency of public administration. Italy's Startup Act, launched in 2012, aims to create a favourable environment for innovative startups, including through "fast-track" and zero cost incorporation and simplified insolvency procedures. In 2018, the OECD evaluation of the Italian Startup Act showed that the policy has a sizable impact on start-up growth. In 2017, a three-year plan for the digital transformation of the public administration establishes a digital development model for enhancing efficiency in central and local administrations.

Market conditions

Export growth has supported Italy's economic recovery, although less than in past post-crisis periods. SMEs in 2016 accounted for 59% of total international trade. However, their participation in global markets is affected by small scale, low productivity growth and limited integration in global value chains, due also to low inward FDI levels, compared to other large EU economies. A "special plan" (piano straordinario) to promote the "Made in Italy" abroad and attract foreign investments is in place. This includes support to innovative promotion strategies, e-commerce and investment in fixed capital assets and technologies.

Infrastructure

Italy scores close to the OECD average for ICT and logistic infrastructure and is expanding its NGA (Next Generation Access) coverage, with planned investments aiming to reach more people and SMEs, including in rural and underserved areas. On the other hand, Italy scores relatively low on investment and maintenance spending on inland transport. Investments in energy infrastructure are mostly focused on renewable energy sources and energy efficiency, including energy audit obligations for certain SMEs, with financial support provided by central and regional governments.

Access to finance

Against the backdrop of a gradual economic recovery, business loans expanded in 2017-18, but unevenly with a downward trend for smaller firms. Collateral requirements grew slightly, but cost of credit (and payment delays) dropped to the lowest level since the crisis. The Central Guarantee Fund played an important role in expanding access to credit. A new evaluation system of firms' creditworthiness was introduced in 2018. The 2017 budget created long-term individual savings plans, eligible for tax exemptions, to channel private savings towards financial instruments issued by Italian companies. Also, unlisted SMEs that issue bonds ("minibonds") benefit from tax reliefs and streamlined procedures. Finally, as of 2017 access to equity crowdfunding has been extended to all SMEs. The same year, equity investors in start-ups and innovative SMEs were eligible to a 30% tax deduction (for up to EUR 1M for individuals and EUR 1.8M for legal entities).

Access to skills

Low skills levels and weak demand for high skills or existing skills have weighted on Italy's productivity for the past 15 years. Efforts have aimed to strengthen the cooperation between universities and SMEs and ensure that academic curricula better meet the labour market requirements. As part of the 2018 budget law, a pilot 40% tax credit has been introduced for firms that invest in their workforce training on Industry 4.0 technologies. In addition, the largest regional employers' association, Assolombarda, is leading a pilot programme T.I.M.E (Training Innovation Management Experience) which helps managers identify their skills needs and develop appropriate "skills development programmes".

Access to innovation assets

The national Industry 4.0 Plan (2016) provides a range of fiscal incentives to invest in innovation (R&D tax credit, patent box, hyper-amortisation for the purchase of connected machinery) and skills and sets up a network of technological hubs, e.g. Digital Innovation Hubs and Competence Centres, to help SMEs seize the opportunities of digital technologies. The first results were promising and marked an overall improvement of firm expenditure in R&D and innovation. In 2017, the Government launched various "awareness" initiatives , mostly directed at SMEs, about the use and potential of new ICT technologies applied to production.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

AGID (2018), *Infrastrutture | Agenzia per l'Italia digitale*, https://www.agid.gov.it/index.php/it (accessed on 24 August 2018).

Italian Government (2019), *The Three-Year Plan*, https://pianotriennale-ict.italia.it/en/plan/.

Italian Government (2017), *Italy's National Plan Impresa 4.0 - Results from 2017 - Actions for 2018*, https://www.mise.gov.it/images/stories/documenti/impresa_40_risultati_2017_azioni%202018_rev_eng.pdf.

Italian Government (2017), *Italy's Plan - Industry 4.0*, http://www.sviluppoeconomico.gov.it/images/stories/documenti/2017_01_16-Industria_40_English.pdf (accessed on 24 August 2018).

Italian Government (n.d.), *National Industry 4.0 Plan (Impresa 4.0)*, Ministry of Economic Development, https://www.mise.gov.it/index.php/en/202-news-english/2036690-national-industry-4-0-plan.

Menon, C., et al. (2018), "The evaluation of the Italian 'Start-up Act'", *OECD Science, Technology and Industry Policy Papers*, No. 54, OECD Publishing, Paris, https://doi.org/10.1787/02ab0eb7-en.

OECD (2019), *Economic Survey of Italy - Italy Economic Snapshot*, OECD, Paris, http://www.oecd.org/economy/surveys/italy-economic-snapshot/.

OECD (2018), *Italy - Economic Forecast Summary (May 2018)*, http://www.oecd.org/eco/outlook/italy-economic-forecast-summary.htm (accessed on 24 August 2018).

OECD (2017), *Skills Strategy Diagnostic Report - Italy*, https://www.oecd.org/skills/nationalskillsstrategies/Diagnostic-report-Italy.pdf (accessed on 24 August 2018).

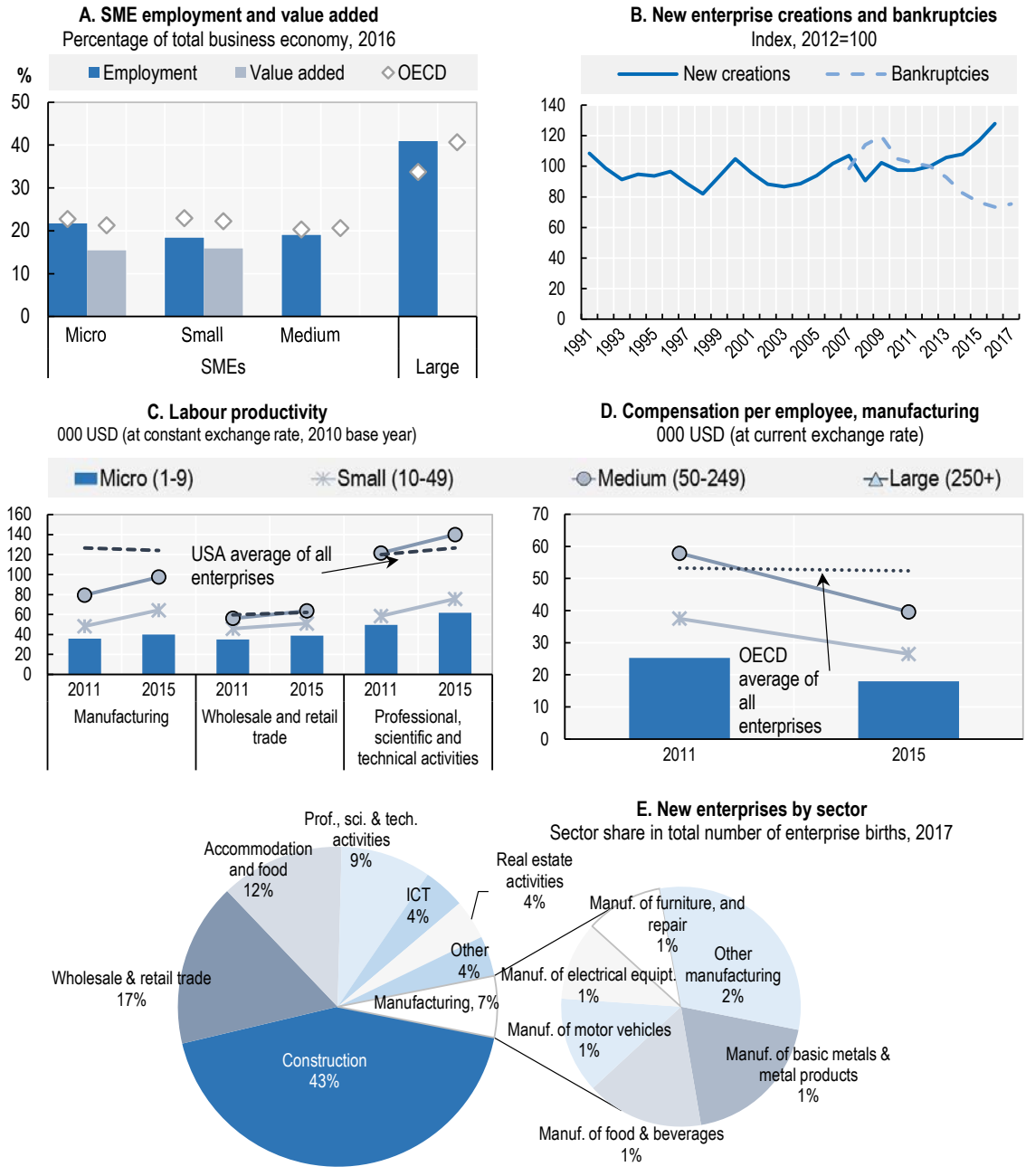
OECD (forthcoming), *Economic and Social Implications of the Italian "Start-up act",* https://one.oecd.org/document/DSTI/CIIE(2018)3/en/pdf (accessed on 24 August 2018).

Presidenza del Consiglio dei Ministri (n.d.), *The Italian Strategy for Next Generation Access Network*, https://www.agid.gov.it/sites/default/files/repository_files/documentazione/next_generation_access_network_-_english_version.pdf.

ReteAgevolazioni (2018), *Piano Straordinario Made in Italy*, https://www.reteagevolazioni.it/piano-straordinario-made-in-italy/.

Chapter 26. Japan

Figure 26.1. Structure and performance of the SME sector in Japan



Note: Chart A. Value added data refer to 2011. Charts C, D. Data on employment refer to number of employees and the reference year 2016. Also, due to data availability for Japan, labour productivity is measured as value added for employee, instead of value added per persons employed.

Source: Chart B. OECD *Timely Indicators of Entrepreneurship database 2018*. Charts A, C, D. OECD Structural and Demographic Business Statistics Database 2018. (http://dx.doi.org/10.1787/sdbs-data-en). E. Ministry of Health, Labour and Welfare of Japan, "*Employment Insurance Business Annual Report*".

StatLink http://dx.doi.org/10.1787/888933925293

SME business conditions and access to strategic resources

Institutional and regulatory framework

Corporate insolvency regime in Japan is among the most efficient in the OECD area. Conditions for starting a business and the regulatory framework remain however comparatively complex. The Basic Policy on Economic and Fiscal Management and Reform 2018 provides the framework for regulatory reforms including a reduction of the costs associated with administrative procedures and the promotion of a Regulatory Sandboxes System. Conditions for business transfers have also been revised in 2018 with reduced taxation on the succession of licenses and permits and the implementation of new regional business succession support agencies.

Market conditions

Japan is strongly integrated into GVCs, especially in Asia, and is a major exporter of high value-added goods. Rising trade protectionism has become a key factor of vulnerability given the country's export-driven growth since mid-2016. The Basic Policy on Economic and Fiscal Management and Reform 2018 foresees comprehensive support for the overseas development of SMEs, including by strengthening legal capacity in international disputes and arbitration (e.g. research assistance by legal professionals and translation of Japanese laws).

Infrastructure

Seven years after the Great Earthquake, almost all the production facilities have been recovered and Japan is aiming to construct the Next Generation Infrastructure Maintenance System. The government is to reach the target amount of about JPY 30 trillion of orders for infrastructure systems in 2020. Applying smart technology to infrastructure development is seen as a priority for achieving the government's vision of a data-driven 'Society 5.0'. The 2017 New Economic Policy Package plans to deliver automated-vehicle transport services by 2020 and to support the diffusion and use of 3D data and ICT in the construction sector. A programme was launched in 2017 to detach experts in SMEs and diffuse information and best practices on technological innovation in the construction industry.

Access to finance

SME lending in Japan has steadily increased since 2013, against the backdrop of very low interest rates, with SME outstanding loans surpassing the pre-crisis levels in 2016. Venture capital investments have also recovered, with continued year-on-year positive growth over 2015-17. Out of the 3.8 million SMEs active in Japan (2017), over 1.3 million benefit from public credit guarantees. In 2017, the government reformed the credit guarantee programme to reduce banks' over dependence on credit guarantees and encourage lending based on business evaluation. The reform foresees a decrease of the guarantee coverage ratio for depressed industries from 100% to 80%, but also introduces a 100% guarantee for start-ups to promote private sector innovation.

Access to skills

Japan has a highly educated workforce with skills for tech-advanced industries. Nonetheless, in 2016, 48.2% SMEs reported shortages in core personnel. Also, due to the

ageing of entrepreneurs, business exits hit a record high in 2017 despite a decline in bankruptcies. The Basic Policy on Economic and Fiscal Management and Reform 2018 puts priority on a Human Resources Development Revolution. The reform capitalises on women, disadvantaged students and life-long learning through financial incentives for training providers, free university education for low-income students, free early children education and an extension of childcare provision. The government is also revising the visa and residence status of foreign workers and students.

Access to innovation assets

Japan is a global leader as per its R&D intensity (3.14% of GDP in 2016). However, business R&D is mostly concentrated in large firms and SME participation remains among the lowest in the OECD area. Japanese SMEs tend also to make less use of digital technologies than SMEs in most other OECD countries. The 2016 Open Innovation Platform for Enterprises, Research Institute and Academia (OPERA) involves SMEs at the pre-competitive stage into collaborative partnerships. The 2017 New Economic Policy Package proposes an amendment to the Patent Act for reducing SME patent fees by half. It also introduces financial measures for SMEs to invest in facilities and ICT equipment.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Cabinet Office (2018), *Basic Policy on Economic and Fiscal Management and Reform 2018 (Jun. 15, 2018)*, http://www5.cao.go.jp/keizai-shimon/kaigi/cabinet/2018/2018_basicpolicies_en.pdf (accessed on November 2018).

CPFIJ (2017), *Council for Promotion of Foreign Direct Investment in Japan Working Group for Revising Regulations and Administrative Procedures Final Report (Summary)*, http://www.invest-japan.go.jp/policy/simplify_regulations_and_procedures/compilation_report_summary_en.pdf.

JapanToday (2018), *The Growth of Robotics in Japanese Schools*, https://japantoday.com/category/features/lifestyle/the-growth-of-robotics-in-japanese-schools.

METI (2018), *Cabinet Decision on the Bill for the Act on Special Measures for Productivity Improvement and the Bill for the Act of Partial Revision of the Industrial Competitiveness Enhancement Act, etc.*, Ministry of Economy, Trade and Industry, https://www.meti.go.jp/english/press/2018/0209_002.html

Nikkei Asian Review (2018), *Chinese Robotics Startup Cracks the Code for Western Markets*, https://asia.nikkei.com/Spotlight/Startups-in-Asia/Chinese-robotics-startup-cracks-the-code-for-Western-markets.

NISTEP (2015), *Report on the Forth Round of the Japanese National Innovation Survey (J-NIS 2015), NISTEP REPORT No 170*, http://doi.org/10.12108/nr170.

OECD (2018), *Japan: Promoting Inclusive Growth for an Ageing Society.*, OECD Publishing, Paris, https://doi.org/10.1787/9789264299207-en.

OECD (2018), "Japan", in *OECD Economic Outlook, Volume 2018 Issue 1*, OECD Publishing, Paris, https://doi.org/10.1787/eco_outlook-v2018-1-29-en.

OECD (2018), *Unemployment Rate (Indicator)*, http://dx.doi.org/doi: 10.1787/997c8750-en.

OECD (2017), *Japan Policy Brief: Improving the Performance of Japan's SME Sector*, http://www.oecd.org/policy-briefs/japan-economy-improving-the-performance-of-japan-sme-sector.pdf.

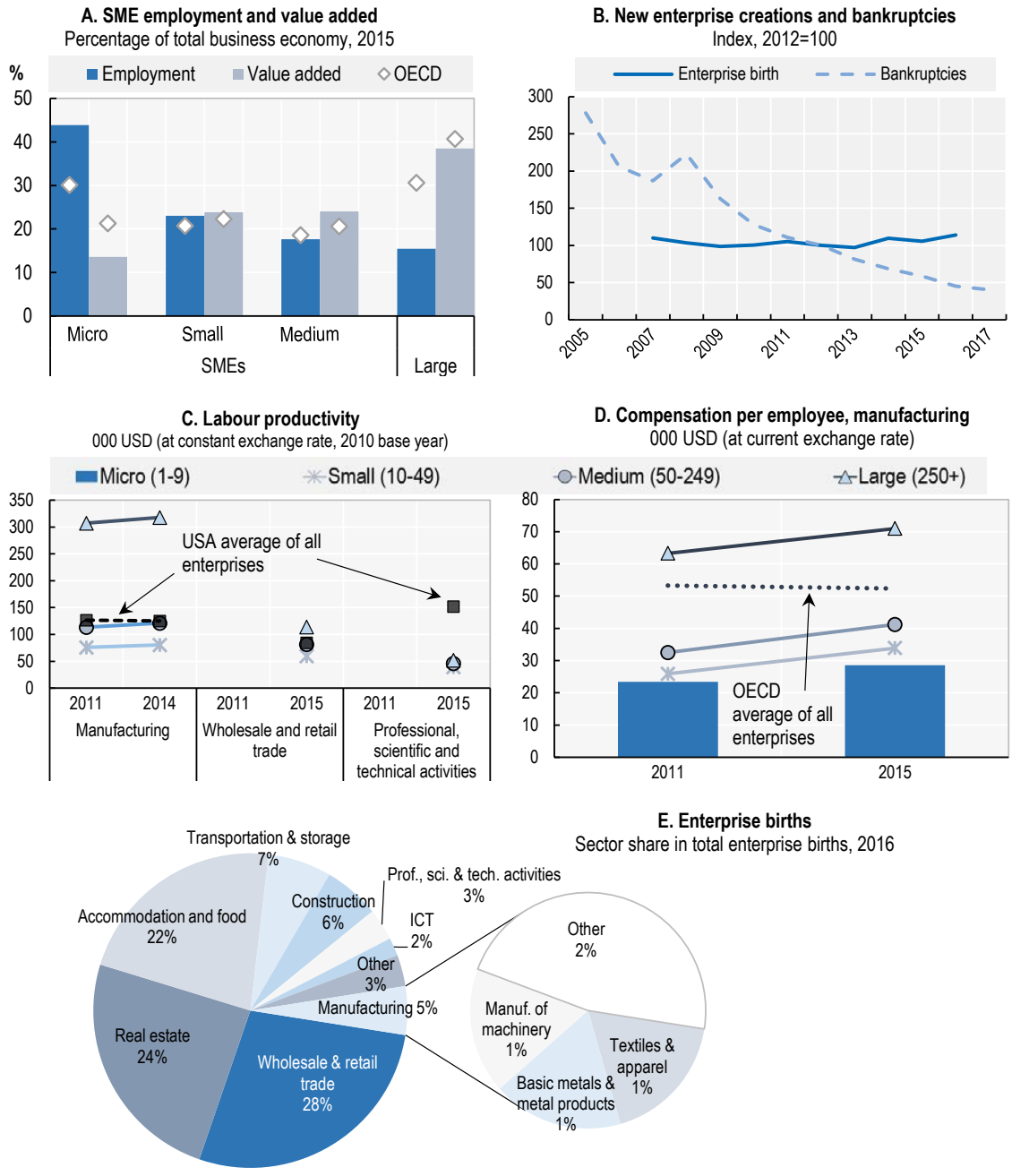
OECD (2017), *OECD Economic Surveys: Japan 2017*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-jpn-2017-en.

SMEA/METI (2017), *2017 White Paper on Small and Medium Enterprises in Japan*, http://www.meti.go.jp/english/press/2017/0421_003.html.

ZDNet (2018), *Japan Set to Deploy English-speaking Robots to Schools: Report*, https://www.zdnet.com/article/japan-set-to-deploy-english-speaking-robots-to-schools-report/.

Chapter 27. Korea

Figure 27.1. Structure and performance of the SME sector in Korea



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: For enterprise births, *OECD Structural and Demographic Statistics Database 2018;* for bankruptcies, *OECD Timely Indicators of Entrepreneurship Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, All enterprises Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925312

SME business conditions and access to strategic resources

Institutional and regulatory framework

Korea has a very supportive administrative and regulatory framework, especially in terms of resolving insolvency, but the regulatory system is constraining as it prohibits what is not legally allowed. The 2017 Liberalisation Plan, by targeting specific geographic areas and industries (e.g. ICT), has been a first step towards a system allowing everything except what is prohibited. Regulatory sandboxes were implemented in 2017 with temporary licenses in sectors using new technologies. Regulatory Free Zones were enacted in 2018 for new products and technologies. The government also encourages regulatory innovation in micro and small businesses by incentivising them to review ways of exempting or deferring regulations.

Market conditions

Korea's growth model has been led by exports from large corporate groups (chaebols) and driven by key industries (e.g. semiconductors). Korea's integration into GVCs is above the OECD median but SME contribution, including through indirect exports, appears limited. Korea is expanding assistance to SME exporters, such as through the on/off-line SME Export Support Centres that facilitate contacts between SMEs and overseas buyers. Since 2016, the Tech Incubator Program for Startup (TIPS) attracts initial investment from private accelerators to support mentoring, funding, and networking of start-ups, e.g. for establishing overseas subsidiaries or attracting foreign investment. Since 2017, the K-Gobal Accelerator programme supports SME overseas expansion in adapting products to global demand, setting a business model and liaising with foreign investors.

Infrastructure

Korea is one of the largest OECD investors in inland transport, ICT and R&D (relative to GDP). The country has built secure and affordable broadband networks. The 4th Science and Technology Basic Plan (2018-22) delineates heavy investments in the next industrial technologies, such as artificial intelligence (AI) or high-performance computing. I-Korea 4.0 (2018) aims to create intelligent networks with state-of-the-art digital technologies. The Mid- to Long-Term Master Plan in Preparation for the Intelligent Information Society (2016) develops data infrastructure, from 5G to brain science to maths for AI.

Access to finance

The stock of SME outstanding loans expanded in Korea in 2017 in a context of low interest rates. Venture capital investments also doubled since 2007 and, as a share of GDP, compare high to OECD levels. The government has focused efforts on targeting financial support towards SMEs and aims to allocate 60% of total public support to early-stage enterprises. The Innovation Venture Capital Fund earmarks KRW 10 trillion, of which KRW 6.3 trillion from private funds, to finance start-ups, ventures and SMEs over three years starting in 2018.

Access to skills

Korea's adult population is highly educated but national data point to labour shortages with 10-15% of SMEs reporting difficulties in hiring over 2016-18. Korea is shifting

from an export-led to an income-led growth model and is putting emphasis on increasing labour force participation of women, youth and the elderly. The government plans to enhance early childcare programmes and increase the take-up of parental leave. The 2017-21 Fiscal Management Plan increases subsidies for SMEs that hire young workers (under 34) and provides personal income tax deductions for youths employed by SMEs. In addition SMEs are encouraged to adopt profit-sharing plans with their employees and SME employees are provided with incentives for investing in employer funds. As part of its continued impulse to entrepreneurship, the Ministry of SMEs and Startups (MSS) carries out various educational programmes for developing entrepreneurial contents and curriculum, including the education business since 2015 and the professional development of 3 700 educators by end 2018.

Access to innovation assets

Korean SMEs are among the most active in R&D in the OECD but the less engaged in digital transformation and networks. The government aims to make SMEs a driver of the fourth industrial revolution. The MSS was created in 2017. It gathers all support programmes for SME innovation and entrepreneurship. It also supports the creation of corporate research centres based on industry-science cooperation and mainly targeted to SMEs, with a view to giving them access to cutting-edge technologies. The Korean government has been making efforts to help 30 000 SMEs establish smart factories by 2022 in collaboration with private sector.

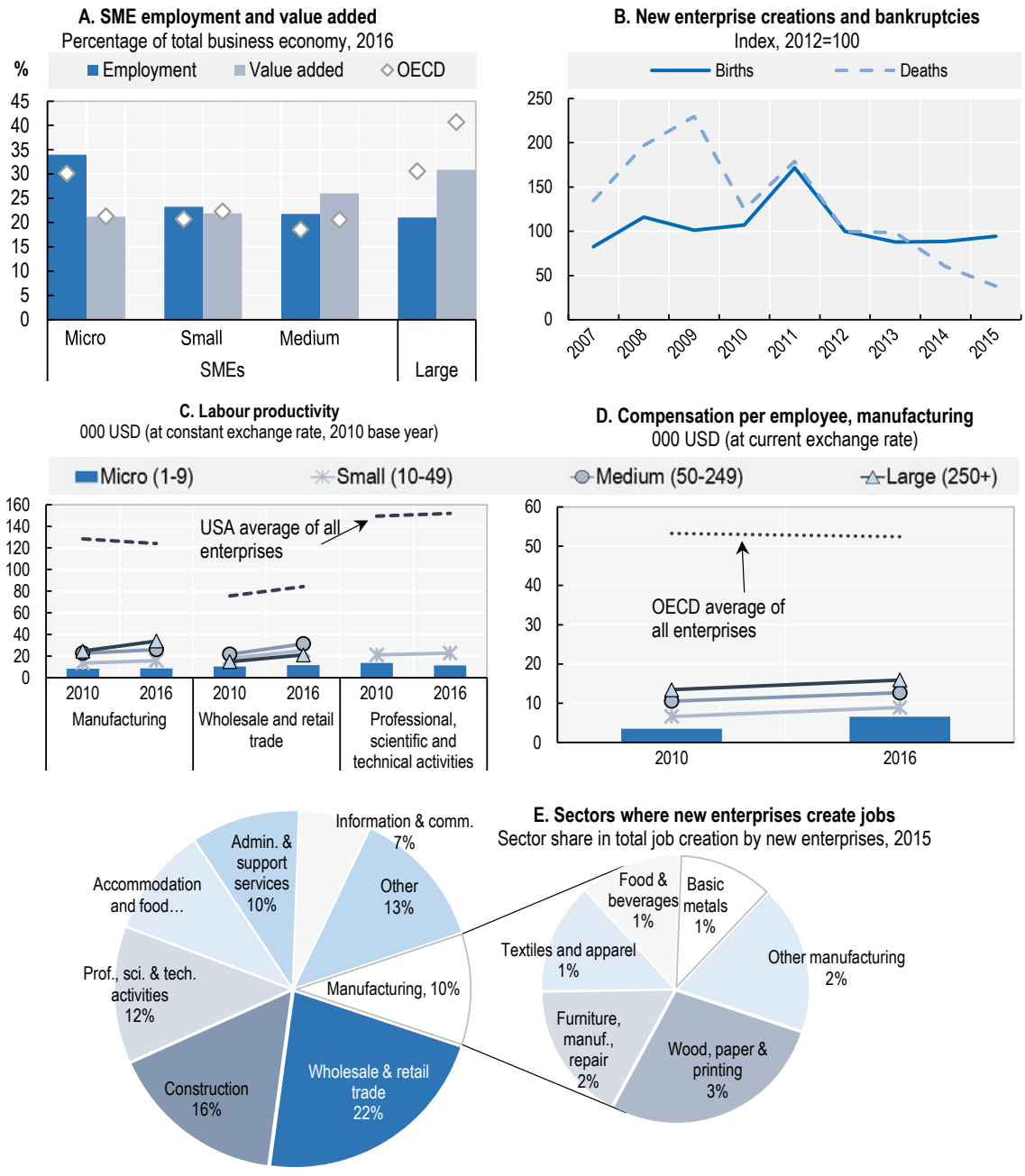
The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

OECD (2018), *OECD Economic Surveys: Korea 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-kor-2018-en.

Chapter 28. Latvia

Figure 28.1. Structure and performance of the SME sector in Latvia



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Structural and Demographic Business Statistics Database 2018,* Employer Business Demography dataset; Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925331

SME business conditions and access to strategic resources

Institutional and regulatory framework

Latvia's regulatory framework performances are in many respects on par, or above, OECD median. The 2017 Action Plan for Business Environment Improvement introduces improved online business registration, digitalisation of public services, monitoring of insolvency proceedings and a single account for all tax payments. A 2018 tax reform aims to increase tax predictability until 2021 with differential treatment for SMEs and start-ups. Latvia has engaged in reorganising the judicial map, through consolidated municipal courts for more rapid procedures, a training programme until 2022 and out-of-court arbitration settlements. This reform is part of a broader agenda to restore trust in government. The new Business Environment Improvement Plan (2019-21) foresees more customer-oriented services, a competitive tax system, opening the business environment and promoting innovation.

Market conditions

While difficult to estimate, the informal economy could account for 22% of GDP in Latvia, well above estimates for peer countries. Informal activities undermine fair competition and is an obstacle to foreign investment and firm expansion. The government has made considerable efforts to reduce informality by intensifying tax audits, labour controls, sanctions and fines. Co-ordination among tax authorities, labour inspectors and customs has also been strengthened and a better use of ICT for tax compliance is planned.

Infrastructure

The quality of Latvian infrastructure falls short as compared to other countries of the region. Latvia underperforms in particular in terms of the reliability of energy supply and the affordability of electricity for industry. The desynchronization of the Baltic states from the Russian power grid is to be completed by 2025 as well the Baltic Energy Market Interconnection Plan. EUR 32.5 million have been earmarked in 2017 in order to promote an efficient use of energy resources and the transition to renewable energy in the manufacturing sector. Measures include energy audits or the introduction of energy management systems.

Access to finance

In Latvia, SME lending declined sharply in the aftermath of the crisis and followed a lower level stable pattern in recent years, despite historically low interest rate. Equity and short-term non-bank liabilities (e.g. trade payables) are the primary source of funding for smaller firms. The government put priority on improving SME access to finance. ALTUM, the national development financing institution, introduced start-up and micro loans in 2016 and portfolio guarantees in 2017. Since 2017 as well, long-term export credit guarantees complement short-term guarantees. Seven venture capital funds backed by EU structural funds for a total EUR 75 million and a minimum EUR 30 million from private sources began operations in 2018.

Access to skills

Latvia's adult literacy, access to training and student proficiency is below OECD median. Job mismatches are significant and the under-skilling level is among the highest in

European countries. The government has engaged important reforms for improving the quality of vocational education and training (VET) and curricula have been upgraded. Students, often from lower-income background, receive stipends during their workplace-based learning. The regulation of Sectoral Expert Councils (2016) involves entrepreneurs more closely in VET. In parallel, SMEs receive financial support for training, with EUR 6.9 million granted for ICT and non-tech trainings or trainings for attracting foreign investments. The Plan of Adult Education Governance Model (2016-20) aims to upskill employed adults with a focus on older and low-skilled workers.

Access to innovation assets

Skills shortage holds back firms' adoption of advanced technologies or management practices. Despite an integration into business and international innovation networks on par with the OECD median, there are few Latvian SMEs moving to new digital-enhanced processes. Among other initiatives, a new programme (2016-22) supports the introduction of new products and technologies into production. An integrated Business Incubator programme (2016-23) proposes funding solutions, consultations, trainings and technology acceleration services through incubators in regions. The Cluster programme (2016-22) promotes cooperation for new product development.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

EC (2017), *SBA Factsheet 2017 Latvia*, European Commission, https://www.google.fr/search?q=sba+factsheet+2017+latvia&rlz=1C1GCEA_enFR817FR817&oq=sba+factsheet+2017+latvia&aqs=chrome..69i57j0l5.6366j0j4&sourceid=chrome&ie=UTF-8 (accessed on 08 December 2018).

Ministry of the Economy (2018), *2018 Progress Report on Implementation of Latvia's National Reform Programme*, https://www.em.gov.lv/en/latvia_in_the_eu/europe_2020_strategy/national_reform_programme_of_latvia/.

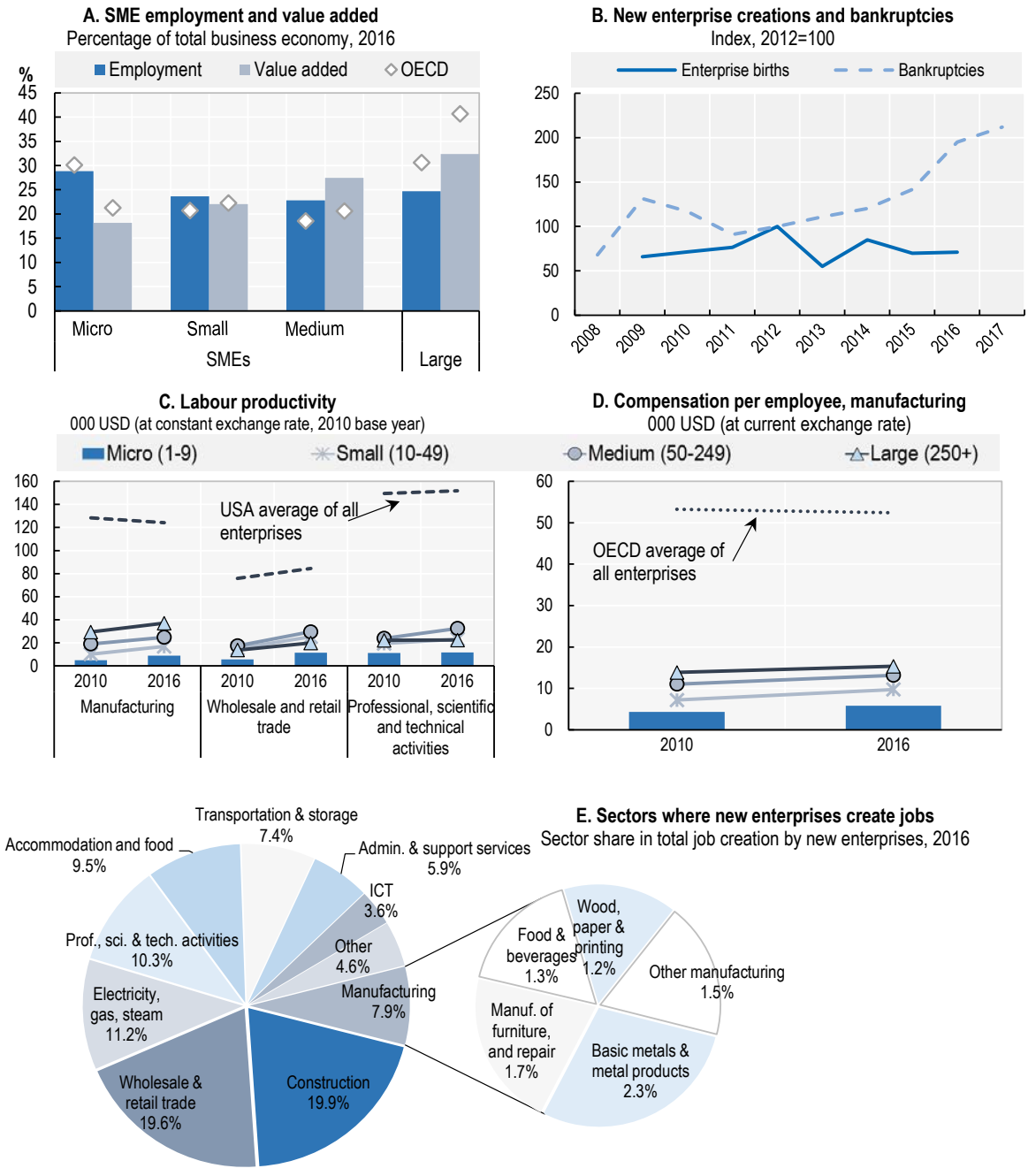
Ministry of the Economy (2018), *Review on the Economic Development of Latvia 2018*, https://www.em.gov.lv/files/tautsaimniecibas_attistiba/leap/leap_2018-en.pdf.

Ministry of the Economy (2018), *Support Programmes Co-financed from EU Funds for Entrepreneurship and Energy Efficiency*, https://em.gov.lv/resources/web/esfondi/2019.03.04.%20ES%20fondi%20ENG%20macins.jpg.

OECD (2017), *OECD Economic Surveys: Latvia 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-lva-2017-en.

Chapter 29. Lithuania

Figure 29.1. Structure and performance of the SME sector in Lithuania



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en*;* Chart B: Employer enterprise births*, OECD Structural and Demographic Statistics Database 2018;* and Financing SMEs and Entrepreneurs: *An OECD Scoreboard 2018 for bankruptcies;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925350

SME business conditions and access to strategic resources

Institutional and regulatory framework

Since its independence in 1990, Lithuania has promoted market-friendly reforms; yet, stringent labour market regulations, complex licensing norms, and lengthy insolvency procedures weigh on business activity and contribute to informality. Reforms in licensing procedures are underway which should reduce the administrative burdens for firms. Also, a comprehensive law on corporate insolvency is being drafted which changes the criteria for starting bankruptcy procedures, set clearer deadlines for filings, and establishes more favourable conditions for enterprise restructuring.

Market conditions

Lithuania's regulatory environment is overall open to foreign investment and trade, particularly in services. However, the inward FDI stock remains lower than in other Baltic countries in relation to GDP, and forward participation to GVCs remain limited. To increase attractiveness, a recent law has eased restrictions on the employment of workers from non-EU countries for selected professions and introduced simplified start-up visa scheme for non-EU entrepreneurs planning to establish a high-tech business in the country. To sustain SME exports to non-EU and non-OECD countries, a short term export credit guarantee schemes was launched in 2018.

Infrastructure

Lithuania's investments in ICT and transport infrastructure is above the OECD median. However, domestic R&D capacity remains limited with poor outcomes in terms of international patents. The government has made steps towards enhancing domestic research capacity and joining international research initiatives. The Lithuanian Roadmap for Research Infrastructure 2015 aims to modernise research facilities and develop open access standards. Substantial investments were made in 2018 in order to participate in several European programmes, including the European research infrastructure (ESFRI). In 2017, five integrated science, studies and business centres ("valleys") were developed with a view to building up world-class clusters and promote innovation in high-tech and traditional sectors.

Access to finance

New business lending in Lithuania declined sharply after the crisis and recovered only slowly as of 2014, despite interest rates at historic lows. In 2018, more than a half of SMEs surveyed by the Bank of Lithuania stated that lending to them is fully or partially limited. To address these limitations, INVEGA, a state-established enterprise, provides individual and portfolio guarantees. Specific instruments, such as the EU Entrepreneurship Promotion Fund (2014-20), the Open Credit Fund 2 and Risk Shared Loans offer loans with favourable interest rates to new firms or SMEs that are developing a new business. Entrepreneurs can additionally use the Business Start-up Subsidies, a programme that partially compensates their labour costs. To foster alternative financing sources, the government adopted a law on crowd-funding in 2016, and established 3 new venture capital instruments in 2017 and 5 new venture capital instruments in 2018.

Access to skills

Education performance in Lithuania is below peer countries, and gaps between students from rural and urban areas persist. Lithuania has a highly educated workforce in terms of tertiary graduates; yet finding workers with the right skills appears to be a significant constraint for over 40% of firms, well above the OECD average. The new Labour Code, in effect since 2017, introduces apprenticeship contracts. The government has implemented several instruments with European Structural Funds for encouraging businesses to invest in their employees' competencies and for laying the foundations of competence development mechanisms. The legal framework has also been recently changed to improve the employment conditions of highly qualified specialists from third countries and facilitate employment procedures.

Access to innovation assets

Lithuania has made significant efforts for the digitalisation of its industry. SME uptake of new digital solutions is on par with OECD levels, and even above with regards to high-speed broadband or supply chain management applications. A National Industrial Competitiveness Commission was set up mid-2017 as a basis for the national platform 'Pramonė 4.0' that gathers experts in order to prepare the Lithuanian Industry Digitization Action Plan (2019-30) and its implementation guidelines.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

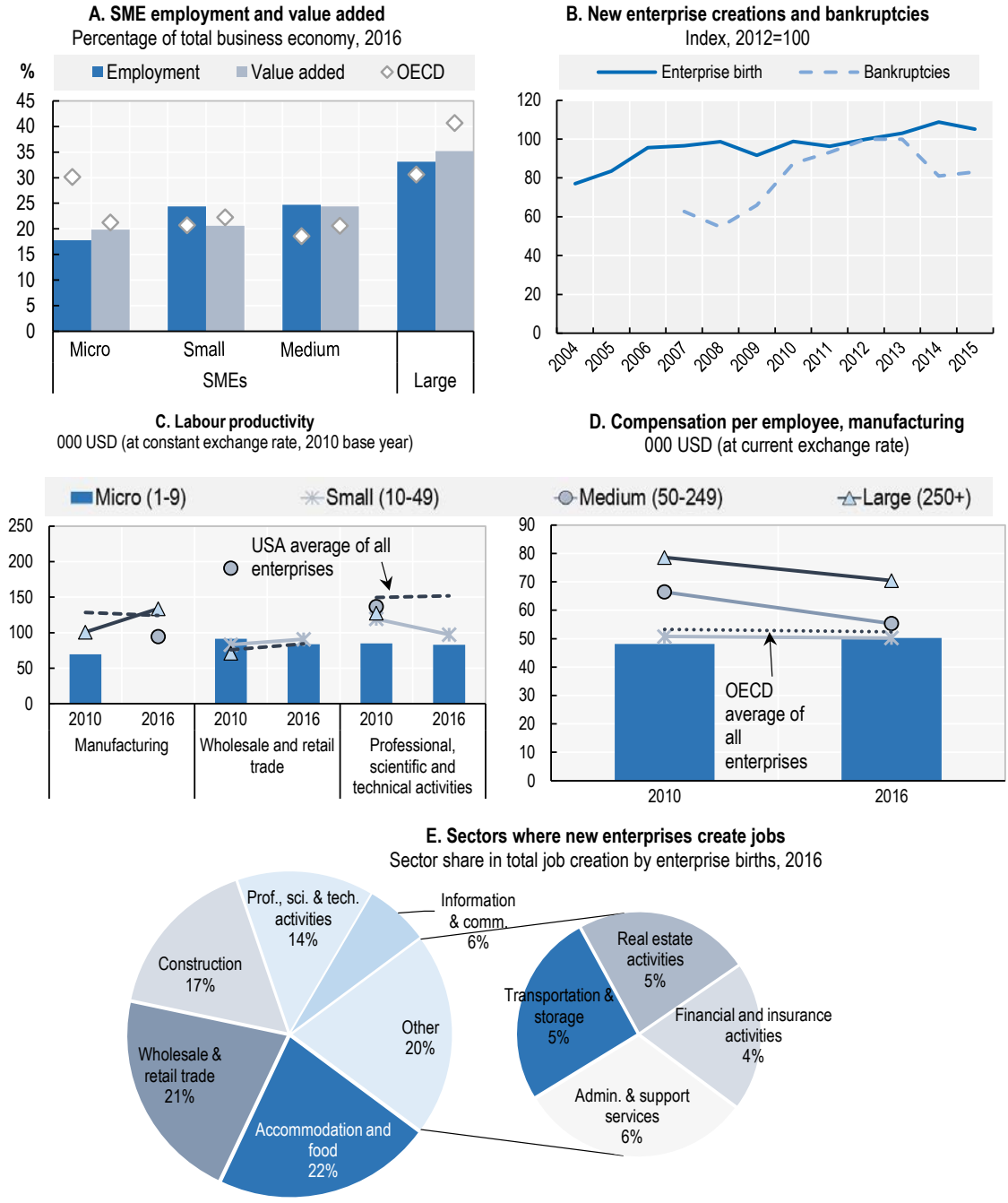
References

OECD (2018), (2018), *OECD Economic Surveys: Lithuania 2018*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-ltu-2018-en

World Bank (2018), *Doing Business 2018, Reforming to Create Jobs*, World Bank Group, http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2018-Full-Report.pdf.

Chapter 30. Luxembourg

Figure 30.1. Structure and performance of the SME sector in Luxembourg



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018.* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: For creations (employer enterprise births), *OECD Structural and Demographic Business Statistics Database 2018;* for bankruptcies, *OECD Timely Indicators of Entrepreneurship Database 2018;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925369

SME business conditions and access to strategic resources

Institutional and regulatory framework

Luxembourg presents relatively favourable framework conditions to business, such as low complexity of procedures, low costs for enforcing contracts and time to comply with taxation. On the other hand, Luxembourg ranks low in terms of strength of insolvency framework, with long procedures and discharge from bankruptcy, and barriers in service and network sectors are relatively high. In recent years several stringent regulations were eased: fixed tariffs for services of architects and engineers were abolished and the procedure for issuing housing permits was simplified. In 2017, a simplified form of *société à responsabilité limitée* ("S.à r.l.-S"), also dubbed "1-1-1 companies" (one person, one euro, in one day) entered in force to facilitate the start-up and development of new business activities

Market conditions

Luxembourg is a small open economy, whose domestic demand is largely supplied by imports. While 86% of medium-sized enterprises export, only 10% of micro-enterprises and 46% of small firms trade across borders, below the OECD average. SMEs can easily access public markets through an e-procurement portal. Also, big tenders are often divided into smaller lots to give SMEs the opportunity to apply and SMEs can benefit from protective measures regarding late payments.

Infrastructure

Luxembourg performs along the OECD median in terms of transport investment and logistics performance. ICT investments are relatively low, but, on the other hand, Luxembourg is one of the best performing countries in the OECD with respect to digital security. Also, the government has launched a National Strategy for Ultra-High-Speed Networks, with the aim to invest in a dark fibre network and world-leading data centres.

Access to finance

In Luxembourg, new lending to SMEs (defined as lending below EUR 1 million) increased in 2017, after six years of constant decrease, while new loans to all enterprises continued to decline. In recent years, measures were introduced to foster financing to innovative start-ups and SMEs. Since 2015, the Luxembourg Future Fund (LFF), co-funded by the European Investment Fund and the *Société Nationale de Crédit et d'Investissement* invests in innovative SMEs. In 2016, the public/private Digital Tech Fund was set to support ICT start-ups active in industries such as cybersecurity, financial technology, big data, digital health, telecommunications, satellite services and the internet of things.

Access to skills

Luxembourg's workforce is highly skilled, reflecting the concentration in the country of sophisticated firms in the financial sector and other top-end international services. Luxembourg however suffers from a relatively high level of skills mismatch. Luxembourg is also investing in digital skills: in 2017 the Cyber Security Competence Centre, was created based on a public-private partnership, with the objective of delivering cybersecurity services and training. In 2018, the government launched Luxembourg

Digital Skills Bridge, which provides technical and financial assistance to upskill employees in companies facing major technological disruption.

Access to innovation assets

Over the last decade major reforms have been implemented in Luxembourg vis-à-vis the steering and funding of public research: notably the introduction of performance contracts for research funding and research performing organisations. The recently-created university has already built strong research bases and a growing international reputation, while the public research centres have expanded their activities considerably. The R&D intensity of SMEs is below the OECD median, but innovation by smaller firms is relatively high.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

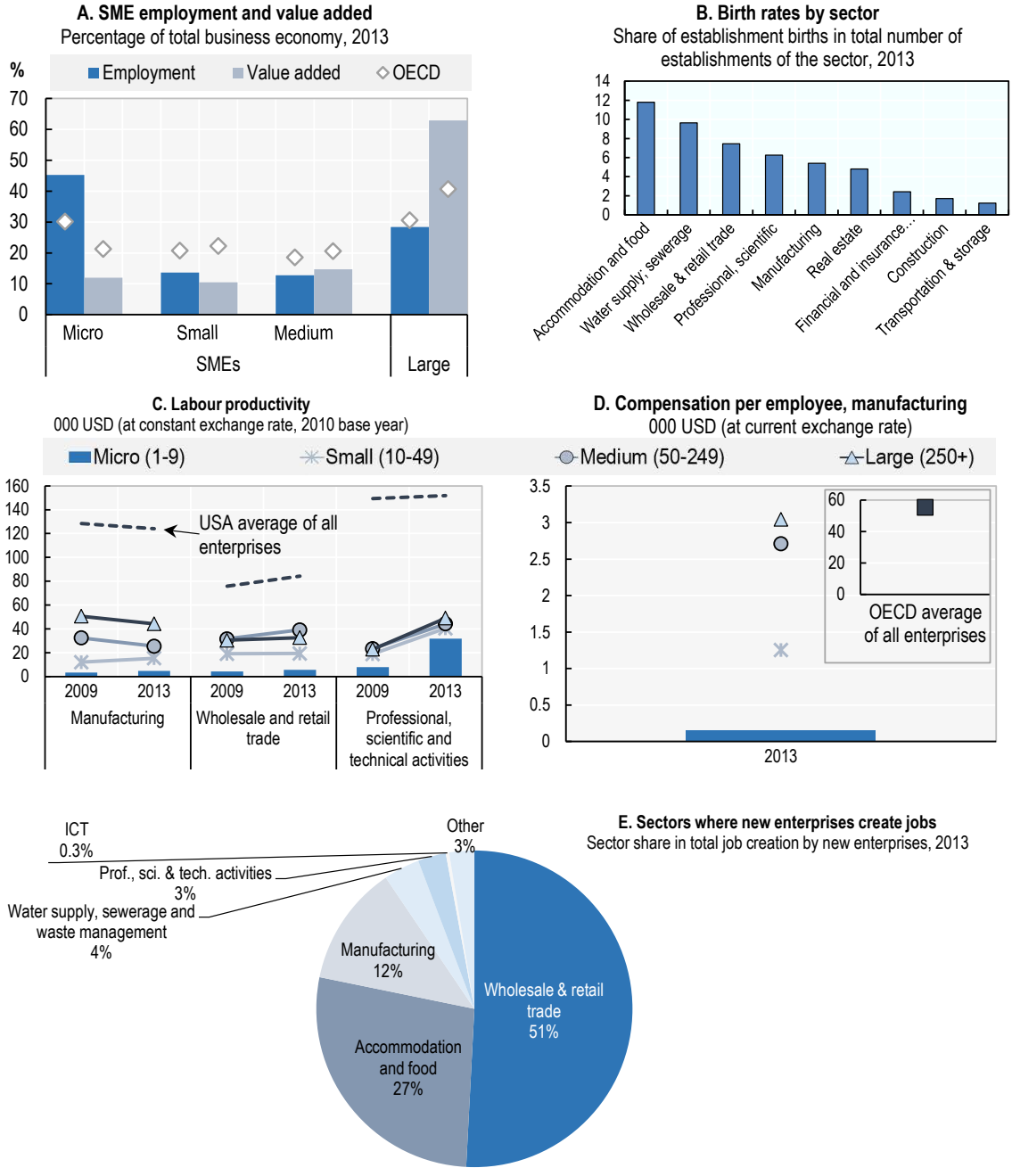
EC (2018), *2018 SBA Factsheet Luxembourg*, European Commission.

OECD (2017), *OECD Economic Surveys: Luxembourg 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-lux-2017-en.

OECD (2016), *OECD Reviews of Innovation Policy: Luxembourg 2016*, OECD Reviews of Innovation Policy, OECD Publishing, Paris, http://dx.doi.org/10.1787/9789264232297-en.

Chapter 31. Mexico

Figure 31.1. Structure and performance of the SME sector in Mexico



Note: A Data refer to establishments for Mexico, and enterprises for OECD. Data cover the business economy (ISIC Rev.4 05-82 excluding 64-66). For Mexico, micro firms have 1-10 persons employed (OECD: 1-9); small, 11-50 persons (OECD: 10-49); medium, 51-250 (OECD: 50-249); and large, 251+ (OECD: 250+); Note: B. Data refer to establishments.

Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B, D: *OECD Structural and Demographic Business Statistics Database 2018;* All enterprise Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925388

SME business conditions and access to strategic resources

Institutional and regulatory framework

The framework conditions for SMEs and entrepreneurship have improved in recent years, thanks to broader reforms, as well as to a number of targeted initiatives. The creation of INADEM in 2013 aims to streamline SME policy regulations and increase transparency in funding allocation. In 2016, the government also created a new legal entity through the Commercial Corporations Law: the Simplified Actions Corporation (Sociedad por Acciones Simplificadas or SAS), which allows firms to be created within 24 hours through a digital platform, at zero cost.

Market conditions

In light of ongoing discussions on the North American Free Trade Agreement, including a renegotiation of SME policies, INADEM has recently focused on supporting industries that might be more vulnerable to changes, but that also hold high potential for growth and diversification abroad, such as aerospace and machinery. Public procurement is used strategically to support business innovation. CompraNet 5.0, an electronic procurement platform, functions as a database of open public tenders, providing a range of information for suppliers and reducing transaction costs. In 2015, comprehensive technical support was added to increase its accessibility to users.

Infrastructure

Mexico's ICT infrastructures are poorly developed, partly due to limited competition among domestic network providers. The intensity of domestic ICT investment remains low and there are relatively few e-government initiatives. Also, adoption rates of ICT by SMEs is well below the OECD average. In 2016, Mexico licensed the 700 MHz band in the context of the creation of a 4G mobile wholesale access network, the Red Compartida. This network went live in 2018 and can be upgraded to the latest mobile technology releases, including 5G, once they are commercially available.

Access to finance

Loan volumes to Mexican SMEs have increased in recent years, although bank credit to the private sector remains low by OECD standards. The government stepped up efforts to broaden access to formal financial services through the 2016 National Policy on Financial Inclusion. Launched in 2016, the programme Mujeres PYME supports the development of female-owned SMEs by providing access to preferential financing and business development tools. In addition, a youth credit programme, supported by loan guarantees by the National Institute for Entrepreneurs (INADEM), was launched in 2015 for people aged between 18-35 years, based on viability of business plans.

Access to skills

Vocational Education and Training (VET) plays an important social role in Mexico and the government has aimed to strengthen the dual training system through greater involvement of the private sector and an increasing number of apprenticeships among firms. Coverage remains below the OECD average, however. INADEM, in collaboration with chambers of commerce and training agencies, launched a programme in 2015-16 that encourages ICT adoption and managerial skills upgrading among micro firms. The

scheme addresses areas such as inventory management, accounting, customer relationships, micro-market analysis and, repayment capability.

Access to innovation assets

The Special Programme for Science, Technology and Innovation (PECITI) (2014-18) aims to transform Mexico into a knowledge-based economy by: 1) increasing national investment in STI; 2) forming highly qualified human resources in science and technology; 3) strengthening regional development; 4) promoting science-industry linkages; and 5) developing the S&T infrastructure. A new tax credit regime for R&D was introduced in 2017, allowing for a corporate income tax deduction of 30% for R&D investments. In addition, the High-Impact Entrepreneurship Programme, launched in 2015, supports knowledge-based innovative SMEs through a matching grant scheme.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

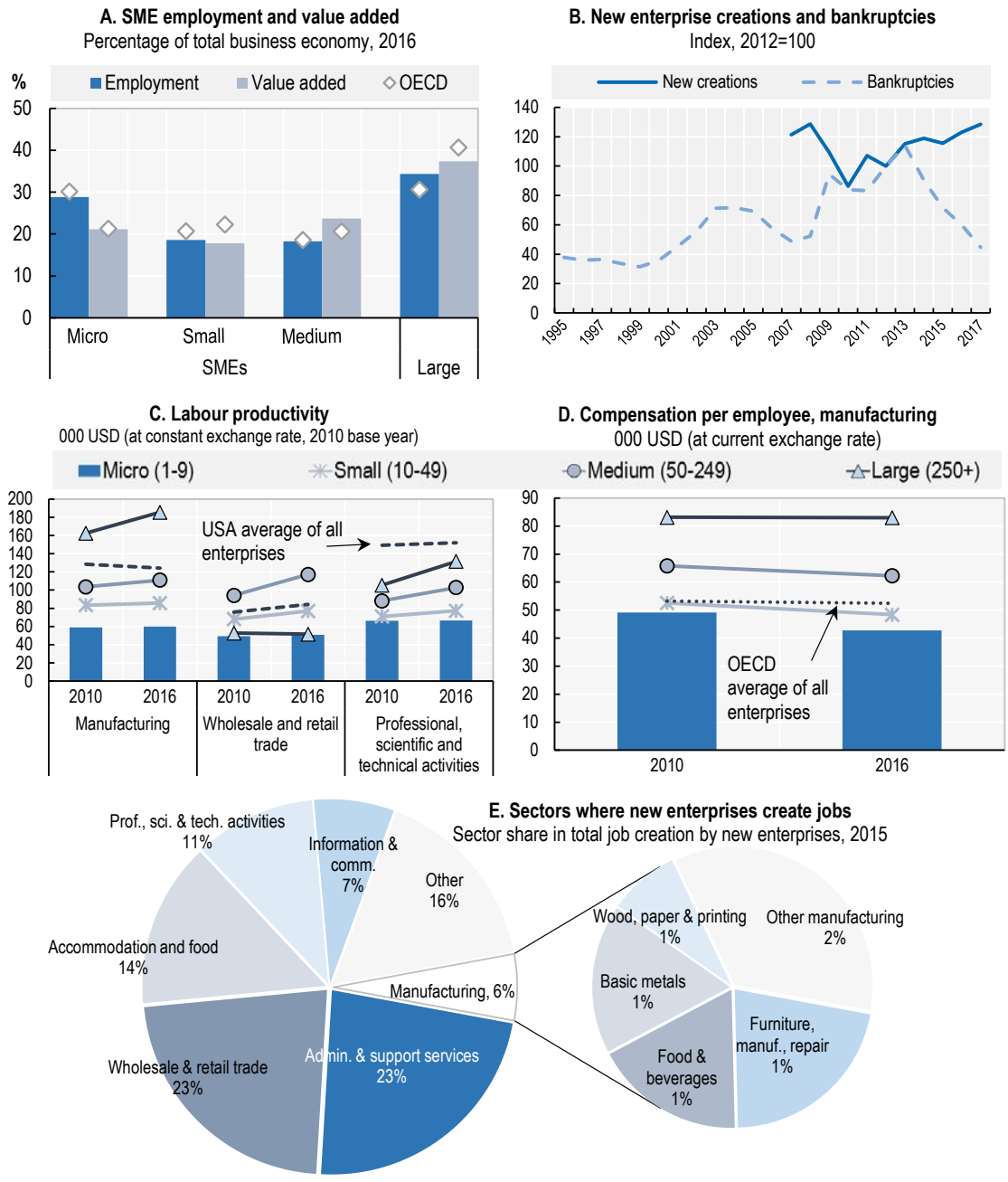
References

OECD (2018), *Going for Growth 2018 - Mexico Country Note*, http://www.oecd.org/eco/growth/going-for-growth-2018-mexico-english-note.htm (accessed on 10 August 2018).

OECD (2017), *OECD Economic Surveys: Mexico 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-mex-2017-en.

Chapter 32. The Netherlands

Figure 32.1. Structure and performance of the SME sector in The Netherlands



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en*;* Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart E*: OECD Structural and Demographic Business Statistics Database 2018*, Employer Business demography dataset.

StatLink http://dx.doi.org/10.1787/888933925407

SME business conditions and access to strategic resources

Institutional and regulatory framework

The Netherlands offers among the most OECD accommodative regulatory conditions to businesses. But administrative burden on start-ups and the cost for starting a business remain comparatively high. The Dutch Advisory Board on Regulatory Burdens (ATR) (2017-21) reviews all new regulations with a view to reducing burdens on firms and citizens. A mandatory electronic filing system for financial statements was introduced in 2017 that alleviates SME administrative procedures. As part of the Coalition Agreement 2017, the Dutch government has outlined plans for reforming tax and regulatory policies over 2018-21 with a view to fighting tax evasion and levelling the playing field for SMEs. One of the first measures taken is a reduction of SME corporate income tax rate from 20% to 16%.

Market conditions

Access to global markets, especially the European market, is key for the very open Dutch economy. The authorities have been pro-active in reducing barriers to international trade and foreign direct investment (FDI) and the Netherlands shows among the best OECD performance in terms of trade and FDI facilitation. Considering the important trade and investment linkages with the UK, online and physical desks since 2016 provide SMEs with assistance in calculating the impact of Brexit on their business. EUR 10 million are also to be invested annually over 2017-21 for strengthening multi-year programming and international public-private cooperation in trade, innovation and foreign investment.

Infrastructure

The Netherlands invests considerably more in ICT than the OECD median and its fixed broadband is also more broadly diffused. Performance in terms of mobile broadband penetration is however on par with the median. While earlier focus of digital policy was on digitalising the government, the Digital Agenda 2017 adopts a broader approach for driving the transformation of sectors such as healthcare or mobility. Special focus is given to build open and high-speed infrastructure, move to the 5G and improve security and trust.

Access to finance

Dutch SME lending has recovered and outstanding loans now exceed pre-crisis levels. Venture capital investments have reached the highest point of the decade in 2017 and are on par with the OECD median. The government is targeting high-potential SMEs and supports Fintech initiatives. The Dutch Venture Initiative II (2016) is a EUR 200 million venture and growth capital fund-of-funds that invests in sectors such as ICT or clean or medical tech. The EUR 100 million Dutch Growth Co-Investment Programme (2017) targets the second equity gap that start-ups face when they intend to grow. And the National Promotional Institution (Invest-NL) was set up in 2017 to, amongst other things, finance and develop viable SMEs. In 2016, the Authority for the Financial Markets and the Dutch Central Bank created the Innovation Hub that provides guidance on supervision and regulations relating to innovative financial products.

Access to skills

The Netherlands ranks high with regards to adult digital literacy and student proficiency in core competences is above median. However, national data show that 25% of SMEs experience difficulties in finding qualified people and 57% of enterprises advertising ICT positions struggle hiring experts (2016). The 2015 Make IT Work programme to re-train university students as ICT experts was expanded in 2017 and new university programmes on entrepreneurship and data science were launched in 2016. As a part of the Dutch Technology Pact, SME-Idea is an experiment that challenges entrepreneurs in finding solutions for removing barriers to schooling and workers development. In addition public-private partnerships (PPPs) between vocational education, universities and businesses are gaining in importance.

Access to innovation assets

Dutch SMEs use more digital technologies than the OECD median, e.g. high-speed broadband, cloud computing or big data analytics. The government is pursuing its Top Sectors policy and the Knowledge and Innovation Agenda (2018-21) aims to strengthen PPPs. The 2016 Digital Agenda makes big data a growth engine of the Top sectors. Commit2Data (2017) brings together SMEs, researchers and large firms in hubs to investigate new Big Data business models. The Platform NL Grows (2016) helps entrepreneurs grow their business by connecting them with fellow entrepreneurs, coaches and educators.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

De Nederlandsche Bank (n.d.), *InnovationHub AFM & DNB*, https://www.dnb.nl/en/supervision/innovationhub/index.jsp#.

De Staat van het MKB (n.d.), *Statistics Netherlands*, https://www.staatvanhetmkb.nl/.

Dutch Digital Delta (2018), *Commit2Data*, https://commit2data.nl/en.

EIF (2017), *Dutch Growth Co-Investment Programme*, European Investment Fund, http://www.eif.org/what_we_do/resources/dutch-growth-co-investment-programme/index.htm (accessed on 15 November 2018).

European Commission (2017), *2017 SBA Fact Sheet, Netherlands*, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiB68e7_dPeAhXHyIUKHarWDFMQFjAAegQICRAC&url=http%3A%2F%2Fec.europa.eu%2FDocsRoom%2Fdocuments%2F26562%2Fattachments%2F22%2Ftranslations%2Fen%2Frenditions%2Fnative&usg=A (accessed on 15 November 2018).

European Commission (2017), *Investment Plan for Europe. Country Factsheet: Portugal*, https://ec.europa.eu/commission/sites/beta-political/files/portugal-investment-plan-factsheet-17x17-june17_en.pdf (accessed on 22 June 2018).

Government of the Netherlands (2016), *Digital agenda for the Netherlands innovation, trust, acceleration*, https://www.government.nl/topics/ict/documents/reports/2017/04/11/digital-agenda-for-the-netherlands-innovation-trust-acceleration (accessed on 15 November 2018).

OECD (2018), *OECD Economic Surveys: Netherlands 2018*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-nld-2018-en.

De Nederlandsche Bank (n.d.), *InnovationHub AFM & DNB*, https://www.dnb.nl/en/supervision/innovationhub/index.jsp#.

De Staat van het MKB (n.d.), *Statistics Netherlands*, https://www.staatvanhetmkb.nl/.

Dutch Digital Delta (2018), *Commit2Data*, https://commit2data.nl/en.

EIF (2017), *Dutch Growth Co-Investment Programme*, European Investment Fund, http://www.eif.org/what_we_do/resources/dutch-growth-co-investment-programme/index.htm (accessed on 15 November 2018).

European Commission (2017), *2017 SBA Fact Sheet, Netherlands*, http://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwiB68e7_dPeAhXHyIUKHarWDFMQFjAAegQICRAC&url=http%3A%2F%2Fec.europa.eu%2FDocsRoom%2Fdocuments%2F26562%2Fattachments%2F22%2Ftranslations%2Fen%2Frenditions%2Fnative&usg=A (accessed on 15 November 2018).

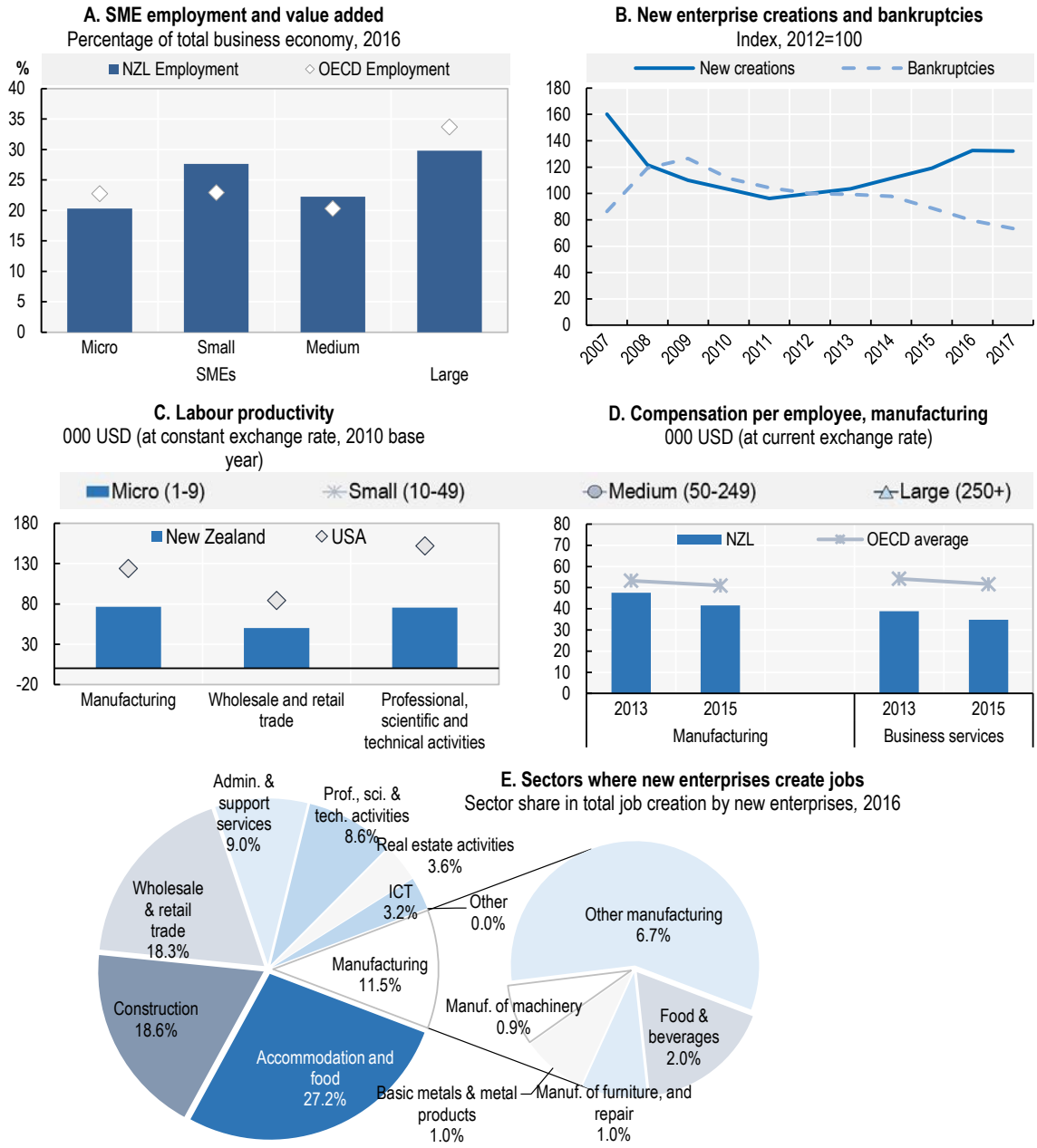
European Commission (2017), *Investment Plan for Europe. Country Factsheet: Portugal*, https://ec.europa.eu/commission/sites/beta-political/files/portugal-investment-plan-factsheet-17x17-june17_en.pdf (accessed on 22 June 2018).

Government of the Netherlands (2016), *Digital agenda for the Netherlands innovation, trust, acceleration*, https://www.government.nl/topics/ict/documents/reports/2017/04/11/digital-agenda-for-the-netherlands-innovation-trust-acceleration (accessed on 15 November 2018).

OECD (2018), *OECD Economic Surveys: Netherlands 2018*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-nld-2018-en.

Chapter 33. New Zealand

Figure 33.1. Structure and performance of the SME sector in New Zealand



Note: Chart A: Data exclude non-employers.
Sources: Chart A. C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business demography dataset.

StatLink http://dx.doi.org/10.1787/888933925426

SME business conditions and access to strategic resources

Institutional and regulatory framework

New Zealand presents a favourable environment for business creation, with relatively low start-up costs and administrative burdens on start-ups. As a response to the 2015 report of the government-appointed Small Business Development Group, in 2017 a set of tax simplification and compliance cost reduction measures were introduced, including simplification in provisional tax to increase certainty, modernisation of withholding rules and lessen impact of late tax payment penalties.

Market conditions

New Zealand's SMEs are largely centred on domestic activities, with low participation to global value chains, and regulatory conditions on FDIs are relatively restrictive. Several government agencies implement measures to help exporters, including web-tools to navigate free trade agreements (FTAs) and compare tariff rates across different FTAs (Tariff Finder). The completed Trade Single Window, deployed in 2017 with e-functionalities, allows all border requirements for goods and craft to be met in one place. In 2016, the mandate and operational criteria of the Export Credit Office (NZECO) were reformed to support a wider range of SMEs and larger exporters, while enabling NZECO to diversify its risk portfolio.

Infrastructure

ICT investments in New Zealand are high by OECD standards and broadband penetration, both fixed and mobile, is above the OECD median. The Ultra Fast Broadband (UFB) programme aims at providing 80% of New Zealanders with fibre by 2019. Areas outside of the UFB scope have benefitted from the Rural Broadband Initiative (RBI), addressing the technical and financial difficulties originated from line distance and low population density. In addition, the government made the transformation of the land transport system a priority. In 2018, the NZ Transport Agency launched a NZD 16.9 billion programme of investment over three years with a view to connecting people and businesses and help the economy grow. The National Land Transport Programme (2018-21) is a partnership with local governments.

Access to finance

Over 2013-17, SME lending in New Zealand increased steadily, but SME borrowing has become relatively more expensive since the global financial crisis, compared to borrowing for larger firms. Also, tightened lending standards have led to higher loan rejection rates for SMEs. On the other hand, venture and growth capital for SMEs has been on an upward trend since 2012, also boosted by the New Zealand Venture Investment Fund (NZVIF) which catalyses private sector investment into young, innovative and primarily technology-based companies. Additionally, to open up financing opportunities for SMEs, the government introduced in 2014 a regulatory framework for equity crowdfunding.

Access to skills

New Zealand scores among the top OECD countries in terms of adult and student proficiency, while workplace training and learning are in line with the OECD median.

The government is stepping up efforts on adapting the skill base to the digital economy and high-tech industries. The Digital Skills Forum, a focused coalition of industry associations and government organisations, identifies key issues and opportunities across ICT, high-tech and digital skills. To address skills shortages and attract international talents, Skilled Migrant Category visas are issued for migrants that fit Essential Skills in Demand Lists, compiled by the government, based also on suggestions from employers and trade unions.

Access to innovation assets

SME R&D intensity in New Zealand above the OECD median, but business engagement in innovation networks, particularly with research institutions, is below OECD standards. The Government has set the target of raising investment in R&D to more than 2% of GDP by 2027, and is introducing a new R&D Tax Incentive. The Government also provides support through R&D grants; technical, networking and acceleration services; the Commercialisation Partner Network; and the Pre-Seed Accelerator Fund.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

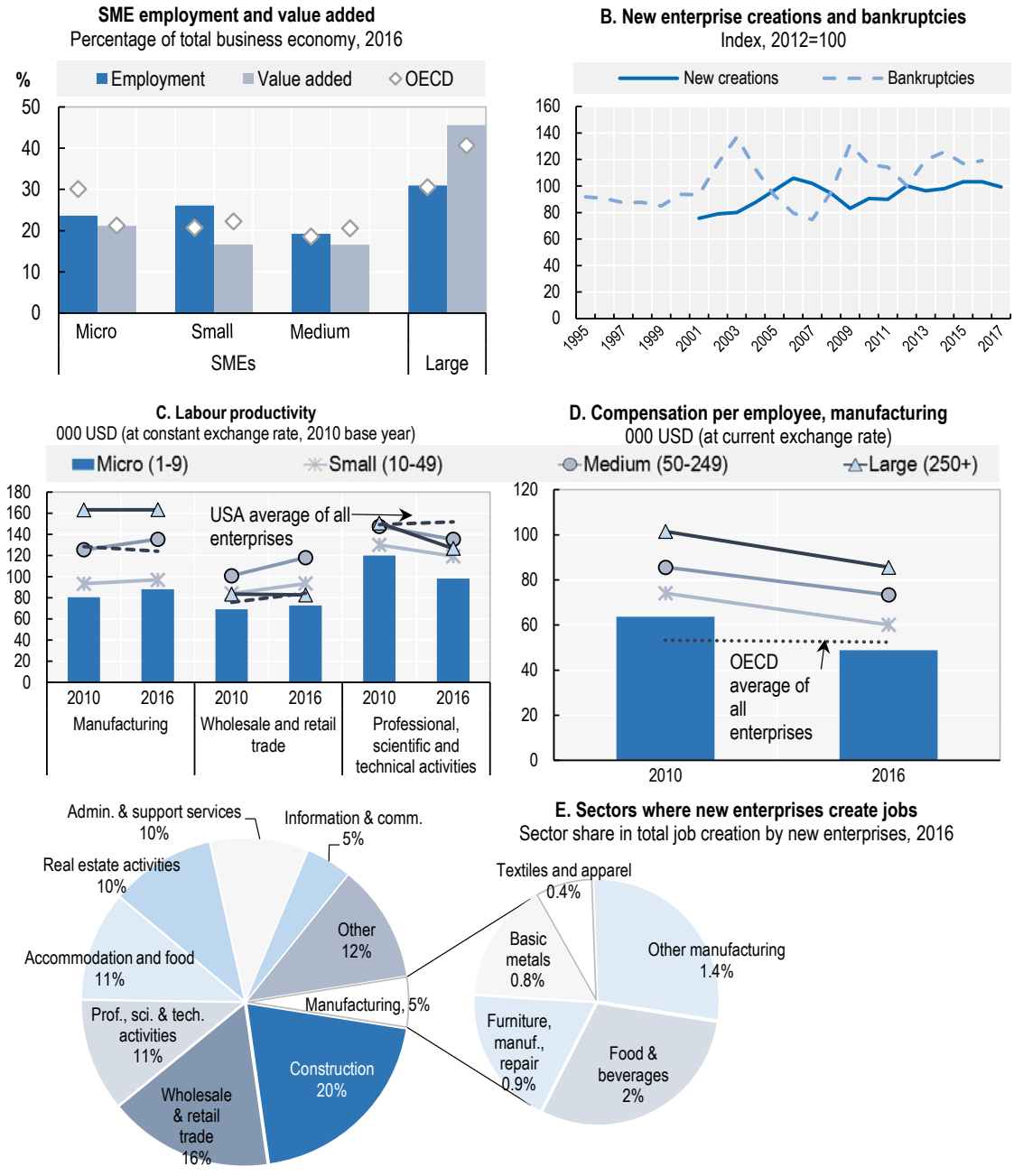
Digital Skills Forum (n.d.), *New Zealand Digital Skills Forum*, https://www.digitalskillsforum.nz/.

New Zealand Trade and Enterprise (2016), *Navigating Free Trade Agreements*, https://www.nzte.govt.nz/about/news/news-and-features/navigating-free-trade-agreements.

New Zealand Transport Agency (2018), *National Land Transport Programme*.

Chapter 34. Norway

Figure 34.1. Structure and performance of the SME sector in Norway



Sources: Chart A. C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business demography dataset.

StatLink http://dx.doi.org/10.1787/888933925445

SME business conditions and access to strategic resources

Institutional and regulatory framework

Norway has a mixed performance on indicators related to the institutional and regulatory framework, and diversification of the economy will require strong framework conditions for SMEs. Recent policy efforts to reduce red tape include the establishment of a "better regulations council". Progress in specific areas has included lighter social security reporting requirements for employers, simplification in building and planning legislation and simplified tax rules for business partnerships. Since its establishment in 2003 the government portal for enterprise (Altinn) has been working to simplify administration using digital solutions. A project revamping the ICT of the labour and welfare administration (NAV) is underway.

Market conditions

Norway is a small open economy with a longstanding trade in maritime transport and petroleum-related products and services. Crude oil and natural gas account for half the country's exports. However regulatory indicators on services trade point to above-average restrictiveness in many sectors. This is the case in particular in computer and telecom services. In 2017, the country launched its Strategy for Export and Internationalisation. One of the ambitions is to increase the export potential of small businesses and to diversify trade towards emerging economies. Norway is currently negotiating trade agreements with Argentina, Brazil, China, India, Indonesia and Russia..

Infrastructure

Norway's policy emphasis on sustaining rural and remote regions plays an important role in enabling connectivity for SMEs through transport and communications infrastructure. The current National Transport Plan 2018-29 focuses on improving connectivity in road and rail networks and achieving zero emissions growth. The proposed budget for the 12-year plan is NOK 1 064 billion, implying an average allocation of around 2.7% of current annual GDP.

Access to finance

The majority of SME lending is long-term in Norway, reflecting the strength of legal rights and the depth of credit information in the country. Venture capital investments have been growing since 2012. In 2015, the Norwegian government introduced a new action plan for entrepreneurship, which includes increased entrepreneurship grants, financing of commercialisation of publicly financed research, new seed capital funds, and a pre-seed capital fund that will invest in young companies in collaboration with private investors.

Access to skills

Norway performs well compared to the OECD average on adult literacy, although some aspects of performance on student proficiency and entrepreneurial skills are below average. A priority of the Norwegian government is to increase education and training efforts towards economic diversification away from petroleum-related activities, along with addressing population ageing. To this end, the Norwegian Strategy for Skills Policy 2017-2021 was launched in 2017. In addition, a committee examining future skills needs

has been established. The promotion of entrepreneurial skills such as project planning and STEM skills is part of the strategy. Skills Norway has been established as a dedicated agency addressing basic adult skills such as literacy, numeracy, oral communication and the use of ICT.

Access to innovation assets

Norway's R&D expenditure is around 2% of GDP, much of it in the petroleum-related sector. According to the EU's 2016 Innovation Union Scoreboard, Norway performs well in terms of its research system, but less strongly on indicators related to high-technology industries and innovation activities and expenditure, particularly in SMEs. The backbone of Norway's support for business innovation is a R&D tax credit programme (Skattefunn) designed to stimulate research and development. The Norwegian innovation agency Innovation Norway provides support for strong start-ups, clusters and firm growth. Transfer of knowledge across sectors is actively encouraged by the cluster programmes and the Research Council of Norway through strategic programmes.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Hemmings, P. (2018), "Norway's economy: Maintaining a successful business sector in a changing world", *OECD Economics Department Working Papers*, No. 1459, OECD Publishing, Paris, https://doi.org/10.1787/ce338dc9-en.

NTP (2017), *National Transport Plan 2018-2029, Meld. St. 33 (2016-2017)*, Report to the Storting (White Paper).

OECD (2017), *Digital Government Review of Norway: Boosting the Digital Transformation of the Public Sector*, OECD Digital Government Studies, OECD Publishing, Paris, https://doi.org/10.1787/9789264279742-en.

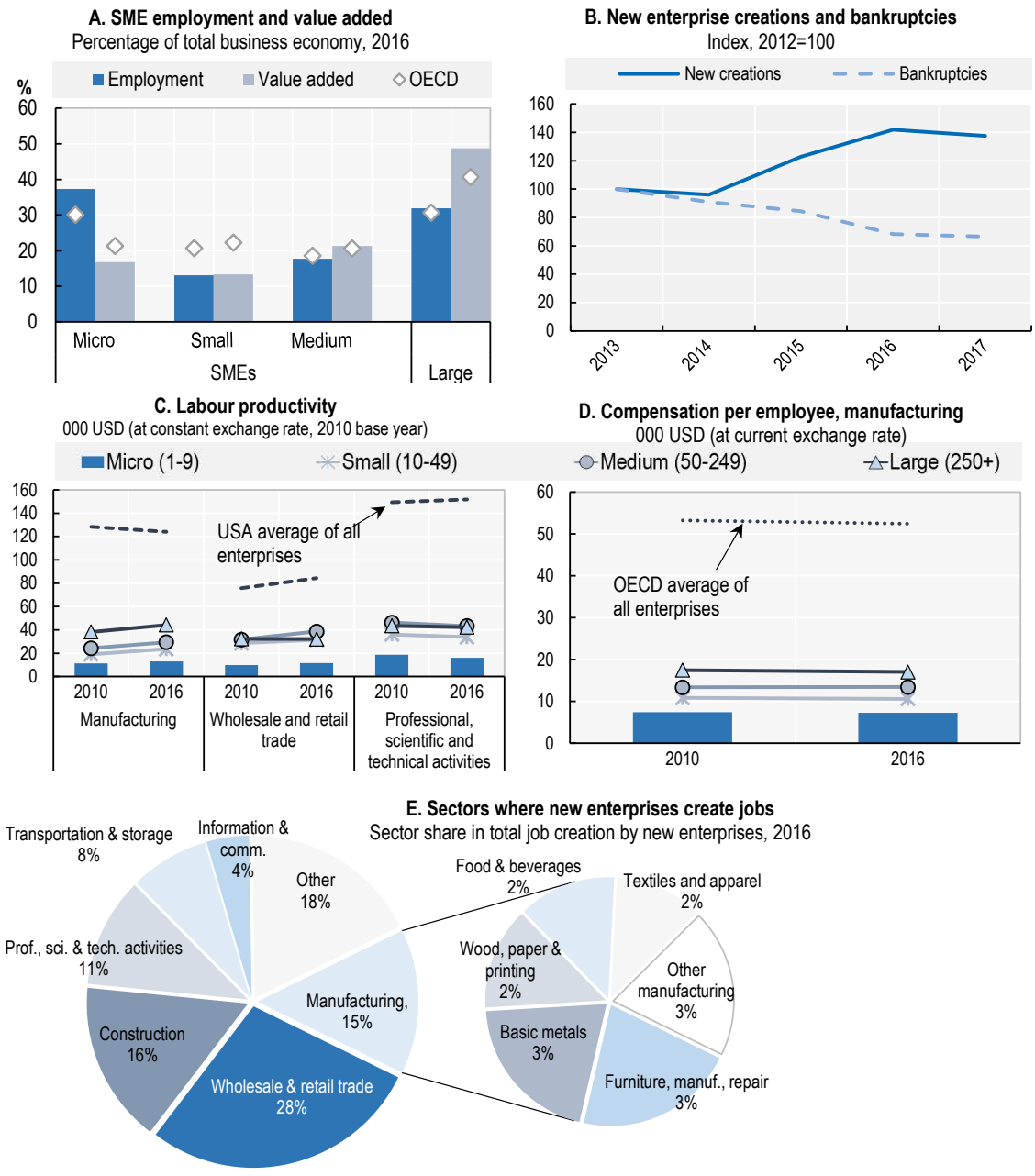
OECD (2017), *OECD Economic Surveys: Norway 2018*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-nor-2018-en.

OECD (2017), *OECD Reviews of Innovation Policy: Norway 2017*, OECD Reviews of Innovation Policy, OECD Publishing, Paris, https://doi.org/10.1787/9789264277960-en.

Skills Norway (2018), *SkillsPlus*, https://www.kompetansenorge.no/English/Basic-skills/Competenceplus/.

Chapter 35. Poland

Figure 35.1. Structure and performance of the SME sector in Poland



Sources: Sources: Chart A. C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business demography dataset.

StatLink http://dx.doi.org/10.1787/888933925464

SME business conditions and access to strategic resources

Institutional and regulatory framework

The government is streamlining business regulations. Key measures include an increase in the annual income threshold for the status of small taxpayer, from EUR 1.2 million to EUR 2 million. Micro firms with a turnover below 50% of the minimum wage will no longer be required to register, and start-ups might be exempted from social contributions in the first six months and can benefit from lower social contributions for the following two years. Ministries will be required to publish simple explanations of administrative rules and tax laws. Since 2015 an ambitious deregulation of professional services is in place. The government has also reformed bankruptcy procedures for firms and individuals and it has come up with a new company succession law.

Market conditions

Poland's participation in GVCs is in line with the OECD median. The government is reorganising tax relief for foreign investments with a view to support investment quality rather than location. Support criteria have also been revised to increase investment coming from small businesses. In 2018, the Polish Investment and Trade Agency launched Polish Tech Bridges project, funded by the European Regional Development Fund, to support foreign expansion of start-ups and SMEs with high potential. The government also aims to strengthen domestic market conditions and took actions to lower stringent market entry regulations. Since 2015 an ambitious deregulation of professional services is in place. In addition Poland endeavours to combat late payment and to streamline public procurement legislation.

Infrastructure

The digital infrastructure has being improving fast in Poland. Substantial investments are also made in transport and energy networks. Poland is the largest beneficiary of EU structural funds with EUR 86 billion channelled over 2014-20 through different programmes. Yet, infrastructure gaps remain. Uncertainty about the availability of EU funds after 2022 also calls for finding new financing sources and prioritising spending. The Strategy for Responsible Development sets out a vision to strengthen industry, innovation and infrastructure with an emphasis given to digitalisation and energy investments.

Access to finance

SMEs' access to finance has improved in Poland in recent years, with more accommodative conditions. In 2017, the share of Polish SMEs citing access to finance as their most important concern stood at 7%, in line with the EU average. As in other OECD economies, government loan guarantees are the most common policy tool to facilitate SMEs' access to finance, amounting to about 0.8% of GDP in 2016. Poland has seen a sharp increase in available venture capital funding, feeding a nascent start-up scene.

Access to skills

Poland performs below the OECD median in terms of adult tertiary education and core ICT skills. Too many workers have weak basic and digital skills, affecting in particular the large group of low-productive SMEs. In addition, vocational training suffers from

limited business engagement and adult learning is not well developed. Business surveys reveal that more than 75% of Polish firms complain about skills gaps and 30% of those that do not invest in training point to a lack of training measures that suit their requirements. The Polish Agency for Enterprise Development (PARP) supports SME training and skills improvement, with various initiatives aiming to engage employers more in training, such as Sectoral Skills Councils set up to identify needs and develop guidelines for schools and employers to work together.

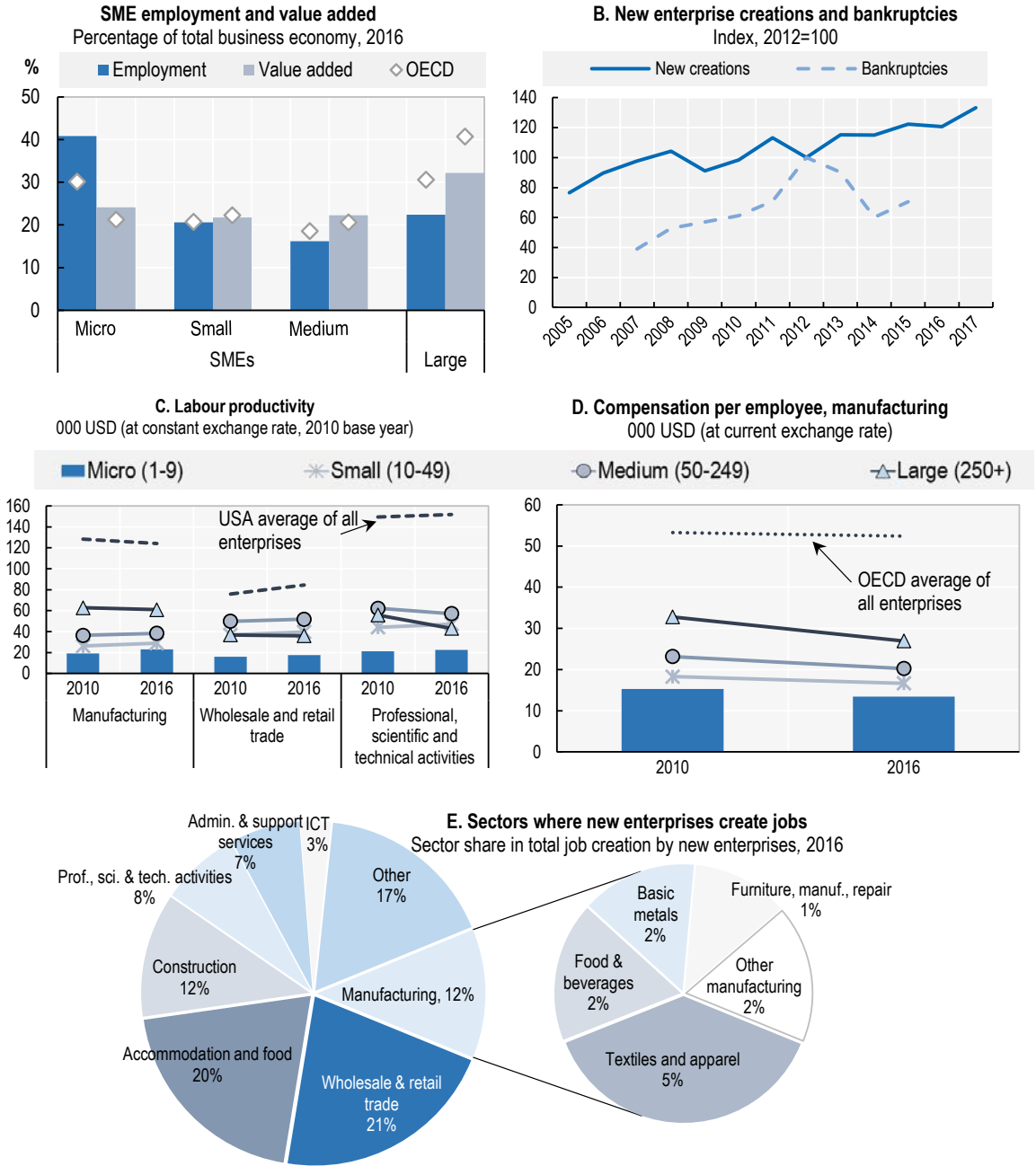
Access to innovation assets

Polish SMEs are active in R&D, technology acquisition and innovation networks, with performance on par with the OECD median. However, they lag in adopting new digital solutions and innovating. The government is introducing a Strategy for Responsible Development that combines greater R&D tax incentives and increased public support to SME innovation, together with further venture capital and infrastructure development. The range of eligible costs to R&D tax relief and the amount conceded have been extended, with an enhanced deduction rate of 100% in 2018. A new Intellectual Property (IP) Box (2019) offers a preferential 5% tax rate on IP-based income. Since 2016 "Start in Poland" consolidates public support for incubation, acceleration and development phases with a view to improving the entire start-up ecosystem, including cooperation with large firms. University-industry collaboration is also encouraged with the PARP innovation voucher and an efficient incubator and accelerator landscape.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

Chapter 36. Portugal

Figure 36.1. Structure and performance of the SME sector in Portugal



Sources: Chart A, C, D: *OECD Structural and Demographic Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018;* for new enterprise creations and Financing SMEs and Entrepreneurs 2018: *An OECD Scoreboard for bankruptcies;* Chart E: *OECD Structural and Demographic Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925483

SME business conditions and access to strategic resources

Institutional and regulatory framework

Portugal has made strong efforts to simplify administrative and licensing procedures for SMEs. The time to start a business and to transfer a property were both brought down to one day. However there is room for further improvements as procedures in Portugal remain more complex than the OECD median. The Enterprise Space, a one-stop service for entrepreneurs, was reinforced in 2017 with an online version, the Entrepreneur Office. The programmes Simplex+2016, +2017 and +2018 promote further simplification and ICT use in procedures and Abolish+ aims to eliminate obsolete legal texts. Corporate taxes have been cut and SMEs are provided with new tax benefits on land properties, reinvested profits or capital remuneration.

Market conditions

The structural reforms engaged in 2011 have created a favourable environment for foreign investment. Moreover, the government managed to reduce its budget deficit to its lowest level since 1974 (0.5%, 2018), the country exiting the EU's Excessive Deficit Procedure in May 2017. The market for public procurement is small by OECD standards, and late payments affect SME participation, which, on the other hand, benefit from a well-structured e-public procurement system. The Code of Public Contracts was revised in 2017 to simplify and increase flexibility in public procurement procedures.

Infrastructure

European funds have sustained infrastructure investment in Portugal. The European Fund for Strategic Investment (EFSI) brought new funding to high-tech companies and specialised research centres. EFSI 2 to 2020 should put further emphasis on SMEs. The 2014-20 Roadmap of Research Infrastructures of Strategic Interest aims to increase SME participation in the H2020 framework programme and the creation of spin-offs through national and regional coordination. The 2019 State budget supports Digital Innovation Hubs (on manufacturing, healthcare, construction, energy, smart cities and agriculture) for their strategic role as testing and development centres and in attracting investment for SME digitisation. As part of the Interface Programme, the Fund for Innovation, Technology and Circular Economy finances cluster certification and technology transfer, through Technological Interface Centres and a network of Collaborative Labs.

Access to finance

Despite decreasing interest rate spread and rejection rates, SMEs face tightening lending conditions. SME lending has decreased over 2009-17, in line with a drop in total business credits and a sharp decline in short-term SME loans (-62% in 2010-2017). Venture capital partially recovered in 2017 (+33%) after the fall in 2016. The government has put high priority on securing SME access to finance. The share of guaranteed loans grew from EUR 5.7 to 6.1 billion over 2016-2017. The EUR 1.6 billion Capitalize Programme set new credit lines for SMEs, sponsored funds for public-private investment and added tax incentives for investors. Part of the financing serves to recapitalise the Mutual Counter-Guarantee Fund. The SME Leaders Programme also aims to strengthen trust between banks and SMEs. The 2016 StartUp Portugal strategy targets national and foreign capital for alternative funding and co-funding.

Access to skills

In Portugal, student proficiency in core disciplines and adult entrepreneurial abilities are in line with the OECD median. There is however a large gap in the number of adults who are highly educated or who access training. Since 2017 INCoDe.2030, an integrated long-term programme for digital competences, employability and digital inclusion, targets all-ages populations through promotion campaigns, self-diagnosis tools and digital resource platforms. It also plans a reform of the certification system and education and re-qualification programmes. In addition, the 2018 Qualifica Programme will create 300 centres to support a new lifelong learning strategy and cover 600.000 people by 2020.

Access to innovation assets

SMEs are proactive in adopting high-speed broadband and new digital technologies, but they remain weakly integrated into innovation networks. The EUR 4.5 billion Indústria 4.0 programme (2017-21) seeks to develop skills, new methods and digital applications in key strategic sectors, and to facilitate co-operation with multinationals. The Industry 4.0 Vouchers provide EUR 12 million for the digital transformation of 1 500 SMEs and COMPETE 2020 sets a competitive financing scheme for their digital transition. The Interface Programme (2016-20) earmarks EUR 1.4 billion to support inter alia SME linkages to the innovation cycle and SME integration in global value chains through its Suppliers' Clubs.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

CCA Ontier (2016), *Find Out Which Tax Incentives Can SMEs Have in Portugal?*, https://www.lexology.com/library/detail.aspx?g=82af80f3-67c5-4cf9-bac8-261001874188 (accessed on 22 June 2018).

EC (2017), *Digital Transformation Monitor - Country: Portugal "Industria 4.0"*, European Commission, https://ec.europa.eu/growth/tools-databases/dem/monitor/sites/default/files/DTM_Ind%C3%BAstria%204.pdf.

European Commission (2018), *2017 Small Business Act FactSheet: Portugal*, https://ec.europa.eu/growth/smes/business-friendly-environment/performance-review_en#sba-fact-sheets (accessed on 22 June 2018).

European Commission (2017), *Investment Plan for Europe. Country Factsheet: Portugal*, https://ec.europa.eu/commission/sites/beta-political/files/portugal-investment-plan-factsheet-17x17-june17_en.pdf (accessed on 22 June 2018).

FCT (2014), *Portuguese Roadmap of Research Infrastructure 2014-2020*, Portuguese national funding agency for science, research and technology, https://www.fct.pt/apoios/equipamento/roteiro/2013/docs/Portuguese_Roadmap_of_Research_Infrastructures.pdf.

INCoDe2030 (n.d.), *National Digital Competences Initiative e.2030*, https://www.incode2030.gov.pt/sites/default/files/incode2030_en.pdf.

OECD (2015), *OECD Skills Strategy Diagnostic Report: Portugal*, http://www.oecd.org/skills/nationalskillsstrategies/Diagnostic-report-Portugal.pdf.

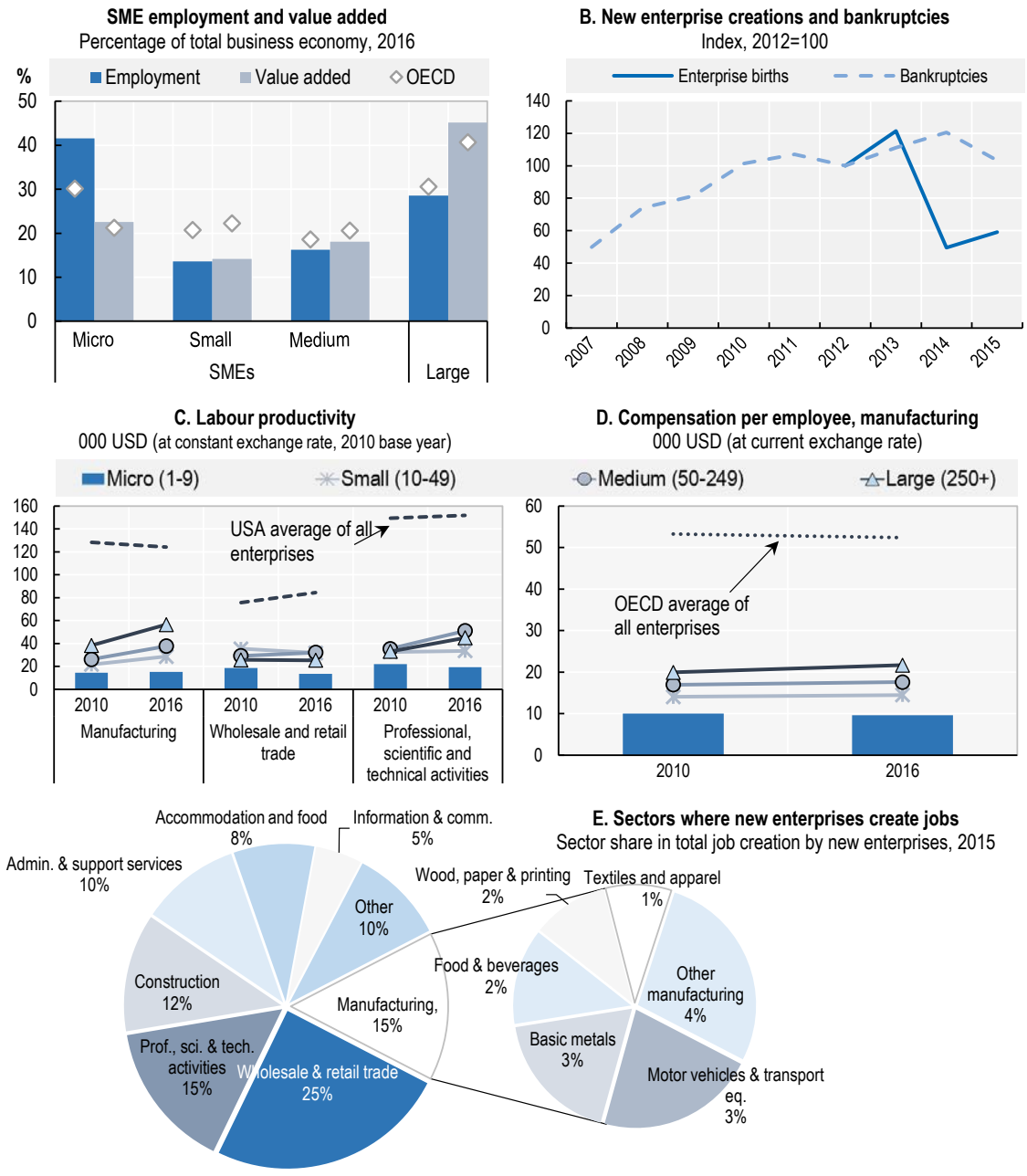
Programa Interface (n.d.), *Capacitar A Industria Portuguesa*, http://www.programainterface.pt/pt.

StartUP Portugal (n.d.), *Government Launches New Measures to Support Entrepreneurship*, http://startupportugal.com/sp-plus/.

U.S. Department of Commerce (2017), *Portugal - Market Challenges*, https://www.export.gov/article?id=Portugal-Market-Challenges (accessed on 22 June 2018).

Chapter 37. Slovak Republic

Figure 37.1. Structure and performance of the SME sector in Slovak Republic



Source: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: Employer enterprise births, *OECD Structural and Demographic Business Statistics Database 2018;* and Financing SMEs and Entrepreneurs 2018: *An OECD Scoreboard for bankruptcies;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018, Employer* Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925502

SME business conditions and access to strategic resources

Institutional and regulatory framework

Starting a business in the Slovak Republic is less costly than in most OECD countries, but burden on firms remain due to administrative requirements and the complexity of rules. In 2016, the government introduced the "Act on the Promotion of Small and Medium Enterprises" which includes specifications on SME coverage in regulatory impact assessment. Furthermore, since the beginning of 2017, a new corporate structure is in place, the "simplified joint stock company", with minimum share capital of EUR 1. This company form is particularly well suited for venture capital and private equity investments as it enables to issue various classes of shares and agree beforehand on the exit from the company.

Market conditions

Almost half (45%) of the Slovak GDP depends on foreign markets, but exports are relatively concentrated and smaller SMEs are less trade oriented than in most other OECD countries. Under the EU OPRI, a national project to support SME internationalisation is in place. In 2015 the reform of the "Public Procurement act" became effective, with the objective of ensuring more fair and objective procurement and introduce Most Economically Advantageous Tender (MEAT). Additionally, the Public Procurement Office organises training for contracting authorities that also cover SME facilitation.

Infrastructure

While Slovak investments in transport infrastructure are relatively high, ICT investments are low by OECD standards. The Strategic Transport Development Plan (2016-30) – Phase II focuses on providing an even access to settlements and industrialised zones and supporting inclusive growth in all regions with the development of an integrated multimodal transport system. The government has also set the long-term objective of achieving access to high-speed internet connection with at least 30 Mbps for all households by the end of 2020. As of 2018, the European Investment Bank, through the European Fund for Strategic Investments, planned to finance EUR 475 million for transport infrastructure projects, set to trigger EUR 1.2 billion in investments..

Access to finance

Total SME lending has been on an upward trend since 2012 and credit conditions for SMEs have been gradually improving. Government policies supported this trend by providing loans and guarantees for SMEs through specialised state banks and through the Slovak Business Agency (SBA), such as with the micro-loans programme. Other financing instruments targeted at SMEs are being backed by the EU structural and investment funds (ESIF). These include the ESIF disbursement to support SMEs in the 2014-2020 period. The closure of the funding support from JEREMIE was a major cause of the reduction by 83% of venture and growth capital in 2017, as SMEs being funded under the 2014-2020 programme have not yet received support..

Access to skills

In the OECD area, the Slovak Republic ranks relatively low in terms of adult tertiary education and core ICT skills. At the same time, with the unemployment at historical lows, labour shortages are pushing up wages and attracting foreign workers, and in particular skilled workers. To enhance skills development, in 2015, the government put in place a reform, which introduces the provision of VET in a dual system based on collaboration between employers and vocational schools. It has also launched a pilot national project to collect data about graduates' labour market performance.

Access to innovation assets

Affiliates of multinational companies in Slovakia favour technology import, while innovation and R&D investments remain weak in local SMEs, with medium- to low-tech manufacturing industries making larger contributions to BERD than high-tech, knowledge-intensive firms. Policies to support innovation in SMEs range from loans, guarantees and risk-sharing mechanisms offered by the Slovak Investment Holding, to competitive grants managed by the EU's Operational Programme Research and Innovation (OPRI). Moreover, in 2016 the government introduced tax incentives on corporate income for business R&D and for intellectual property revenues and other profits (i.e. a patent box).

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

EIB (2018), *The European Investment Bank in Slovakia: What We Do*, http://www.eib.org/en/projects/regions/european-union/slovakia/index.htm.

European Commission (2018), *Country Information - Slovakia - Digital Single Market*, https://ec.europa.eu/digital-single-market/en/country-information-slovakia (accessed on 12 September 2018).

European Commission (2017), *Slovak Republic - SBA Factsheet*, https://ec.europa.eu/docsroom/documents/29489/attachments/25/translations/en/renditions/pdf.

Government of the Slovak Republic (2014), *Strategic Document for Digital Growth and Next Generation Access Infrastructure (2014 – 2020)*, https://www.mindop.sk/ministerstvo-1/elektronicke-komunikacie-8/strategicke-dokumenty/sirokopasmovy-pristup/narodna-strategia-pre-sirokopasmovy-pristup-v-sr/narodna-strategia-pre-sirokopasmovy-pristup-v-sr-uznesenie-vlady-sr-c-136-2011.

Ministry of Transport (2016), *Strategic Transport Development Plan of the Slovak Republic up to 2030-Phase II*, Construction and Regional Development of the Slovak Republic, https://www.opii.gov.sk/download/d/sk_transport_masterplan_(en_version).pdf (accessed on 12 September 2018).

OECD (2018), *Slovak Republic - Economic Forecast Summary (May 2018)*, http://www.oecd.org/economy/slovak-republic-economic-forecast-summary.htm (accessed on 12 September 2018).

OECD (2017), *OECD Economic Surveys: Slovak Republic 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-svk-2017-en.

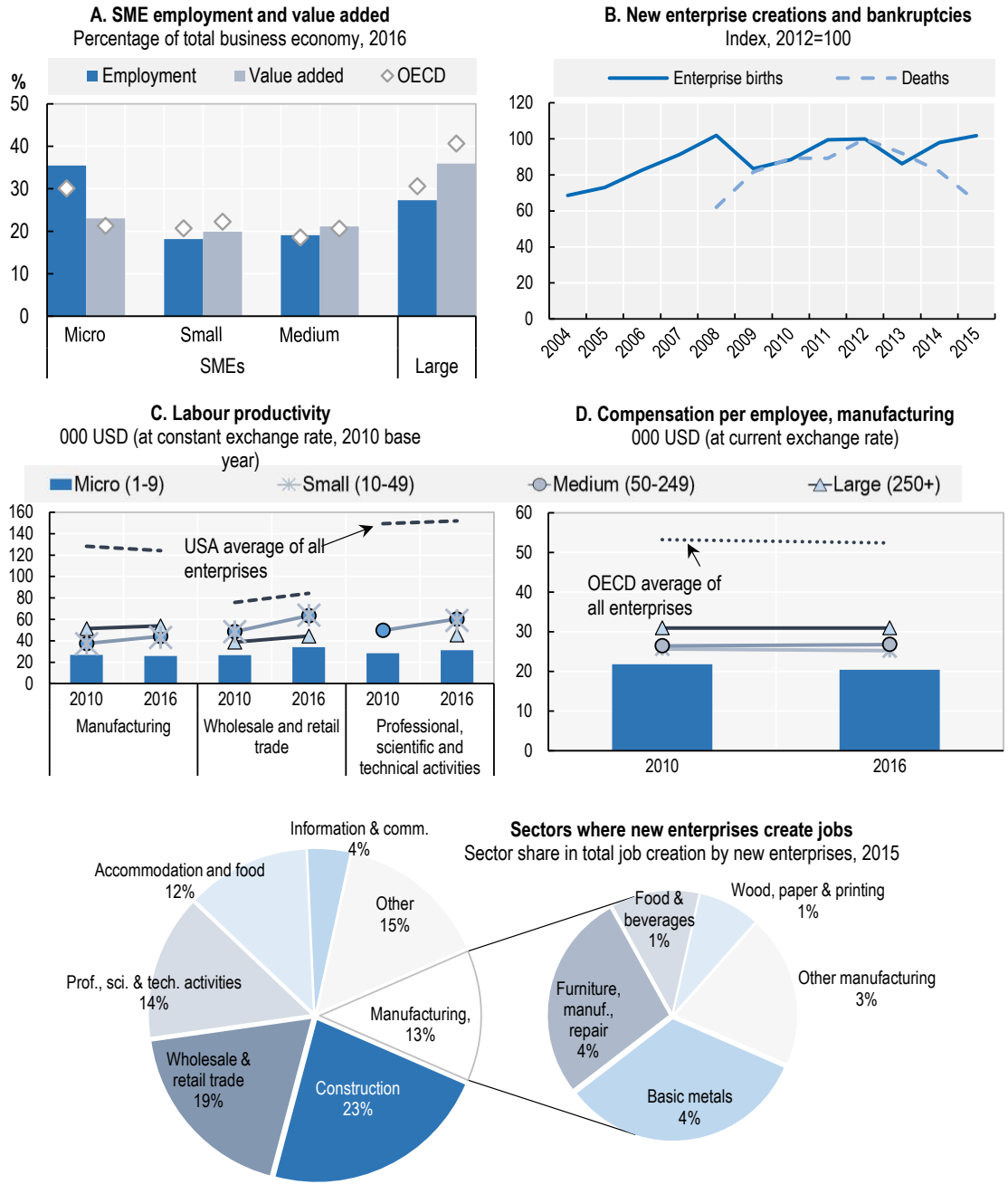
OECD (2017), *Public Procurement for Innovation: Good Practices and Strategies*, OECD Publishing, https://doi.org/10.1787/9789264265820-en.

OECD (2017), *Slovak Republic, Trade and Investment Statistical Note*, http://www.oecd.org/investment/SLOVAK-REPUBLIC-trade-investment-statistical-country-note.pdf.

SARIO (n.d.), *Support of Internationalization of SMEs*, Slovak Investment and Trade Development Agency, https://www.sario.sk/en/support-internationalization-smes.

Chapter 38. Slovenia

Figure 38.1. Structure and performance of the SME sector in Slovenia



Source: A, C, D. *OECD Structural and Demographic Business Statistics Database* 2018, (http://dx.doi.org/10.1787/sdbs-data-en) *Source*: B, E. *OECD Structural and Demographic Business Statistics Database* 2018, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925521

SME business conditions and access to strategic resources

Institutional and regulatory framework

The costs associated with business start-up in Slovenia are among the lowest in the OECD area. The national online business portal e-VEM was updated in 2016 to reduce the time and cost for starting a business. E-VEM is the first level of the SPOT system, a system of one-stop shops on four levels, designed together by the Ministry of economic development and technology, and the public agency SPIRIT Slovenia. The second level is SPOT Information Points, the third level are 12 SPOT Advice Points and the national (fourth) level is SPOT Global (for investors and investments). Besides the SPOT system, the services of Institutions of innovative environment (technology parks, incubators etc.) are being supported. Simplifications were also introduced in the tax system for the self-employed, with the creation in 2016 of pre-filled social-security contributions accounts in electronic format. At the same time, the Ministry of Economic Development monitors the implementation of mandatory SME tests in all new laws since 2016. The Action Plan Slovenia – the land of innovative start-ups (2018) highlights 36 obstacles to start-ups and measures for their elimination, of which only 20 are being implemented due to intra-governmental coordination requirements. A report on the implementation has been prepared as well as an updated Action plan with proposed solutions and activities.

Market conditions

Slovenia has increased its domestic value added in exports by over 50 % over the past two decades but forward participation in GVCs remains below the OECD median. The 2015-20 Programme for Internationalisation includes measures to support SME internationalisation through the development of new business models, the establishment of partnerships to enhance participation in GVCs, the creation of one-stop-shops for exporters and investors, feasibility studies and export plans, and the exploration of new international market opportunities.

Infrastructure

While ICT investments and fixed broadband penetration in Slovenia are close to the OECD median, mobile broadband penetration is lower than in most OECD countries. The Digital Slovenia 2020 strategy aims to have ultra-fast broadband cover 96% of households and fast broadband covering the rest by 2020, above the Digital Agenda for Europe Goals. The Next Generation Broadband Development Plan sets a roadmap to reach these goals by 2020, including the development of the infrastructure in underserved areas, with the provision to firms of a digital highway to access global e-services. These efforts are complemented by a Cyber Security Strategy.

Access to finance

SME lending has halved over 2011-16 while interest rates have declined. In 2017, a EUR 253 million Fund of Funds was created with EC Cohesion Funds to support SMEs, R&D and innovation, energy efficiency and urban development. First funds were allocated in 2018. The Slovene Enterprise Fund also supports MSMEs through multiple instruments (grants, microloans, seed capital, guarantees etc.) and “smart money” by combining instruments, especially seed capital and convertible loans, with mentoring, coaching and training. The SID bank implements, besides a Fund of Funds, different loan funds for SMEs, investments, internationalisation, tourism and wood processing. The Patient loans

(with lower interest rate and longer grace period) are still active. Public loan guarantees varied widely over recent years, amounting to EUR 520 million in 2016 – up from 0 in 2015 but only half the 2013 level. In 2016, the government opened credit lines with long grace periods aimed at promising but over-indebted SMEs. A call was also issued for SMEs that received the EC Seal of Excellence but could not be funded by the Horizon 2020 SME instrument. It supports feasibility studies (up to EUR 35 000).

Access to skills

In spite of significant progress in educational attainment and workforce upskilling since the 1990s, life-long learning opportunities remain limited and several vocational occupations show signs of labour shortage. Skills development of employees is supported through Human Resources Competence Centres. These partnerships of sectoral institutions and companies (including SMEs) identify skills gaps and implement training programmes. In 2017, a call was issued for creating 11 new centres, where 240 companies are now involved. Digitalisation and digital competences in SMEs are also a priority: a call for tenders on incentives was issued in 2018 (EUR 2.6 million) and digital innovation hubs were opened in 2019 as one-stop-shop. Measures were launched in schools to strengthen entrepreneurial skills and facilitate the transition to the labour market (e.g. apprenticeships in secondary vocational education).

Access to innovation assets

SME R&D intensity is relatively high by OECD standards in Slovenia, but does not translate into high innovation rates. In 2019, the Ministry of Economic Development and Technology introduced a voucher system to improve SME business processes for quality standards, IPR, internationalisation (trade fairs, forums, trade analysis and delegations abroad) and digitalisation (digital strategy, digital competences, digital marketing and cyber security). A EUR 9.45 million call for e-business for SMEs that go international was published in 2018. Sector-specific incentives encourage SME innovation, e.g. in the wood sector with innovation grants up to EUR 40 000 since 2016. Innovation clusters in Smart Specialisation areas – which must include SMEs – are also supported. In 2016, nine strategic development and innovation partnerships were established by 400 companies and 100 knowledge institutions.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

EC (2018), *Digital Economy and Society Index 2018, Country Report Slovenia*, European Commission, Brussels, http://ec.europa.eu/newsroom/document.cfm?doc_id=43041.

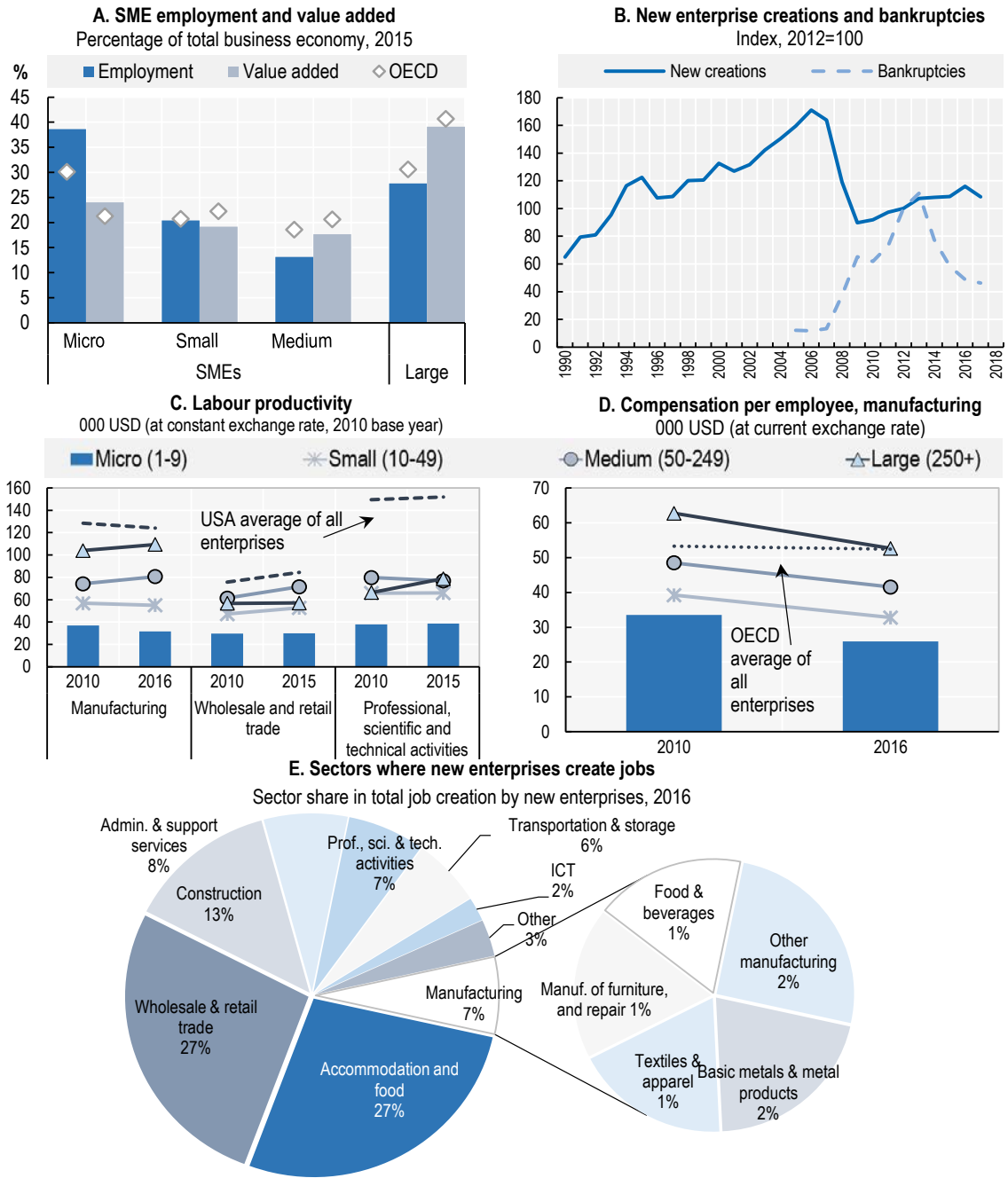
EC (2017), *2017 SBA Fact Sheet Slovenia*, European Commission, https://ec.europa.eu/docsroom/documents/32581/attachments/26/translations/en/renditions/native.

Government of Slovenia (2015), *Programme for Internationalisation 2015-2020*, http://www.mgrt.gov.si/fileadmin/mgrt.gov.si/pageuploads/SEKTOR_ZA_INTERNACIONALIZACIJO/ANG/Program_INTER_2015-2020_koncna_EN-_FINAL.pdf.

OECD (2017), *OECD Economic Surveys: Slovenia 2017*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-svn-2017-en.

Chapter 39. Spain

Figure 39.1. Structure and performance of the SME sector in Spain



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B*: OECD Timely Indicators of Entrepreneurship Database 2018* for new enterprise creations; and Financing SMEs and Entrepreneurs 2018*: An OECD Scoreboard for bankruptcies;* Chart E. *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925540

SME business conditions and access to strategic resources

Institutional and regulatory framework

Spanish SMEs benefit from a supportive administrative and regulatory framework as compared to the OECD median. However, regional regulatory differences create barriers to achieving a single domestic market, and progress on implementing the Market Unity Law is slow. The government reinforced the legal implementation framework of the SME test in 2017. In addition, the insolvency regime remains constraining and recent reforms have aimed to improve business liquidity and access to credit. The Business Health Tool (2017) provides free online support to entrepreneurs for assessing the viability of their business. Besides, the Government has recently approved the first Strategic Framework for Spanish SMEs, conceived as an instrument for improving SME competitiveness and growth possibilities.

Market conditions

The share of Spanish exporting SMEs has increased since 2011 but remains relatively low compared to the OECD area. The Internationalisation Strategy of the Spanish Economy (2017-27) puts an emphasis on supporting SMEs to export and invest abroad, including financial support. Levelling the playing field in public procurement is another market issue in Spain, as there is room for reducing payment delays and tendering requirements for SMEs. The Public Sector Contracts Act 2017 provides a new legislative framework for SME access to public contracting with more simplified and transparent procedures. It also establishes the division of contracts into smaller lots and provides payment protections to subcontracted SMEs.

Infrastructure

Spain has high quality infrastructure. Gaps between regions are therefore less of an issue in Spain than institutional barriers. Fixed and mobile broadband penetration are on par with the OECD median, although price to fixed broadband basket remain comparatively extremely high. The government is currently working on a new Digital Strategy for Smart Spain, which will place a strong focus on skills development and addressing business needs.

Access to finance

SME financing conditions have been improving in Spain since 2014. SME lending (mainly in the form of short-term loans) recovered after a dramatic drop during the crisis. Interest rates and interest rate spreads have declined and credit conditions have stabilised. Venture capital investments also increased to EUR 1.1 billion between 2015 and 2016. The government has committed to increasing the financing available for SMEs. Since 2016, the Centre for Industrial Technological Development (CDTI) earmarked EUR 700 million in the form of loans and VC funding to SMEs with high tech content. ENISA has become the leading support institution for entrepreneurship, mainly through participative loans. ENISA growth, in particular, targets firms with growth potential.

Access to skills

Skills demand is polarised in Spain, with many jobs requiring either high-level or low-level qualifications. The labour market shows high unemployment (20% in 2016),

overqualification and a high level of temporary contracts. On-the-job training remains below OECD standards. The Strategic Plan for Vocational Education and Training (2016-20) foresees enhancing quality, recognition and mobility. Training vouchers for the unemployed, administrated by regional governments, were also introduced in 2017.

Access to innovation assets

Spanish SMEs invest less in ICT equipment than their OECD counterparts but are proactive in adopting high-speed broadband. They also engage less in innovation activities, although their digital business practices is on par with the median. The Strategic Plan Red.es (2017-20) provides momentum to the development of digital ecosystems and support to SME ICT use. Since 2017, the National Strategy "Industria Conectada 4.0" has engaged several actions towards SMEs, including an on-line diagnostic application (HADA), Advisors for Connected Industry 4.0 (Activa), awareness campaigns (Congreso IC4) and preferential loans for financing digitalisation projects. The Comprehensive Plan to Boost the Competitiveness of Retail Trade 2017 aims to adapt the sector to new purchasing environments, especially SME operation on digital platforms, and to respond to new consumer behaviours. SMEs also receive enhanced support for doing business online with the E-commerce Impulse programme (2017). And the Intellectual Property Strategic Plan (2017-20) aims to integrate data protection into the Spanish business culture.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Competitiveness, S. (2017), *Estrategia de Internacionalización de la Economía Española 2017*, http://www.mineco.gob.es/stfls/mineco/prensa/ficheros/noticias/2017/170908_Estrategia_Internacionalizacion_2017_2027.pdf (accessed on 26 November 2018).

EC (2018), *Spain - Investments and infrastructure*, EU Transport Scoreboard, https://ec.europa.eu/transport/facts-fundings/scoreboard/countries/spain/investments-infrastructure_en (accessed on 28 November 2018).

OECD (2018), *OECD Economic Surveys: Spain 2018*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-esp-2018-en.

OECD (2017), *Getting Skills Right: Spain*, Getting Skills Right, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264282346-en

OECD (2017), *OECD Economic Surveys: Spain 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-esp-2017-en.

Spain Ministry of Economy Industry and Competitiveness (2017), *Plan Integral de Apoyo a la Competitividad del Comercio Minorista de España 2017*, http://www.mineco.gob.es/stfls/mineco/prensa/ficheros/noticias/2017/170908_Plan_Integral_Comercio_17.pdf (accessed on 26 November 2018).

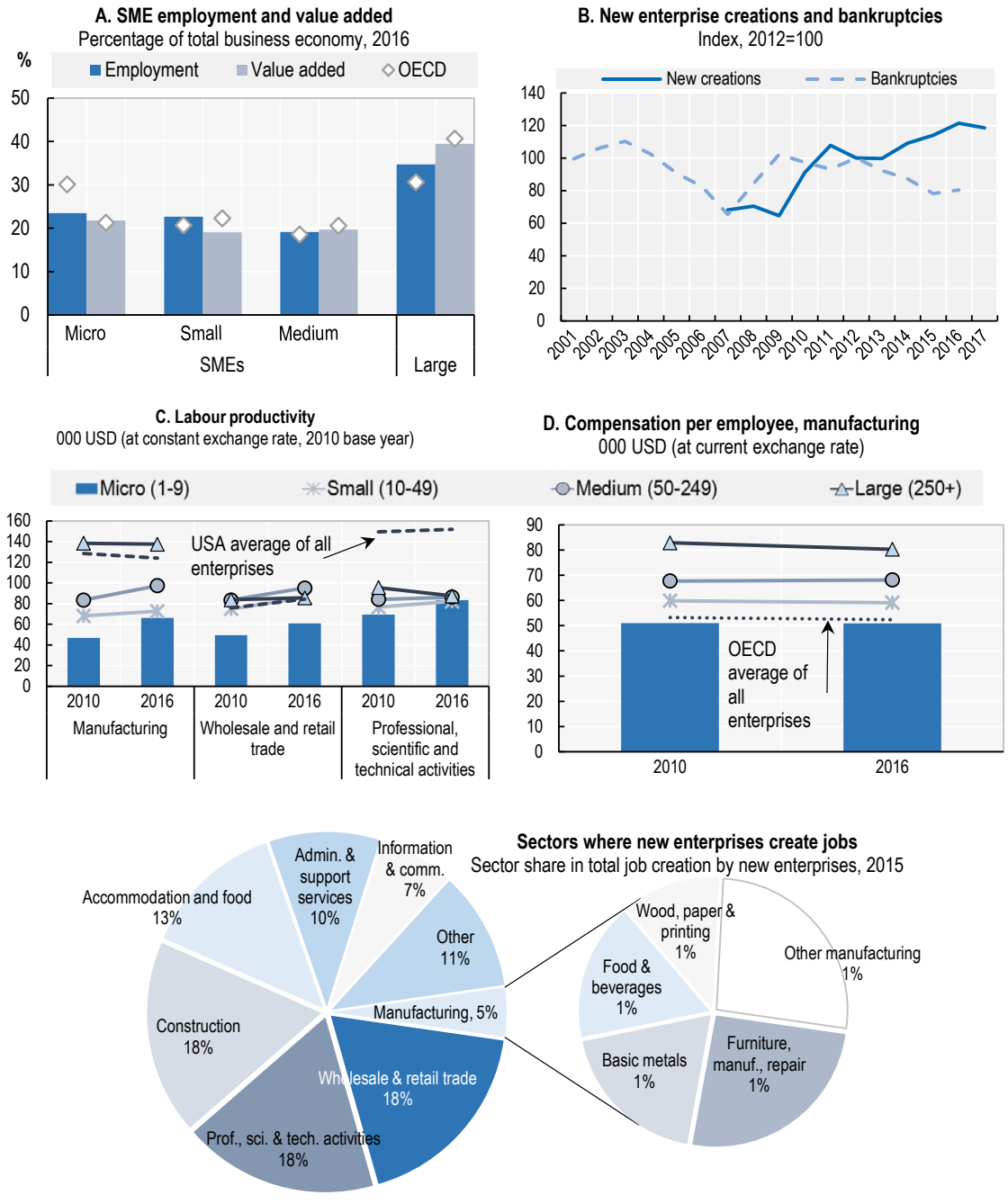
Spain Ministry of Energy Tourism and Digital Agenda (2017), *Plan Estratégico de Red.es (2017-20)*, https://www.red.es/redes/sites/redes/files/Plan_Estrategico_red.pdf (accessed on 26 November 2018).

Spanish Government (2017), *Intern ationalisation of the Economy and Retail Trade*, http://www.thespanisheconomy.com/stfls/tse/ficheros/2016/170908_CoM_Internationalisation_of_the_Economy_and_retail_trade.pdf.

Spanish Government (2017), *Retrato de la PYME - Dirce a 1 de enero de 2017*, http://www.ipyme.org/Publicaciones/Retrato-PYME-DIRCE-1-enero-2017.pdf.

Chapter 40. Sweden

Figure 40.1. Structure and performance of the SME sector in Sweden



Source: Charts A, C, D. *OECD Structural and Demographic Business Statistics Database 2018.* (http://dx.doi.org/10.1787/sdbs-data-en); *Chart B. OECD Timely Indicators of Entrepreneurship Database 2018* Chart: E. OECD Structural and Demographic Business Statistics Database 2018, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925559

SME business conditions and access to strategic resources

Institutional and regulatory framework

Administrative conditions for Swedish start-ups and regulatory procedures are on par with OECD practices. Sweden has long placed regulatory simplification at the core of its reform agenda and further efforts are made through the consolidation of a business online portal (www.verksamt.se), capacity building for regulatory impact assessment and the digital simplification of communication between municipalities and firms. The pilot programme Serverat, which targets micro firms in the food industry with streamlined digital services, has also been extended to the hospitality industry. Since 2015, the central government has taken steps with municipalities in order to improve land-use planning and regulations and reverse the structural undersupply of housing that constraints labour mobility and business dynamism.

Market conditions

In view of it large public procurement market, Sweden has adopted a more strategic approach to procuring in order to increase savings and benefits to society. The 2017 National Public Procurement Strategy aims to improve trust in public markets, make public procurement more innovation-friendly and provide the right conditions for SMEs to compete, including by dividing public contracts into smaller lots and removing crippling capacity criteria.

Infrastructure

Sweden has strong network infrastructure and ranks among the top OECD in many related dimensions. The government is making historic investments in railway, road and maritime infrastructure, and public transport. The National Plan for Infrastructure (2018-29) earmarks SEK 700 billion in both new construction and modernisation with a focus on climate, job creation and housing. In addition, the Digitalisation Strategy announced in 2016 aims to reinforce digital security and privacy, improve business climate for data-driven innovation, support the digital transformation of public agencies and develop hard and soft digital infrastructure, especially for data transmission.

Access to finance

SME lending has increased in Sweden since 2012, coincidently with decreasing interest rates, increasing business lending and low rate spread. Private equity funding and alternative finance are also on the rise. Venture capital (VC) investments were EUR 411 million in 2017, up from EUR 263 million the previous year. The volumes raised through alternative finance have increased by +548% in one-year time. The government restructured the public financing for innovation and sustainable growth in 2016 and simplified the state VC system to rationalise public resources in the area. Saminvest AB began operations in 2017 as a fund of funds focusing on development-stage companies.

Access to skills

Sweden has a highly educated workforce, among the top 5 OECD with regard to its digital literacy. Skills shortages are nevertheless widespread and weigh on SME capacity to grow. According to 2015 national data, a third of Swedish firms report labour shortages, most often because of a lack of candidates with the right skills. Sweden also

faces challenges in adapting migrants' skills to its knowledge-intensive market. The Smart Industry Strategy (2016) steps up efforts towards an Industrial Skills Boost and the development of a skills system for Industry 4.0, including by raising interest in STEM and encouraging lifelong learning, mobility and career changes. Measures also aim to speed up the integration of immigrants into vocational education and training.

Access to innovation assets

SME digital transformation is on march in Sweden. The share of SMEs investing in high-speed broadband or cloud computing, or selling online, is among the highest in the OECD area. The government set up in 2017 a coaching programme for small firms to optimise the benefits of digitalisation. A SME-targeted programme aims to raise knowledge on immaterial assets with grants and specialised hubs for using them. Efforts also focus on commercialisation, through support for the validation of technology and business concepts, specifically targeting innovators and young firms (2016). The Testbed Sweden (2017) increases capacity for demonstration facilities.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

EC (2017), *2017 SBA Fact Sheet Estonia*, European Commission, https://ec.europa.eu/docsroom/documents/32581/attachments/28/translations/en/renditions/native

Government Offices of Sweden (2019), "The Government's plan for infrastructure – how we build Sweden strong and sustainable", https://www.government.se/press-releases/2018/06/the-governments-plan-for-infrastructure--how-we-build-sweden-strong-and-sustainable/.

OECD (2017), *OECD Economic Surveys: Sweden 2017*, OECD Publishing, Paris, https://dx.doi.org/10.1787/eco_surveys-swe-2017-en.

OECD (2016), *Getting Skills Right: Sweden*, Getting Skills Right, OECD Publishing, Paris, https://dx.doi.org/10.1787/9789264265479-en.

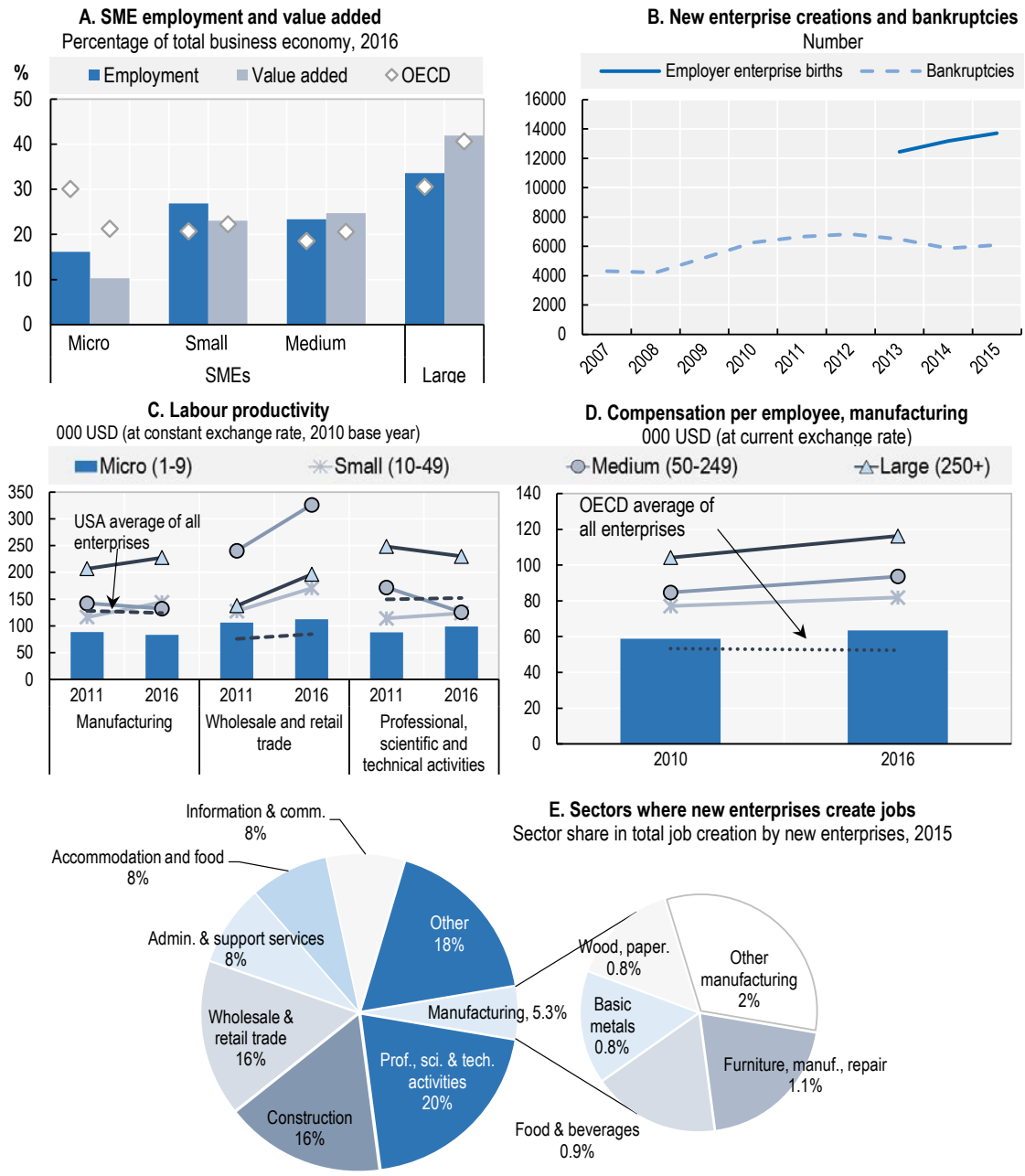
Swedish Government (2017), "For sustainable digital trasnformation in Sweden: a Digital Strategy", Ministry of Enterprises and Innovation, https://www.government.se/49c292/contentassets/117aec2b9bf44d758564506c2d99e825/2017_digitaliseringsstrategin_faktablad_eng_webb-2.pdf.

Swedish Government (2017), *National Public Procurement Strategy*, https://www.upphandlingsmyndigheten.se/globalassets/english/procurement/national_public_procurement_strategy_english_web.pdf (accessed on 05 December 2018).

Swedish Government (2016), *Smart Industry - A Strategy for New Industrialisationfor Sweden*, https://www.government.se/498615/contentassets/3be3b6421c034b038dae4a7ad75f2f54/nist_statsformat_160420_eng_webb.pdf (accessed on 05 December 2018).

Chapter 41. Switzerland

Figure 41.1. Structure and performance of the SME sector in Switzerland



Notes: A. For Switzerland, structural business data exclude enterprises with less than three persons employed.
Sources: Charts A, C, D: *OECD Structural and Demographic Statistics Database 2018*, http://dx.doi.org/10.1787/sdbs-data-en; Chart B. For employer enterprise births, *OECD Structural and Demographic Statistics Database 2018*; for bankruptcies, Financing SMEs and Entrepreneurs 2018: *An OECD Scoreboard;* Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925578

SME business conditions and access to strategic resources

Institutional and regulatory framework

Regulatory conditions for Swiss start-ups are accommodative. The level of administrative burden on start-ups, the costs for starting a business or the strength of insolvency regime are on par with the OECD median. However, there is a high level of administrative fragmentation between the Federal State and cantons, for instance in the support programmes to entrepreneurs. 87 different measures are available at the canton level for financing firms and start-ups. In 2017 the government launched EasyGov.swiss, an one-stop-shop allowing firms processing authorisation, application and reporting online. It is available at federal level and will be extended to cantonal and municipal authorities in 2019. Together with the SME Portal, the platforms aim to simplify administrative procedures for SMEs.

Market conditions

Switzerland is a small open economy, well integrated in the global economy, but the country has higher binding restrictions in services trade than the OECD median, particularly in computer or telecom services. These constraints tend to weigh on cross-border flows and increase domestic mark-ups. The government is actively pursuing the development of a Free Trade Agreements network. New FTAs were concluded in 2016 with the Philippines and Georgia. Negotiations are ongoing with India, South-East Asian countries, or Mercosur States.

Infrastructure

In Switzerland, network industries (energy, transport and ICT) are highly regulated and concentrated, which weigh on their competitiveness. Whereas fixed broadband is widely diffused across the country, performance in terms of price or mobile broadband penetration are around, or even below, the OECD median. The Digital Switzerland Strategy (2018-20) provides the guidelines for a digital transformation of the country and envisions developments around Smart Cities and Artificial Intelligence. It includes a starter kit for cyber security for SMEs. Innosuisse, the Swiss Innovation Agency, also promotes the digital transformation of energy and mobility systems via the Swiss Competence Centers for Energy Research (SCCERs).

Access to finance

The Swiss credit market is sound and SME liquidity issues have faded in the last decade. SMEs have benefited from decreasing interest rates and a lower interest rate spread. Lending standards also loosened in 2016 and venture capital markets peaked after a boom in 2015. Crowdfunding activities have been increasing at a fast pace despite the absence of a specific legislative framework. The government has focused recent efforts on alternative sources of SME finance and creating a Fintech-friendly environment. In 2017, the Federal Council lowered entry barriers to the Fintech market with a view to increasing competition. Regulatory amendments also aim to stimulate the testing of new business models.

Access to skills

The Swiss vocational education and training (VET) system is strongly employer- and market-driven and yields good labour market outcomes. However, there is mounting evidence of increasing job vacancies and skills mismatches with already ICT skills shortage and more under-qualified workers than over-qualified ones. The multiannual federal plan for the promotion of Education, Research and Innovation (ERI Dispatch) (2017-20) puts an emphasis on improving financing for professional tertiary education and making it more attractive. The Digitalisation Action Plan for ERI (2019-20) foresees strengthening digital competences in all fields of education.

Access to innovation assets

Switzerland is an innovation leader in Europe, and Swiss SMEs are more engaged in innovation activities than their OECD counterparts. In comparison, their participation in R&D and collaboration networks is less strong. They are also less proactive in digitalising internal processes. An online platform digital.swiss (2016) provides information on digitalisation and measures progress in 15 topic areas. The New Regional Policy (NRP) entered its second 8-year funding phase in 2016 with a focus on regional innovation and the structural transformation of the tourism industry. SMEs in rural areas receive coaching on knowledge sharing and collaboration with a view to promoting regional innovation systems.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

Le Conseil Fédéral (2017), *Le Conseil fédéral met en vigueur de nouvelles règles pour les FinTech*, https://www.admin.ch/gov/fr/accueil/documentation/communiques.msg-id-67436.html (accessed on 11 September 2018).

OECD (2017), *OECD Economic Surveys: Switzerland 2017*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-che-2017-en.

SECO (2019), *Free Trade Agreements*, State Secretariat for Economic Affairs, https://www.seco.admin.ch/seco/en/home/Aussenwirtschaftspolitik_Wirtschaftliche_Zusammenarbeit/Wirtschaftsbeziehungen/Freihandelsabkommen.html.

SECO (2018), *EasyGov*, State Secretariat for Economic Affairs, https://www.easygov.swiss/easygov/#/en (accessed on 15 November 2018).

SECO (n.d.), *Developing a Transaction Portal for Businesses*, State Secretariat for Economic Affairs, https://www.egovernment.ch/en/umsetzung/schwerpunktplan/tranksaktionsportal-fur-die-wirtschaft/ (accessed on 15 November 2018).

Swiss Confederation (2018), *Companies Benefit from EasyGov and SME Portal*, https://www.kmu.admin.ch/kmu/en/home/New/news/2018/companies-benefit-from-easygov-and-smeportal.html (accessed on 15 November 2018).

Swiss Confederation (2018), *Piano d'azione Svizzera digitale*, https://www.bakom.admin.ch/bakom/it/pagina-iniziale/digitale-e-internet/strategia-svizzera-digitale.html (accessed on 15 November 2018).

Swiss Confederation (2018), *The SME Portal is available in English*, https://www.kmu.admin.ch/kmu/en/home/New/news/2018/the-sme-portal-is-available-in-enlgish.html.

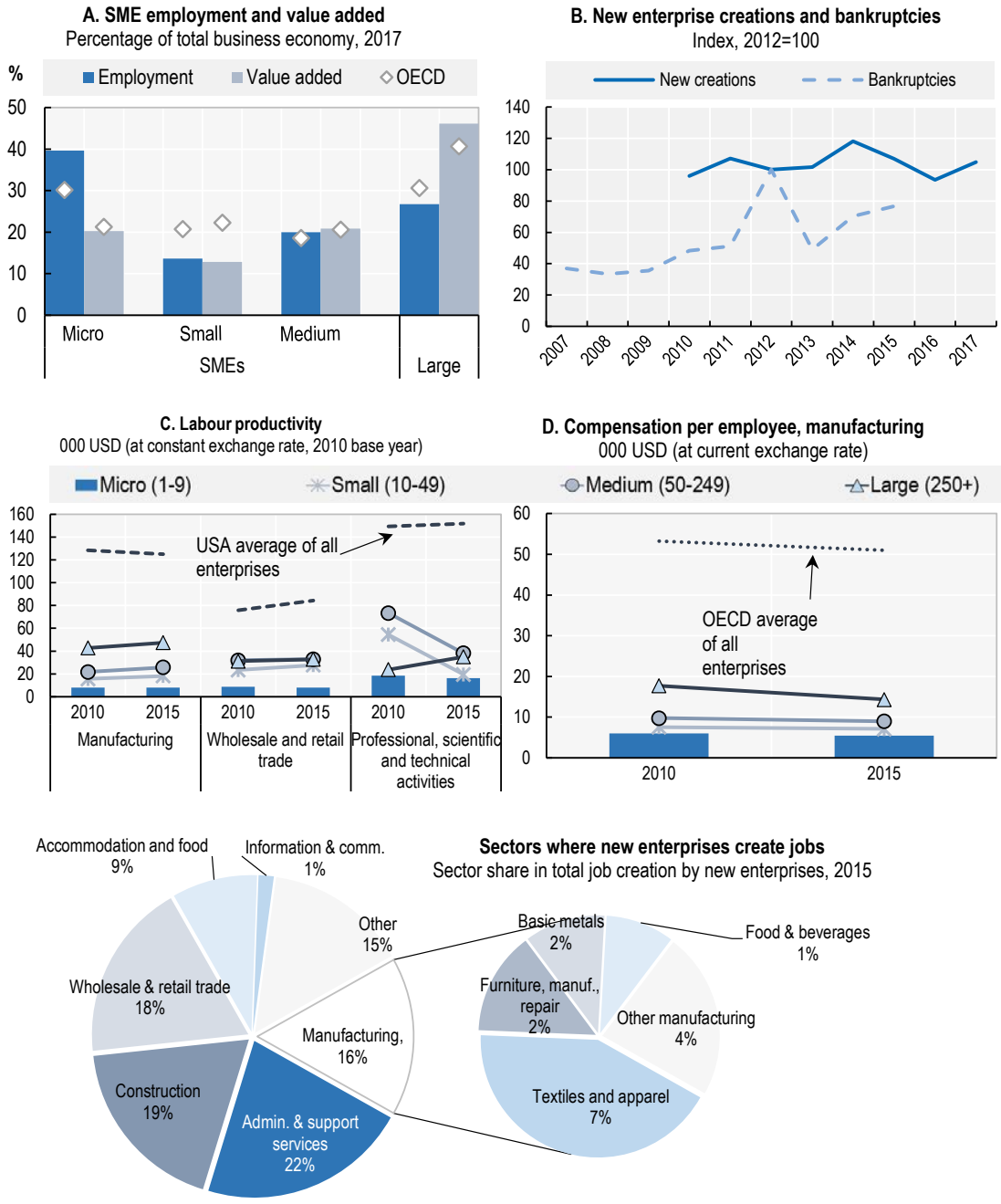
Swiss Federation for Adult Learning (n.d.), *Federal Act on Continuing Education and Training*, https://alice.ch/en/continuing-education-in-switzerland/federal-act-on-continuing-education-and-training/ (accessed on 12 September 2018).

Switzerland Global Enterprise (2018), *Swiss SMEs Still in Export Mode*, https://www.s-ge.com/en/article/news/export-outlook (accessed on 15 November 2018).

Vujanovic, P. and C. Lewis (2017), "Ensuring a dynamic skills-training and life-long learning system in Switzerland", No. 1444, OECD Publishing, Paris, https://doi.org/10.1787/438423d9-en.

Chapter 42. Turkey

Figure 42.1. Structure and performance of the SME sector in Turkey



Note: Chart A: The OECD average refers to 2016.
Source: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018,* http://dx.doi.org/10.1787/sdbs-data-en; Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925597

SME business conditions and access to strategic resources

Institutional and regulatory framework

Improving the institutional and regulatory framework has been a key area of reform in Turkey, where administrative burdens are high relative to OECD levels. The review and simplification of legislations are part of the SME Strategy and are undertaken through various actions by the Prime Minister's Office. The Reduction of Bureaucracy and Simplification of Legislation Initiative (BAMS) was launched in 2014 followed by a number of legislative amendments, changes in application processes, new online services and digitalised documents. In 2017-18, the procedures to create a business were simplified by removing the paid-in minimum capital requirement and the notarisation of company documents and legal books. The introduction of paperless transactions as part of the E-Government Strategy and Action Plan 2016-19 is also expected to streamline bureaucratic procedures for businesses and citizens.

Market conditions

In recent years, private consumption and investment in Turkey have been fuelled by fiscal policies and goods export demand, although service exports remain weak. SMEs account for over 55% of exports in Turkey, and supporting SMEs' internationalisation is a priority in the 2015-18 SME Strategy, which places emphasis on specialised training for SMEs expanding in international markets.

Infrastructure

Turkey's investments in inland transport infrastructure are in line with the OECD median, while the country's ICT infrastructure is less developed than in most other OECD countries, with low rates of fixed and mobile broadband penetration. These however reflect large differences across regions in the quality of infrastructure and SMEs' uptake. The National Broadband Strategy and Action Plan 2017-20 aim to increase investments in broadband services in order to spread related infrastructure across the country. Turkey has made significant strides in building up its R&D infrastructure, with international cooperation playing a pivotal role, including in the framework of EU programmes, and several schemes to boost commercialisation and high-technology start-ups. .

Access to finance

SMEs lending in Turkey grew steadily over 2007-17, also supported by a variety of government's programs. KOSGEB, the main body for executing SME policies in Turkey, runs a number of credit interest support programmes and, in 2016, launched an interest free credit model for SMEs. In 2016 as well, a bill was passed on movable collateral in commercial transactions, which allows SMEs' access to finance against receivables, machinery, inventory and stock. This reform led to the creation of security rights for an estimated EUR 9.3 billion. KOSGEB also introduced the SME Technological Product Investment Support and the Strategic Product Support Programmes in 2017 with a view to stimulating alternative sources of finance. The Turkish Growth and Innovation Fund, established in 2016, is a fund-of-funds targeting early stage and start-up businesses, technology transfer accelerators and investments involving business angels.

Access to skills

Turkey lags behind other OECD countries in terms of adult literacy and training and student proficiency. The National SME Strategy and Action Plan (2015-18) emphasises the importance of building SME skills intelligence for designing training programmes. In 2017, the government created a Platform for the Digital Transformation of Industry with the participation of business organisations that help identify skills needs for the transition. The Ministry of Labour and Social Services and Family is working on an Adult Skills Strategy in partnerships with different stakeholders.

Access to innovation assets

Despite their substantial investment in equipment and software, Turkish SMEs exhibit low uptake of digital practices, including e-sales. The Programme to Support Market Research and Market Entry subsidises 80% of SME membership fees on e-commerce sites/portals for a three-year period. Efforts have been made to strengthen legal frameworks for e-payments and consumer protection. The new Trust Mark in Electronic Commerce provides a label to audited e-commerce sites regarding data protection, regulations awareness, transparency etc. Turkey is also developing statistics on e-commerce with a dedicated information platform for registering and recording activities.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

European Commission (2018), *Turkey 2018 Report.*, https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/20180417-turkey-report.pdf (accessed on December 2018).

European Commission (2017), *2017 SBA Fact Sheet Turkey*, https://ec.europa.eu/neighbourhood-enlargement/sites/near/files/turkey_sba_fs_2017.pdf (accessed on December 2018).

European Training Foundation (2018), *Turkey – Helping SMEs Internationalise Through Training*, https://www.etf.europa.eu/en/news-and-events/news/turkey-helping-smes-internationalise-through-training (accessed on December 2018).

OECD (2018), "Comparison of size of the informal economy, 2015", *OECD Studies on SMEs and Entrepreneurship*, OECD Publishing, Paris, https://doi.org/10.1787/9789264301450-graph7-en.

OECD (2018), *OECD Economic Surveys: Turkey 2018*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-tur-2018-en.

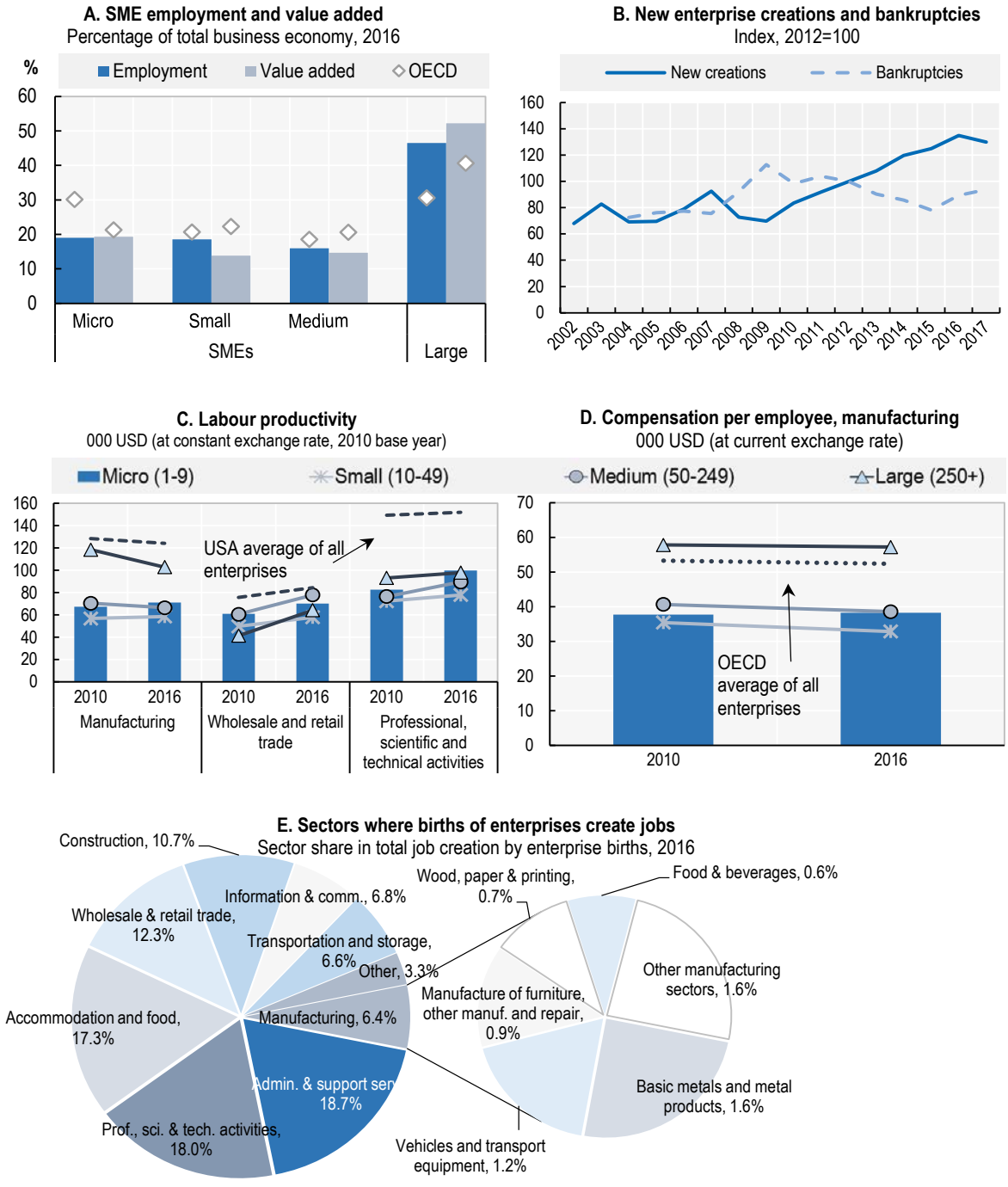
OECD (2017), "Turkey", in *OECD Economic Outlook, Volume 2017 Issue 1*, OECD Publishing, Paris, https://doi.org/10.1787/eco_outlook-v2017-1-47-en.

OECD (2016), *SME Policy Index: Western Balkans and Turkey 2016: Assessing the Implementation of the Small Business Act for Europe, SME Policy Index*, OECD Publishing, Paris, https://doi.org/10.1787/9789264254473-en.

World Bank (2017), *Turkey - Country Partnership Framework for the Period FY18 - FY21 (English)*, World Bank Group, Washington DC, http://documents.worldbank.org/curated/en/585411504231252220/Turkey-Country-partnership-framework-for-the-period-FY18-FY21.

Chapter 43. United Kingdom

Figure 43.1. Structure and performance of the SME sector in the United Kingdom



Sources: Charts A, C, D: *OECD Structural and Demographic Business Statistics Database 2018*, http://dx.doi.org/10.1787/sdbs-data-en; Chart B: *OECD Timely Indicators of Entrepreneurship Database 2018*; Chart E: *OECD Structural and Demographic Business Statistics Database 2018*, Employer Business Demography dataset.

StatLink http://dx.doi.org/10.1787/888933925616

SME business conditions and access to strategic resources

Institutional and regulatory framework

Despite developing an agile approach to regulation that is generally favourable to businesses and enables innovation, the UK ranks below the OECD average for administrative burden on start-ups, the simplification of regulatory procedures and strength of insolvency framework. Measures are being taken to address some of these points. To reduce regulatory complexity, the UK pioneered the 'One-in, One-Out' test, which imposes to assess the net cost of complying with any proposed regulation and find a deregulatory measure which relieves business of the same net cost. Moreover, the UK launched a Regulators' Pioneer Fund in Budget 2017 to invest in innovative projects.

Market conditions

UK SMEs can benefit from the opportunities created by a strong e-procurement system, which is among the most advanced in terms of announcing tenders online, accepting electronic submissions, and managing communications and invoicing online. In 2017, the Crown Commercial Service announced a trial project that enables information to be supplied once and saved for future procurement processes, saving time for SMEs.

Infrastructure

The proportion of UK R&D cross-funded by the higher education and the business sector is below the OECD median. The government has created Science and Innovation Audits (SIAs) to identify strengths in science and innovation in places, and make recommendations, including where industry-science linkages could be strengthened. The SIA process is co-ordinated by the Department for Business, Energy and Industrial Strategy but undertaken by multi-stakeholder groups that include local businesses, universities and local enterprise partnerships (LEPs). The data and analysis generated help LEPs and authorities to develop Local Industrial Strategies and consortia members produce stronger strategies and funding applications.

Access to finance

The share of new bank lending to SMEs is among the bottom five OECD countries. However, SME access to alternative sources of finance grew in recent years, including asset-based finance and peer-to-peer (P2P) lending. Recent measures have been introduced to improve SME access to credit, including the creation of British Patient Capital, a subsidiary of the British Business Bank. Building on the 5-year experience of the Bank's Venture Capital Catalyst (VCC) programme, this GBP 2.5 billion programme supports SMEs with high growth potential to access the long-term financing they need to scale up. Launched in 2018, the programme invests alongside the private sector to drive a total of GBP 7.5 billion investment, and is an important element of the Government's Industrial Strategy.

Access to skills

The UK is a leader among OECD countries in workplace training. This is expected to be further bolstered by a new payroll levy scheme that was implemented in April 2017 to enhance the apprenticeship system; as the levy only applies to employers with annual payrolls over GBP 3 million, most SMEs will be excluded from paying. SMEs stand to

benefit from the new scheme with Government funding the costs of training 16 to 18 year-old apprentices in firms with fewer than 50 employees. Those employing older apprentices and other non-levy paying SMEs can also benefit from government funding of 90% for the cost of training, which will increase to 95% in 2019. This new scheme has a target of 3 million apprenticeship starts by 2020.

Access to innovation assets

The innovation performance of small firms is strong relative to other OECD countries. To boost innovation in SMEs, the government has launched a wide range of programmes, including "Innovation Loans" in 2017. This GBP 50 million pilot initiative seeks to provide affordable and flexible finance for later-stage innovation projects, particularly aimed at innovative SMEs. The loans are delivered through Innovate UK, which is part of UK Research and Innovation, a non-departmental public body funded by a UK government grant-in-aid. This is the first time Innovate UK will have offered an alternative form of innovation finance.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

British Patient Capital (2018), *About*, https://www.britishpatientcapital.co.uk/about/ (accessed on 08 October 2018).

EC (2018), *2017 Small Business Act Fact Sheet: United Kingdom*, European Commission, https://ec.europa.eu/docsroom/documents/29489/attachments/29/translations (accessed on 08 October 2018).

OECD (2017), *OECD Economic Surveys: United Kingdom 2017*, OECD Publishing, Paris, http://dx.doi.org/10.1787/eco_surveys-gbr-2017-en (accessed on 08 October 2018).

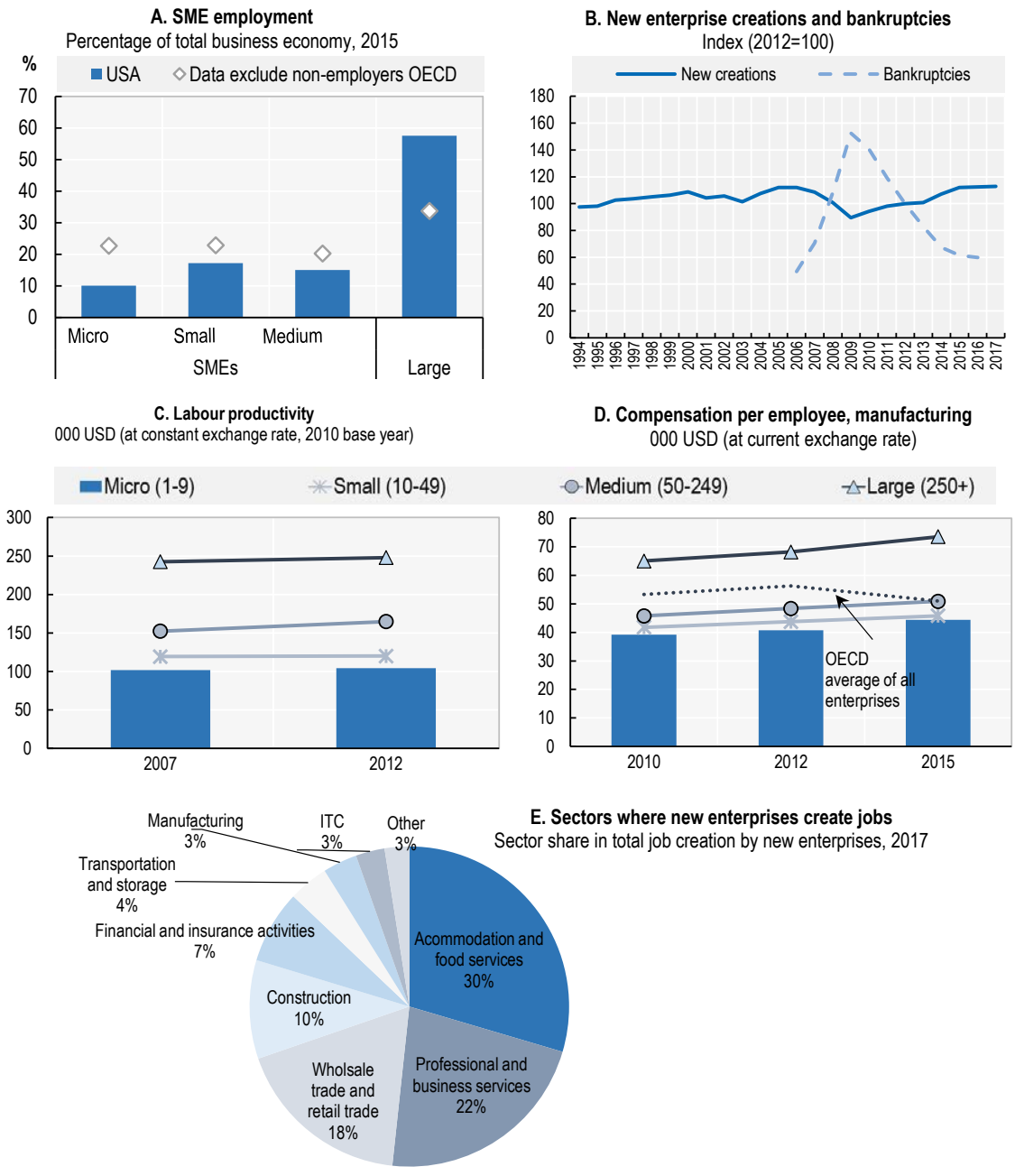
OECD/European Commission (2018), "Innovation loans", in *STIP Compass: International Database on STI Policies*, https://stip.oecd.org/stip/policy-initiatives/2017%2Fdata%2FpolicyInitiatives%2F15937 (accessed on 08 October 2018).

Office for National Statistics (2019), *Dataset: EMP13: Employment by Industry*, https://www.ons.gov.uk/employmentandlabourmarket/peopleinwork/employmentandemployeetypes/datasets/employmentbyindustryemp13.

Office for National Statistics (2018), *Business Demography, UK: 2017*, https://www.ons.gov.uk/businessindustryandtrade/business/activitysizeandlocation/bulletins/businessdemography/2017.

Chapter 44. United States

Figure 44.1. Structure and performance of the SME sector in the United States



Notes: Chart A, C, D. Data exclude non-employer businesses.
Sources: Charts A, C, D. *OECD Structural and Demographic Business Statistics Database 2018.* (http://dx.doi.org/10.1787/sdbs-data-en) *Charts* B, E. OECD Timely Indicators of Entrepreneurship Database 2018.

StatLink http://dx.doi.org/10.1787/888933925635

SME business conditions and access to strategic resources

Institutional and regulatory framework

US regulatory conditions are more business friendly than in most OECD countries, including lower administrative burdens on start-ups and an efficient insolvency regime that favours business dynamism. The 2017 Tax Cuts and Jobs Act allows deductions of up to 20% of qualified income from federal income taxes for small businesses depending on their legal structure. Measures for administrative streamlining were also put in place with Executive Order 13771, which instructs Federal agencies to provide a list of Regulatory Actions and estimate their Impacts on the economy. It also encourages to eliminate two Rules for each new Rule. In addition, the Environmental Protection Agency announced in 2018 its intentions to boost the 2015 eDisclosure programme by providing flexibility for new owners who self-disclose civil violations of environmental standards and tailored audit programs for Small Business Compliance.

Market conditions

US SMEs have benefited from sustained growth in domestic markets and expanding opportunities in global markets, although the share of exporting SMEs is still below the level of most OECD countries. This lower share might be partly explained by the relative larger size of the U.S. Economy. The SBA 2018-22 Strategic Plan provides tailored training and counselling to SMEs through the US Export Assistance Centers. Initiatives to foster SME participation in public markets have also been undertaken: the platform certify.SBA.gov, launched in 2017, enables a more efficient certification process for SMEs to compete for federal contracts.

Infrastructure

Infrastructure provision in the US varies considerably across its key components, with high electricity affordability for industry, international logistic performance and mobile broadband penetration but below OECD median levels in fixed broadband affordability, international co-patenting collaboration, and land transportation. In 2016 about USD 60 million were invested in projects in the transport sector, and improving access to fixed broadband in rural areas attracted a USD 2 billion investment, reflecting the policy priority of enhancing digital connectivity of countryside businesses and households.

Access to finance

There has been a recent evolution in SME financing patterns from traditional debt to alternative SME financing instruments. 24% of corporate credit applicants sought financing at an online lender in 2017, up by +3% compared to 2016. In 2018, the US Department of the Treasury identified improvements in the regulatory landscape to support non-bank financial institutions and foster innovation. The Small Business Administration's (SBA) Capital Access Programs, providing loan guarantees and co-funding for loans, grew steadily, reaching a high in 2017. The SBA's 2018-22 Strategic Plan envisages a 5% increase in the number of loans to SMEs in disadvantaged urban and rural communities in 2019.

Access to skills

The appropriate skills mixes are needed to support the country's industry specialisation in complex business services and high-tech manufacturing. However, with unemployment at historically-low levels, SMEs are challenged to attract employees with the right skills. According to a 2018 NFBI survey, 34% of SMEs raised compensation to attract and retain labour. The 2015 Workforce Innovation and Opportunity Act regulates employment and training programmes at the national level and aims at enhancing partnerships with employers for on-the-job training, for instance by partially reimbursing training costs.

Access to innovation assets

The US keeps leading the international R&D and innovation panorama, although innovation surveys and evidence on multi-factor productivity indicate a narrowing competitive edge. The 2019-20 Networking and Information Technology R&D program defines priority areas and places emphasis on the digital transition. Federal Agencies with extramural R&D budget contribute to the Small Business Innovation Research and Small Business Technological Transfer Programs, which support innovative SMEs' entry in hard-to-break-in markets with around USD 2.5 billion of R&D financing support per year. Both NASA and the Air Force have used the program to provide contracts to SMEs.

The full country profile is available at
https://doi.org/10.1787/34907e9c-en

References

ASCE (2017), *American Society of Civil Engineers - 2017 Infrastructure Report Card*, https://www.infrastructurereportcard.org/.

Dunkelberg, W. and H. Wade (2018), *NFIB Small Business Economic Trends*, https://www.nfib.com/assets/SBET-Oct-2018.pdf (accessed on November 2018).

EPA (2018), *Environmental Protection Agency's eDisclosure program*, https://www.epa.gov/compliance/epas-edisclosure.

Executive Office of the President (2018), *Memorandum for the Heads of Executive deparments and agencies - FY 2020 Administration Research and Development Budget Priorities*, https://www.whitehouse.gov/wp-content/uploads/2018/07/M-18-22.pdf (accessed on 23 August 2018).

FED Small Business (2018), *2017 Small Business Credit Survey: Report on Employer Firms*, https://www.fedsmallbusiness.org/survey/2018/report-on-employer-firms.

NITRD (2017), *The Networking and Information Technology R&D Development Program*, https://www.nitrd.gov/about/about_nitrd.aspx.

OECD (2018), *OECD Economic Surveys: United States*, OECD Publishing, Paris, https://doi.org/10.1787/eco_surveys-usa-2018-en.

OECD (2018), *Ageing and Employment Policies: United States 2018: Working Better with Age and Fighting Unequal Ageing, Ageing and Employment Policies*, OECD Publishing, Paris, https://doi.org/10.1787/9789264190115-en.

OECD (2018), *United States - Economic Forecast Summary (May 2018)*, http://www.oecd.org/eco/outlook/united-states-economic-forecast-summary.htm.

SBA (2018), *United States Small Business Administration, Press Releases and Media Advisory*, Small Business Administration, https://www.sba.gov/about-sba/sba-newsroom/press-releases-media-advisories.

SBA (n.d.), *SBIR-SBTT*, Small Business Administration, https://www.sbir.gov/faqs/general-questions (accessed on November 2018).

SBIR/STTR (2018), *Success Stories: High Performance Water Recycling System for Space Exploration*, https://sbir.nasa.gov/success-stories/high-performance-water-recycling-system-space-exploration.

SBIR/STTR (n.d.), *About SBIR*, https://www.sbir.gov/about/about-sbir.

U.S. Department of Commerce (2017), *Portugal - Market Challenges*, https://www.export.gov/article?id=Portugal-Market-Challenges (accessed on 22 June 2018).

U.S. Department of Labor (2016), *2015 State Annual WIA Report Participant Stories - Employer Engagement Success Stories*, https://www.doleta.gov/performance/WIA_Success_Story/2015/wia_stories_Employer_Engagement.cfm.

U.S. Small Business Administration (n.d.), *SBA Reimagined. Powering the American Dream. Strategic Plan, 2018-2022*, https://www.sba.gov/sites/default/files/aboutsbaarticle/SBA_FY_2018-2022_Strategic_Plan.pdf (accessed on November 2018).

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

The OECD is a unique forum where governments work together to address the economic, social and environmental challenges of globalisation. The OECD is also at the forefront of efforts to understand and to help governments respond to new developments and concerns, such as corporate governance, the information economy and the challenges of an ageing population. The Organisation provides a setting where governments can compare policy experiences, seek answers to common problems, identify good practice and work to co-ordinate domestic and international policies.

The OECD member countries are: Australia, Austria, Belgium, Canada, Chile, the Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Israel, Italy, Japan, Korea, Latvia, Lithuania, Luxembourg, Mexico, the Netherlands, New Zealand, Norway, Poland, Portugal, the Slovak Republic, Slovenia, Spain, Sweden, Switzerland, Turkey, the United Kingdom and the United States. The European Union takes part in the work of the OECD.

OECD Publishing disseminates widely the results of the Organisation's statistics gathering and research on economic, social and environmental issues, as well as the conventions, guidelines and standards agreed by its members.

OECD PUBLISHING, 2, rue André-Pascal, 75775 PARIS CEDEX 16
ISBN 978-92-64-37480-5 – 2019

OECD SME and Entrepreneurship Outlook 2019

The new *OECD SME and Entrepreneurship Outlook* presents the latest trends in performance of small and medium-sized enterprises (SMEs) and provides a comprehensive overview of business conditions and policy frameworks for SMEs and entrepreneurs.

This year's edition provides comparative evidence on business dynamism, productivity growth, wage gaps and export trends by firm size across OECD countries and emerging economies. It explores the implications of digitalisation and globalisation for market conditions and SME access to strategic resources such as finance, skills, technology, data and other innovation assets. The report gives comparative analysis of regulatory frameworks and policies to enhance contributions by SMEs and entrepreneurs, and delivers a forward-looking perspective on the opportunities and challenges SMEs and entrepreneurs face in doing business and scaling up their activities. It also contains country profiles outlining the latest developments in national SME performance and business conditions, with expanded country profiles available on line.

Consult this publication on line at ***https://doi.org/10.1787/34907e9c-en***.

This work is published on the OECD iLibrary, which gathers all OECD books, periodicals and statistical databases. Visit ***www.oecd-ilibrary.org*** for more information.

ISBN 978-92-64-37480-5

OECD*publishing*
www.oecd.org/publishing