Productivity in Europe
Trends and drivers in a service-based economy

FACTSHEET - SPAIN (ES)
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Key messages

- Over the period 1970-2016, average labour productivity growth in Spain, at 1.5% per year, was the second lowest among all EU-15 Member States. In addition, **Spain exhibits the largest negative impact of structural change on long-term labour productivity growth in the sample of EU-15 countries analysed.** This is chiefly the result of relatively large losses in the economic weight of the primary and secondary sectors in favour mainly of the tertiary sector and the relatively high historical average weight of the construction sector.

- **The contribution from intangible capital investment to productivity growth in Spain is one of the lowest in the EU-15.** Hence raising investment in National Account intangibles, especially in software and databases, is an important challenge for the Spanish economy.

- Spain is characterised in many sectors by a higher share of employment in small firms (below 10 employees), which has a negative impact on sectoral labour productivity. The highest negative impact of firm size distribution on productivity is observed for transportation and storage, followed by manufacturing, wholesale and retail trade, and accommodation and food services.

- Spain is among the countries which have the highest shares of zombie firms: about 13% in manufacturing and 11% in service sectors. Zombies are a major concern as they negatively affect the performance of healthy firms. Compared to the EU average, the negative effect of zombie firms on non-zombies in Spain is higher in terms of investment but lower in terms of employment. In addition, zombie congestion makes it more difficult for new firms to enter; only the most productive entrants are successful.

- The degree of business dynamism is associated to discrepancies between the growth rate of labour productivity and gross value added consistently across both manufacturing and services sectors. A moderate rise in the growth rate of enterprise churn generally corresponds to higher gross valued added, however very steep changes can produce opposite variations. Labour utilisation effects are also relevant in the context of the discrepancies observed.

1 Impact of structural change and productivity in services

Table 1. ES – Average labour productivity growth in the period 1910-2017 computed using the 1-digit sector nominal value added weights prevailing in each base year, including and excluding services (%).

<table>
<thead>
<tr>
<th>Base year</th>
<th>All industries (including services)</th>
<th>All excluding services</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>1.91</td>
<td>2.87</td>
</tr>
<tr>
<td>1980</td>
<td>1.71</td>
<td>2.71</td>
</tr>
<tr>
<td>1990</td>
<td>1.45</td>
<td>2.51</td>
</tr>
<tr>
<td>2000</td>
<td>1.29</td>
<td>2.45</td>
</tr>
<tr>
<td>2010</td>
<td>1.13</td>
<td>2.28</td>
</tr>
<tr>
<td>2017</td>
<td>1.13</td>
<td>2.48</td>
</tr>
<tr>
<td>Actual</td>
<td>1.50</td>
<td>2.55</td>
</tr>
</tbody>
</table>

Source: STAN and EU KLEMS, 2019 and 2017 releases, respectively.
Note: the real estate sector is excluded from these computations.

Spanish average real labour productivity growth in the 1970-2017 period would have been about 0.41 percentage points higher (about 27% higher) compared to the actual one if the economic structure prevailing
in 1970 had remained the same (see Table 1).¹ This is the second largest impact of structural change on labour productivity growth (only slightly lower than the impact for Italy) for all the countries analysed², and follows mainly from the loss of economic weight of the primary and secondary sectors. In addition, when excluding services from the computation of the counterfactual average labour productivity growth rates, the latter increase from 1.91 (services included) to 2.87 (services excluded) when using 1970 value added weights, and from 1.13 to 2.48 with 2017 weights. This implies that the servicification of the economy has been a major drag to overall productivity performance.

Table 2 shows the drivers at the 1-digit level of such negative impact of structural change on productivity growth. Two main observations emerge. First, the weights of the agricultural and manufacturing sectors have significantly shrunk from 1970 to 2017, by about 70% and 46%, respectively. Since these sectors have experienced relatively stronger productivity performance³, the reduction in their shares has negatively impacted economy-wide productivity growth. Second, many service subsectors have increased their economic weight significantly while having exhibited relatively poor productivity growth rates. These chiefly include accommodation and food service activities, regulated professional services, wholesale and retail trade, and non-market services.⁴ The construction sector has also crucially contributed to the observed slowdown in labour productivity growth.

Table 2. ES – Value added shares and average labour productivity growth, 1970-2017 (%).

<table>
<thead>
<tr>
<th>Sector</th>
<th>Value added share 1970</th>
<th>Value added share 2017</th>
<th>Average labour productivity growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agriculture, forestry and fishing</td>
<td>11.0</td>
<td>3.3</td>
<td>5.5</td>
</tr>
<tr>
<td>Mining and quarrying</td>
<td>0.7</td>
<td>0.3</td>
<td>4.7</td>
</tr>
<tr>
<td>Manufacturing</td>
<td>29.6</td>
<td>15.9</td>
<td>2.7</td>
</tr>
<tr>
<td>Electricity and water supply, waste management and others</td>
<td>2.1</td>
<td>4.0</td>
<td>1.7</td>
</tr>
<tr>
<td>Construction</td>
<td>11.4</td>
<td>6.9</td>
<td>0.8</td>
</tr>
<tr>
<td>Wholesale and retail trade; repair of motor vehicles and motorcycles</td>
<td>11.8</td>
<td>13.7</td>
<td>0.7</td>
</tr>
<tr>
<td>Transportation and storage</td>
<td>5.9</td>
<td>5.1</td>
<td>2.0</td>
</tr>
<tr>
<td>Accommodation and food service activities</td>
<td>3.5</td>
<td>8.0</td>
<td>-0.5</td>
</tr>
<tr>
<td>Information and communication</td>
<td>2.0</td>
<td>4.7</td>
<td>1.5</td>
</tr>
<tr>
<td>Financial and insurance activities</td>
<td>2.3</td>
<td>4.4</td>
<td>1.8</td>
</tr>
<tr>
<td>Professional, administrative and other activities</td>
<td>3.3</td>
<td>9.1</td>
<td>-1.2</td>
</tr>
<tr>
<td>Other services (community, social, and personal services)</td>
<td>16.3</td>
<td>24.6</td>
<td>0.7</td>
</tr>
<tr>
<td><strong>Services overall</strong></td>
<td><strong>45.2</strong></td>
<td><strong>69.7</strong></td>
<td><strong>0.7</strong></td>
</tr>
</tbody>
</table>

Note: the real estate sector is excluded.

¹ The difference between the 1970 base-year counterfactual and the actual growth rate in the first column of table 1 isolates the impact of structural change.
² The sample includes all EU-15 Member States except EL, IE and PT.
³ The average productivity growth rate of the primary sector is the second highest in the sample of countries analysed, only second to Denmark’s.
⁴ The wholesale and retail trade sector shows the lowest average productivity growth rate, while the regulated professional activities sector exhibits the second largest average fall in labour productivity in the sample of countries analysed.
2 Role of intangibles in productivity in services

Figure 1. Investment-to-capital ratio (left) and contribution of intangible capital growth to productivity growth (right) in 2015.

Although Spain’s intangible investment-to-capital ratio ranks in the middle, it lags behind in terms of the contribution from intangible capital growth to productivity growth (0.13 % versus 0.19 %, the average of the countries). This can be explained by low investment into National Accounts intangibles in the industrial sector. The level of investment does not even cover depreciation in this category of intangibles, especially in software and databases, thereby rendering the overall contribution of National Account intangibles to productivity growth negative.

3 Firm size distribution and sectoral labour productivity

Figure 2. ES – Percentage difference in labour productivity at the aggregate and sectoral levels relative to the EU28, contributing effects (2016)

Figure 3. ES – Percentage change in labour productivity at the aggregate and sectoral levels, contributing effects (2012-2017)


5 National Accounts intangible assets: Software and database, Research and development, Mineral exploration and artistic originals.
Non-National Accounts intangible assets: Design, Brand, Organisational capital, Training.
6 C: Manufacturing; F: Construction; G: Wholesale and retail trade; repair of motor vehicles and motorcycles; H: Transportation and storage; I: Accommodation and food service activities; J: Information and communication; M: Professional, scientific and technical activities; N: Administrative and support service activities.
Apparent labour productivity in a representative aggregate of the market economy in Spain was 11.5% below the EU28 figure in 2016. This difference is the result of a negative contribution of similar magnitude from both the sectoral composition effect and the firm size distribution effect (−5.7 percentage points, pp).

The average size of enterprises is smaller than for the EU benchmark due to a larger employment share in smaller firms (below 10 persons employed) relative to mid-sized companies (50-249 workers), a feature that seems to be conditional on specific aspects of the institutional and judicial framework, such as the protection of property rights.

On a sectoral basis, the largest negative effect on productivity associated with firm size distribution is observed for transportation and storage (NACE section H), being also above average for manufacturing (C), wholesale and retail trade (G), as well as accommodation and food services (I). Information and communication (J) is the most noticeable exception, although the positive effect from the size distribution is largely compensated by lower intrinsic productivity levels than peers.

At a more disaggregated level, the negative size distribution effect in the manufacturing sector is more limited for industries with higher technological content (e.g. motor vehicles and transport equipment), whereas, among services, is particularly large for land transport, and legal and accounting activities.

On a dynamic perspective, recent developments (2012-2017) suggest a positive contribution of firm size distribution to productivity growth (1.8pp out of a 6.5% increase), a feature that is shared across sectors where the gap relative to the EU28 is larger, with the exception of construction (F).

4 Role of firm demography in productivity growth

Figure 4. ES – Entry rates in business services (left-hand side) and in 1-digit industries7 (right-hand side), percentages

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7 One-digit industries include: Mining and quarrying (B); Manufacturing (C); Electricity, gas, steam and air conditioning supply (D); Water supply; sewerage, waste management and remediation activities (E); Construction (F); Wholesale and retail trade; repair of motor vehicles and motorcycles (G); Transportation and storage (H); Accommodation and food service activities (I); Information and communication (J); Financial and insurance activities (K); Real estate activities (L); Professional, scientific and technical activities (M); Administrative and support service activities (N); Education (P); Human health and social work activities (Q); Arts, entertainment and recreation (R); Other service activities (S).
Entry rates (without sole proprietorships) in services fluctuated between 7.9% and 6.7% in the period 2008-2017. At the end of the period, they were below the initial 2008 level (7.6% in 2008 versus 6.7% in 2017). We observe a widespread decline in entry between 2008 and 2017 across industries. A slight decline in entry rate is present also for larger-than-micro firms in the business services sector (1.6% in 2008 versus 1.4% in 2017), a segment of the corporate sector where entry rates have been shown to play an especially relevant role for aggregate productivity growth. Entry rates are close to the European average for larger-than-micro firms (average in 2017: 1.5%), while they are below the average for all firms (average in 2017: 9.1%, without sole proprietors). Thus there seems to be some room to improve productivity growth by stimulating business entry and business dynamism in general in Spain.

5 Labour dynamics and productivity

Figure 6. ES and EU – Job creation (growing firms) and destruction (shrinking firms) along the productivity distribution.

Figure 6 shows that current labour reallocation dynamics are in line with an economy that is increasing its allocative efficiency since at the top of the productivity distribution, relatively more jobs are created than destroyed. Furthermore, the opposite is true at the bottom, especially in manufacturing.

This is the case for both the service and manufacturing sectors. In manufacturing (services) over 50 percent (about 45 percent) of job creation is due to the most productive quarter of companies. Both sectors create some inefficient jobs, however, especially in services. However, both are in line with the EU average.
Results for Spain indicate higher than EU job destruction at the top. Combined with higher than average job creation at the top, this is a sign of high degrees of competition and/or marker restructuring at the upper end of the productivity distribution.

6 Impact of zombie firms on productivity

Figure 7. Average share of Zombie firms between 2010 and 2015.

In recent years, zombie firms have become prevalent in Europe, and Spain is the country which shows the highest share of zombies in its economy, both in the manufacturing and service sectors (Figure 7).

A major policy concern related to the existence of zombie firms is their impact on the rest of the economy. Table 3 investigates the impact of the share of the resources held by zombies on the performance of non-zombie firms via regression analysis for Spain. We measure the industry-zombie share as the share of real capital held by zombie firms within a 2-digit NACE sector in a given year and investigate its effects on non-zombie firms.

Table 3. ES – The effects of zombie congestion on non-zombies.

<table>
<thead>
<tr>
<th></th>
<th>employment growth</th>
<th>Investment rate</th>
<th>labour productivity</th>
<th>TFP</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Zombie</td>
<td>0.000323</td>
<td>0.0291***</td>
<td>0.522***</td>
<td>0.528***</td>
</tr>
<tr>
<td></td>
<td>(0.002)</td>
<td>(0.002)</td>
<td>(0.003)</td>
<td>(0.004)</td>
</tr>
<tr>
<td>Non-Zombie x Industry Zombie share</td>
<td>0.0447**</td>
<td>-0.150***</td>
<td>0.359***</td>
<td>0.367***</td>
</tr>
<tr>
<td></td>
<td>(0.016)</td>
<td>(0.018)</td>
<td>(0.033)</td>
<td>(0.034)</td>
</tr>
<tr>
<td>Number observations</td>
<td>2354107</td>
<td>3060827</td>
<td>2930074</td>
<td>2815263</td>
</tr>
<tr>
<td>R2</td>
<td>0.095</td>
<td>0.049</td>
<td>0.181</td>
<td>0.272</td>
</tr>
</tbody>
</table>

Economic significance

| Congestion at p75 | -0.3 % | -1.3 % | 3.3 % | 3.4 % |
| Congestion at p75 - EU level results | -2.6 % | -7.3 % | -5.2 % |

Note: Each column shows results from separate regressions. The uppermost line shows the dependent variables. They include controls for firm size, year, sector controls. Employment growth is measured as 2(e−e−1)+(e−e−1) where e is employment stock of the firm in year t, investment rate as log change in real capital. Congestions refer to the percentage difference in the outcome variable between non-zombies in sector with median or p75 zombies share and those in sectors without zombies. The p75 for EU is 8.4 %, while for 9 % for Spain. The last line gives results for an EU level estimation with the following countries involved: Bulgaria (BG), Czech Republic (CZ), Germany (DE), Denmark (DK), Spain (ES), Finland (FI), France (FR), Italy (IT), Latvia (LV), Portugal (PT), Romania (RO), Sweden (SE), Slovenia (SI), Slovakia (SK).

Results suggest that non-zombie firms in zombie-ridden sectors on average create more jobs, invest less and are more productive. The results are at odds with EU-level average results and reflect the notion that to be competitive in a zombie-ridden sector, new entrants’ productivity should be higher. For Spain the coefficient
for the effect on productivity of the interaction term of non-zombie firms with the industry-zombie share is positive. This result is in line with the finding of Adelet et al (2017) who argue that whenever zombie shares are high, the congestion effect depresses firm productivity on the one hand, but on the other hand entrant firms need to be more productive, thereby widening the productivity gap between zombies and healthy (especially young) firms.

Additional regression analysis (not reported here) confirms this. The positive coefficient on the interaction term, both in the case of productivity and employment growth, is indeed due to the profile of young firms in these sectors.

7 Role of business cycle dynamics in productivity

![Figure 8. ES – Information and Communication Cycle Decomposition (2008-2018)](image)

![Figure 9. ES – Professional Services Cycle Decomposition (2008-2018)](image)
In Spain, changes in the degree of business dynamism seem to be systematically in place in the context of discrepancies between the growth rates of Gross Value Added (GVA) and Labour Productivity (LP). In the Information and Communication (J) sector, the growth rate in enterprise churn appears to be aligned to that of GVA and positively related. An overuse of labour, however, appears to be concomitant to a fall in LP during 2014 while GVA experiences an increase in its growth rate. Similarly but with an opposite sign, in 2016 a fall in GVA growth while LP rises take place at the same time as a fall in Labour Utilisation (LU) that points in favour of the presence of labour hoarding.

In the Professional Services sector (M-N) during 2014 we can observe again the presence of a change in business dynamism in correspondence of misalignment between GVA and LP growth, however in spite of a fall in enterprise churn, GVA is now increasing and LP is dropping. This might be the result of the large negative swing in business dynamism sampled in 2014 with respect to the steep increase observed in 2013. Excessive volatility in business dynamism can affect GVA negatively.

In the Manufacturing sector on the other hand discrepancies in the growth rates of GVA and LP are milder and more visible only in 2016, in presence of a steep rise in the rate of enterprise churn and possible labour hoarding effects.

### 8 Policies for addressing low productivity growth

The most salient measures closely related to productivity growth at the national level include:

- Within the set of policies aimed at promoting entrepreneurship and innovation in Spanish firms, the main policy instruments are: capital venture (INNVIERTE; Fond ICO); loans (National Innovation Company-ENISA, CDTI-Direct Innovation Line); competitive grants (NEOTEC program; Horizon PYME; EMPLEA program); and business services (Enterprise Growth Program). The Fond-ICO Global is the largest pool of public venture capital funds in Spain.

- The Innovative Business Groups Program (AEI) is an instrument aimed at the consolidation and strengthening of clusters. The instrument features different lines of support, such as preparation of strategic plans; finance for coordination, management and administration of clusters; support for the
preparation of specific innovative projects of the companies in the group; promote joint actions or projects constituted between different clusters.

- Financia-Industria. Personalized advisory service on public financing for those companies that wish to carry out an industrial project.

- Reindustrialization and Strengthening of Industrial Competitiveness. Financing of investment projects to improve the competitiveness of industry, through the granting of long-term loans to create industrial companies, improve or modify production processes, or implement technologies of Industry 4.0. This instrument constitutes one of the most ambitious plans for the productive transformation of industry, being endowed with 400 million euros.

At the regional level, some notable examples are the ‘Adelante Inversión’ aids, targeting the improvement of business productivity in Castilla-La Mancha, endowed with 20 million euros; aid aimed at supporting technological investments (Murcia), which offers 10 million euros in grants to SMEs; or the grants for creation of new firms (Vizcaya, Basque Country), endowed with 5.35 million euros.
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