Belgium: Productivity

Belgium is one of the most productive economies in the world. Real GDP per hour worked is among the highest of the OECD countries and exceeds that of neighbouring countries such as France, Germany and the Netherlands (OECD, 2019). Belgium’s high aggregate productivity reflects several factors, including high capital intensity, the skills of the workforce, firms’ leading edge in digitalisation, and a good integration in global value chains. However, productivity gains have been comparatively modest and declining since the late 1990s, and more so than in other advanced economies. While productivity growth in Belgium aligned with high-income OECD countries during the period 1980–98, it only averaged 0.8% since then, compared to 1.4% in high-income OECD countries (OECD, 2019).1 This slowdown threatens Belgium’s position as a high-productivity country. The recent In-Depth Productivity Review of Belgium assessed in detail the drivers of productivity and recommended a 7-Point Action Plan to reignite productivity growth. This issue of OECD Insights on Productivity and Business Dynamics presents selected material from the second chapter of the Review, which documents within-industry productivity patterns in Belgium over the period 2000-14. The analysis relies on data from the OECD MultiProd project to help understand the micro-drivers of aggregate productivity growth in Belgium (Box 1).

The microdata reveal large productivity disparities between the most and the least productive firms, especially in services. Belgium does not lack highly productive businesses, but the productivity gap between them and the rest of firms is large and increasing over the period 2000-14. This divergence mostly comes from the bottom of the productivity distribution, and it is particularly marked in service industries following the 2008 financial crisis. Such worsening performance of the least productive firms suggests that technology and knowledge diffusion from the domestic productivity frontier to the bottom weakened. The data also show that the group of least productive firms is not only populated by unproductive firms that should exit the market, but also by young, small and dynamic firms that are yet to achieve their full potential. The In-Depth Productivity Review of Belgium identified several policies that have the potential to help the productivity convergence of these firms, including training, research and development, and labour market institutions.

**Highlights**

- Belgium does not lack highly productive businesses, but the productivity gap between the top firms and the rest is large and increasing.

- The increase in dispersion mainly arose from the bottom half of the productivity distribution, i.e. a worsening performance of the least productive firms relative to the median, suggesting a deceleration of technology and knowledge diffusion from the top to the bottom.

- “Laggard” firms in Belgium are relatively young and small, and account for a substantial share of employment.

- The In-Depth Productivity Review of Belgium identified policies that have the potential to speed up the productivity convergence of laggards, in particular public training, direct support for research and development, and labour market institutions.
Recently, Belgium has introduced initiatives that will help tackle the challenges of productivity growth, including the development of the National Pact for Strategic Investments, the setting up of the Digital Belgium Action Plan and the establishment of a National Productivity Board. Relevant to this note, which focuses on the micro-drivers of productivity, the country recently implemented some policy measures that shape aggregate productivity developments through channels operating at the firm level. These include measures to stimulate product market competition and to better match labour market demand, as well as reforms to improve the business environment for the self-employed and SMEs (OECD, 2019, 2017). There exist, however, possible areas for further policy action. According to latest OECD Indicators on Employment Protection, legislation on collective dismissals and hiring restrictions for temporary work agency contracts are comparatively restrictive (OECD, 2019). Effective regulations are essential to ensure functioning markets, however excessive regulations can lower productivity and distort the allocation of resources. The most recent OECD Product Market Regulation indicators point to excessively high barriers in service industries (OECD, 2018). Finally, public funding of research and development (excluding tax incentives) and public spending on training are relatively low (OECD, 2019). Public spending on research and development can enhance productivity and promote inclusiveness. Well-functioning labour markets and effective training can help promote the adoption of technology throughout the economy (OECD, 2015).

Box 1. The MultiProd project

MultiProd provides a unique comprehensive overview of within-industry productivity patterns across countries over the last two decades. It extends productivity analyses beyond aggregate industry performance and focuses on the underlying dynamics and developments within industries.

The MultiProd project relies on a distributed microdata approach to access representative firm-level data while respecting the confidentiality of the underlying data sources, in collaboration with experts from National Statistical Offices within the MultiProd network. The resulting micro-aggregated database is harmonised across countries and over time, hence suitable for international comparisons.

MultiProd focuses on manufacturing and non-financial market services (“services” for brevity) in order to enhance cross-country comparability. The definition of these two macro-sectors (“sectors” for brevity) follows a customised 7-sector aggregation of ISIC Rev.4/NACE Rev.2 industrial classification. Detailed industries within sectors (“industries” for brevity) follow the SNA A38 classification. The analysis excludes the Coke and Refined Petroleum industry and the Real Estate industry.

The present analysis compares Belgium to a “benchmark” group of countries constructed for the In-Depth Productivity Review of Belgium and consisting of Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, the Netherlands, Norway, Portugal, Sweden and Switzerland.

Figures are for 2000-14; benchmark statistics are not reported after 2012 due to limited data availability. Results presented here are from the MultiProd database as of February 2019. The underlying data sources for Belgium are i) balance sheet data from the Central Balance Sheet Office of the National Bank of Belgium, ii) VAT data from the Federal Public Service Economy for turnover, intermediate inputs and investment of SMEs; and iii) records of the National Social Security Office for employment data. Owing to methodological differences, figures may deviate from officially published national statistics.

See Desnoyers-James, Calligaris and Calvino (2019) for further details on the MultiProd data; see Berlingieri et al. (2017) for details on the methodology.

Productivity disparities

Overall, the micro data show that within-industry labour productivity grew in manufacturing and stagnated in non-financial market services in Belgium over the period 2000-14 (Figure 1). Excepting a short period following the 2008 financial crisis, labour productivity increased each year within manufacturing industries. The growth over the entire period 2000-14 amounts to nearly 30% or about 2% each year, surpassing that of the average of the OECD countries. Over the same time-period and similar to other OECD countries, the cumulative change within service industries was slightly negative.

However, these trends in within-industry average productivity growth hide heterogeneous developments between firms, even in narrowly defined industries. To address this heterogeneity, the analysis separates the population of firms into performance groups, i.e. it groups firms in different bins according to their productivity. The MultiProd
database contains statistics for five productivity performance groups defined by percentiles of the labour productivity distribution:

- the bottom decile comprises firms with a productivity level between the 0th and the 10th percentile of the distribution;
- the medium-low quantile, between the 10th and the 40th percentile;
- the medium quantile, between the 40th and the 60th percentile;
- the medium-high quantile, between the 60th and the 90th percentile;
- the top decile comprises the top 10% of firms in terms of productivity performance.

**Figure 1. Cumulative change in average labour productivity**

Manufacturing and non-financial market services
Belgium vs benchmark countries, 2000-14

Note: This figure reports the estimated year dummies of a panel data regression of average log labour productivity within industries in Belgium and within country-industry pairs in the set of benchmark countries. The first year is taken as the baseline. Results are estimated separately for manufacturing and non-financial market services based on detailed industries, following the SNA A38 classification.

Source: OECD calculations based on MultiProd database, February 2019. See Box 1 for details.

**Figure 2. Average labour productivity in 2005 USD PPP by performance group**

Manufacturing and non-financial market services
Belgium vs benchmark countries, 2000-14

Note: This figure plots the weighted average level of labour productivity measured in 2005 USD PPP across five productivity performance groups in Belgium and in the set of benchmark countries: bottom decile (0-10th percentile of the productivity distribution), medium-low (10-40th percentile), medium (40-60th percentile), medium-high (60-90th percentile) and top decile (90-100th percentile). In each performance group, industry-level data (SNA A38) are aggregated to sector level (manufacturing and non-financial market services) using weighted means (with weights equal to the number of firms in the industry), and then averaged (unweighted) over time for each country.

Source: OECD calculations based on MultiProd database, February 2019. See Box 1 for details.
In the period 2000-14 in Belgium, the micro-data reveal notable differences across productivity performance groups (Figure 2). On average across manufacturing industries, the productivity level of the average firm at the top was about eight times higher than that of the average firm at the bottom. In services, the top performing firms were on average ten times as productive as the worst performing ones. Further, these productivity differences between the most and least productive firms have increased over the period 2000-14 (OECD, 2019). This is in line with cross-country evidence showing increased divergence in productivity between the most productive firms and the rest, even within country-industry pairs (Berlingieri, Blanchenay and Criscuolo, 2017).

The increasing productivity gap between the highest and lowest productivity domestic firms in Belgium can arise either from frontier firms pulling away or from firms at the bottom lagging behind. Decomposing the overall change in productivity dispersion into contributions of the top and the bottom of the distribution suggests that the productivity divergence mostly came from a worsening relative performance of firms at the very bottom of the productivity distribution vis-à-vis the median firm (Figure 3). However, increasing divergence at the top of the productivity distribution has also played a role in Belgium, much more so than in the benchmark. In manufacturing, within-industry productivity dispersion in the bottom half of the distribution increased by 5% from 2000 until 2008, then spiked during the financial crisis before returning to pre-crisis levels. In services, the top and the bottom half of the productivity distribution followed a similar pattern until 2010, with a moderate increase in dispersion at both ends of the distribution. However, the gap between the lowest productivity firms and the median has increased markedly following the crisis.

**Figure 3. Cumulative change in labour productivity dispersion at the top and the bottom**

**Manufacturing and non-financial market services**

**Belgium vs benchmark countries, 2000-14**

Note: This figure reports the estimated year dummies of a panel data regression of average log labour productivity dispersion in the top half (90/50 ratio) and in the bottom half (50/10 ratio) of the productivity distribution within industries in Belgium and within country-industry pairs in the set of benchmark countries. The first year is taken as the baseline. Results are estimated separately for manufacturing and non-financial market services based on detailed industries, following the SNA A38 classification.

Source: OECD calculations based on MultiProd database, February 2019. See Box 1 for details.

### Laggard firms

The more pronounced productivity divergence in the lower tail of the distribution in Belgium points to a deceleration of technology and knowledge diffusion from the top to the bottom of the distribution, especially in services. Low-productivity firms have often been referred to as “zombies”, seen as surviving only due to weak market selection, and creating a drag on aggregate productivity growth. Yet, some low-productivity firms are at an early stage of development and operating below efficiency level, while having strong productivity growth potential. This motivates a focus on “laggard” firms, i.e. the firms in the bottom 40% of the productivity distribution (Berlingieri et al., 2020).³
Figure 4. Firm size and firm age by performance group
Manufacturing and non-financial market services
Belgium vs benchmark countries, 2000-14

Panel A. Size (number of workers)

In Belgium, as in the benchmark, the typical firm within the bottom decile in the productivity distribution tends to be small (in terms of number of workers) relative to firms in other parts of the distribution (Figure 4, panel A). Over the period 2000-14 in the manufacturing sector, these firms, on average, had nine employees, which is less than 15% of the typical firm in the top decile. Moreover, the size-productivity gradient is stronger in Belgium than in the benchmark, suggesting a more efficient allocation of labour resources. The difference in employment is much less present in services, consistent with the strongly positive size-productivity relationship in manufacturing and much weaker relationship in services observed in many countries (Berlingieri, Calligaris and Criscuolo, 2018).

Additionally, the typical firm in the bottom decile is generally young relative to firms with higher productivity. Over the period 2000-14, low productivity firms were, on average, two to three years younger than the best performing firms in manufacturing and five years younger in services (Figure 4, panel B). Belgian firms are also, on average, older than in the benchmark across all productivity groups and the productivity-age relationship is not monotonic, i.e. firms located in the middle of the productivity distribution are the oldest, on average, rather than those in the top as in the benchmark.

Note: This figure plots the average firm size measured by the number of workers (Panel A) and the average firm age measured in years (Panel B) across five productivity performance groups: bottom decile (0-10\(^{th}\) percentile of the productivity distribution), medium-low (10-40\(^{th}\) percentile), medium (40-60\(^{th}\) percentile), medium-high (60-90\(^{th}\) percentile) and top decile (90-100\(^{th}\) percentile). In each performance group, industrial data (SNA A38) are aggregated up to sectoral level (manufacturing and non-financial market services) using weighted means (with weights equal to the number of firms in the industry), and then averaged (unweighted) over time for each country.

Source: OECD calculations based on MultiProd database, February 2019. See Box 1 for details.
Over the period 2000-14, laggards accounted for a sizeable share of employment, representing around 20% of employment in manufacturing, and more than 30% in services (Figure 5). Although small in size and accounting for a modest share of gross output and value, laggards’ considerable employment share has important implications for inclusive growth. On one hand, previous OECD work has found that lower productivity is associated with lower wages for workers across countries (Berlingieri, Calligaris and Criscuolo, 2018). Therefore, the sizeable share of the labour force employed in laggards are, on average, low-income workers. On the other hand, young small firms have a high potential to contribute to employment growth because they are generally more responsive to productivity shocks (Decker et al., 2018).

**Figure 5. Share of value added, employment and gross output by performance group**

Manufacturing and non-financial market services

Belgium, 2000-14

Note: The figure plots the share of gross output, value added and employment in each of the productivity performance groups in Belgium: bottom decile (0-10\% percentile of the productivity distribution), medium-low (10-40\% percentile), medium (40-60\% percentile), medium-high (60-90\% percentile) and top decile (90-100\% percentile). Shares at the sectoral (manufacturing and non-financial market services) level within each productivity performance group are averaged (unweighted) over time.

Source: OECD calculations based on MultiProd database, February 2019. See Box 1 for details.

**Policies for productivity catch-up**

The MultiProd data show that: i) productivity differences between the most and the least productive firms have increased on average in Belgium; ii) this increase mostly arises from the bottom half of the productivity distribution, i.e. a worsening performance of firms at the bottom of the productivity distribution vis-à-vis the median firm; and iii) young, small and dynamic firms populate the left tail of the productivity distribution, rather than only “zombie” firms that should exit the market. Such characterisation of productivity patterns in Belgium makes policies aimed at the catch-up of laggards particularly relevant.

Various policies promote productivity growth by increasing innovation at the global frontier, enhancing diffusion of knowledge and technology, and improving allocative efficiency (OECD, 2015). Recent OECD work for the In-Depth Productivity Review of Belgium identified policies that specifically have the potential to speed up productivity convergence of laggards. These include skill, research and development and labour market policies (OECD, 2019). In particular, public training and public research and development expenditure increase the speed of convergence of laggards by easing the diffusion of knowledge and reducing the cost of technology adoption. On the other hand, rigid labour market institutions hinder the catch-up of laggards by hampering the reallocation of labour resources.

Belgium’s public spending on training as a share of GDP is about 40\% lower than in the average benchmark country. Whereas France spent 0.37\% of GDP on training and Denmark spent 0.61\%, Belgium spent only 0.16\%. If Belgium increased the level of training expenditure to that of Denmark (the country with the highest level of spending in the benchmark), the pace of catch-up of laggards could increase by as much as 30\% (OECD, 2019).
Another example is employment protection legislations. On one hand, these are desirable in labour markets characterised by frictions and asymmetric information, and can limit wage dispersion (Berlingieri, Blanchenay and Criscuolo, 2017) On the other hand, strict rules on temporary contracts can be particularly detrimental to young developing firms, which have a higher probability of also being laggards. Recent OECD work finds that, in European OECD countries, employment protection legislations and high minimum wages are correlated with a slower pace of catch-up among laggards (OECD, 2019).

References


Notes

1 The implementation of the subsidized “service vouchers” program, which greatly increased low-skill labour utilisation, is unlikely to be a significant explanation for the productivity slowdown in Belgium compared with other countries – see the In-Depth Productivity Review of Belgium for details (OECD, 2019, pp.19-20). Moreover, within-industry trends are robust to removing the “Administrative and support service activities” (ISIC Rev.4 industries 77 to 82), which saw the highest growth in workers while experiencing the strongest decrease in average productivity growth.

2 The analytical material in this note does not reflect recent reforms, as these occurred after the period covered by the microdata.

3 MultiProd covers the entire population, including small firms, hence is well suited for investigating the impact of technology diffusion.

4 This is similar to patterns observed in the benchmark. Figures not shown for brevity but available on request.
OECD Insights on Productivity and Business Dynamics

The global productivity slowdown and the simultaneous decline in business dynamism has prompted widespread policy concern. Productivity is the ultimate driver of living standards improvements in the long run, whereas a dynamic business environment is key in enabling job creation. Persisting negative trends can increase earnings inequalities and exacerbate pressures on governments’ budgets, thus threatening social cohesion and political stability.

While most existing analysis of productivity and business dynamics rely on macro-aggregated data, the OECD MultiProd and DynEmp projects utilise a distributed microdata methodology to construct unique sets of harmonised micro-aggregated statistics from confidential firm-level data. The resulting databases allow studying the role of individual firms in driving aggregate outcomes and explaining the observed macro trends across countries and over time.

OECD Insights on Productivity and Business Dynamics is a series of country profiles with a focus on the micro-drivers of aggregate productivity and job creation. It makes available, to wider audiences, analytical material from the MultiProd and DynEmp databases that was prepared for use within the OECD.

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