

Box 2

MANUFACTURING IN SPAIN: RECENT DEVELOPMENTS

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According to the industrial production index (IPI),¹ manufacturing output in Spain between January and July 2022 was up 2.9% on the same period in 2021. This figure contrasts with the more modest increases recorded in France and Italy (1.3% and 1.2%, respectively) and the 1.2% decline in Germany (see Chart 1.1). However, beneath the positive aggregate performance of the Spanish IPI lies a high level of heterogeneity across the different manufacturing sub-sectors. Specifically, the output of some sub-sectors, such as the manufacture of basic metals and of motor vehicles, fell in the first seven months of 2022, whereas that of some consumer goods sub-sectors, for example the manufacture of wearing apparel and of leather and related products, recorded sizeable increases (see Chart 1.2). This box analyses three factors that could explain such heterogeneity: higher energy prices against the backdrop of the war in Ukraine; changes in consumption patterns associated with contact-intensive activities returning to normal after the worst of the pandemic had passed; and global supply chain bottlenecks.

First, it stands to reason that the recent surge in energy prices has had a greater impact on the output of those sub-sectors with more energy dependent production processes. One way of quantifying such dependence is by using input-output tables to calculate the ratio of total energy spending to total output for each sub-sector.² According to this metric, manufacture of basic metals is the most energy dependent sub-sector, spending €0.33 on energy per euro of output. Considered overall, there is a negative correlation between manufacturing output in 2022 and energy dependence, i.e. the more energy dependent the sub-sector, the worse its output has fared over the course of 2022 (see Chart 1.3).

Second, the lifting of the pandemic restrictions has accelerated in recent months. This has led to a recovery in demand in contact-intensive activities and has boosted the output of the manufacturing sub-sectors more closely

linked to such activities, such as the manufacture of wearing apparel and of leather and related products. The manufacturing sub-sectors whose output in 2020 was hardest hit by the health restrictions are precisely those which have grown the most so far in 2022 after such containment measures were lifted and mobility and contact-intensive activities recovered somewhat (see Chart 1.4).

Third, the global supply chain bottlenecks are another factor that could explain the heterogeneity across the manufacturing sub-sectors in terms of industrial output in recent months. The European Commission's Business and Consumer Surveys are useful for approximating the impact of these disruptions in each sub-sector, given that, inter alia, they quantify the percentage of manufacturing firms experiencing shortages of material and/or equipment. Both in Spain and most other European countries, these percentages have climbed to all-time highs in the past few quarters and, despite improving somewhat recently, they remain at historically very high levels, particularly in certain sub-sectors such as the manufacture of motor vehicles. These data show that there is indeed a negative correlation – albeit somewhat weaker than for the two previous factors – between the impact of the bottlenecks on the different manufacturing sub-sectors and their industrial output in 2022 (see Chart 1.5).³

In sum, the heterogeneous output developments across Spain's manufacturing sub-sectors so far in 2022 could be explained, at least in part, by the differences in terms of energy dependence, exposure to the recovery in contact-intensive activities and the severity of the supply shortages. A multiple regression analysis examining these three factors as determinants of the IPI performance in 2022 indicates that, overall, they could explain approximately 65% of the variation between the different sub-sectors. Specifically, energy dependence would explain 53% of the total variation, while the recovery in

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- 1 The IPI is an index measuring monthly changes in the real output of industry, i.e. adjusting for prices, drawing on a business survey. Unlike quarterly gross value added (GVA) in the National Accounts, the IPI provides a breakdown for the different manufacturing sub-sectors. Specifically, this box analyses the IPI for the 23 manufacturing sub-sectors at two-digit level of the Spanish National Classification of Economic Activities (NACE Rev. 2).
 - 2 In other words, for each sub-sector the ratio between the value of purchases from the energy sectors (energy supply and manufacture of coke and refined petroleum products) and its total output is calculated. The *OECD Inter-Country Input-Output (ICIO) Tables* are used for this analysis. The calculations are made in nominal terms for 2018.
 - 3 For each sub-sector, the difference is calculated between the percentage of firms affected by a shortage of material and/or equipment and the 90th percentile of its historical distribution. For more details, see Box 5 "The potential impact of global supply chain bottlenecks on the Spanish economy in coming quarters", "Quarterly report on the Spanish economy", *Economic Bulletin 4/2021*, Banco de España.

Box 2

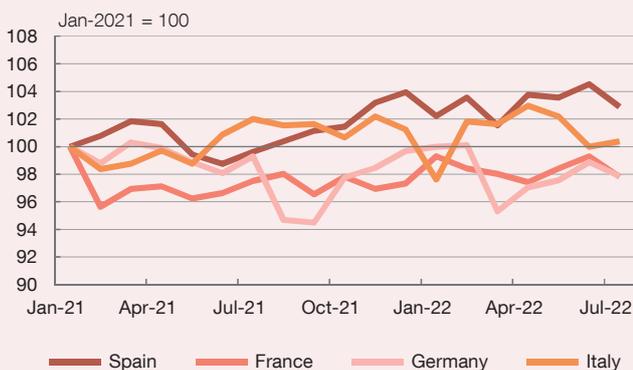
MANUFACTURING IN SPAIN: RECENT DEVELOPMENTS (cont'd)

contact-intensive activities would account for 32% and the bottlenecks for 15% (see Chart 1.6).⁴

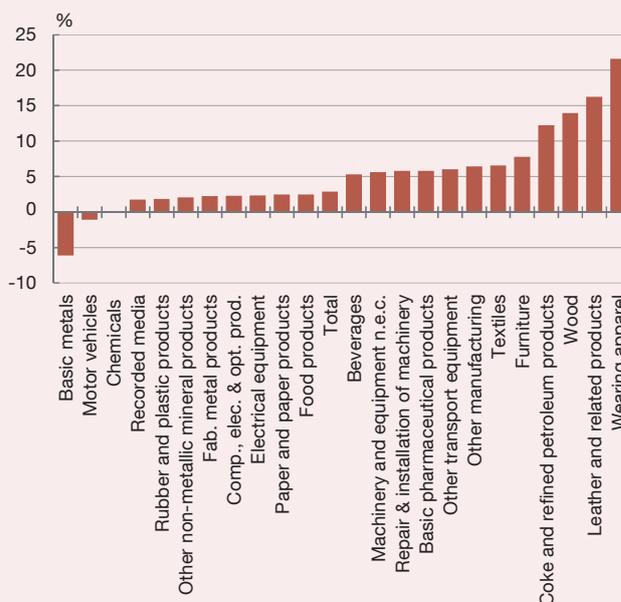
Lastly, the fact that, in aggregate terms, Spain's manufacturing sector has performed comparatively better

Chart 1
Manufacturing in Spain: recent developments

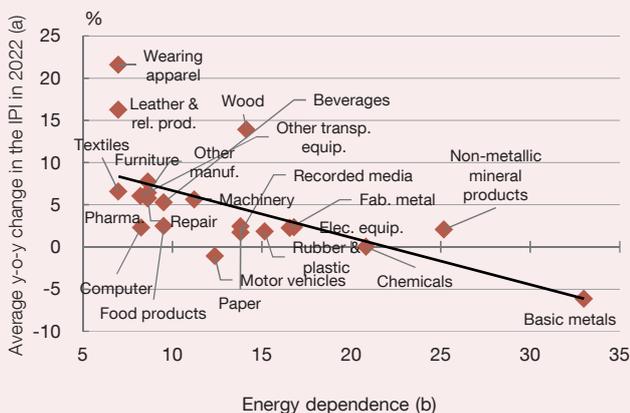
1 Manufacturing IPI



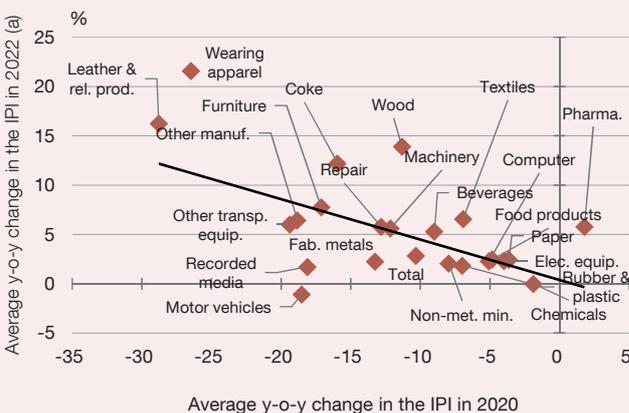
2 Average year-on-year change in the IPI in 2022, by sub-sector in Spain (a)



3 Change in the IPI in 2022 and energy dependence, by sub-sector in Spain



4 Change in the IPI in 2022 and impact of the pandemic in 2020, by sub-sector in Spain



SOURCES: INE, Eurostat, European Commission and OECD Inter-Country Input-Output tables (ICIO-2018).

- a Average rate of change in the IPI between January and July 2022 compared with the same period of 2021.
- b Total direct and indirect spending on energy divided by total output.

4 Calculations based on the methodology devised by F. Hüttner and M. Sunder (2011), "Decomposing R² with the Owen value", Working Paper No 100, Universität Leipzig.

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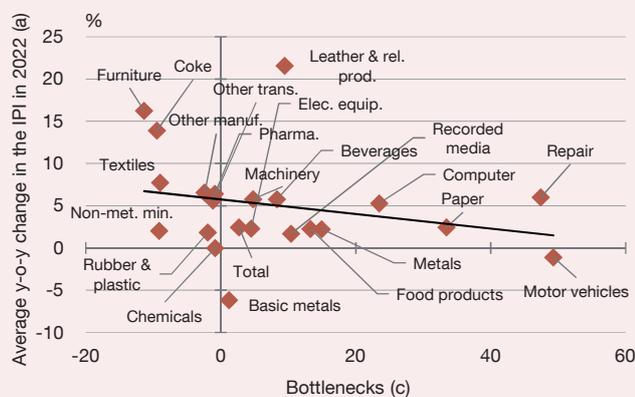
MANUFACTURING IN SPAIN: RECENT DEVELOPMENTS (cont'd)

than its main European counterparts may largely owe to its specific productive structure. For instance, manufacture of textiles, of wearing apparel and of leather and related products – the best-performing sub-sectors recently thanks to the recovery in contact-intensive activities – account for 6.8% of the Spanish manufacturing sector, while in Germany, for example, that percentage is as low as 1.1%.⁵ Meanwhile, the share in total Spanish manufacturing of basic metals, motor vehicles and chemicals – the hardest-hit sub-sectors in recent quarters

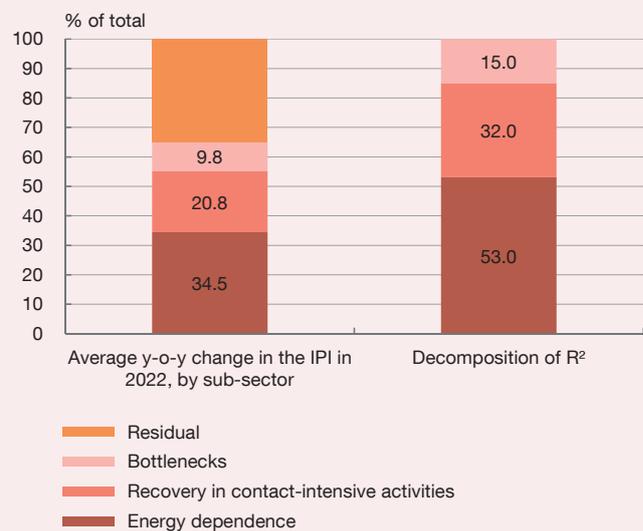
due to their energy dependence and the bottlenecks –, stands at 21%, well below the figure of 30.7% for Germany. These compositional differences between Spanish and German manufacturing partly explain the relative buoyancy of Spanish industry in 2022. In particular, were the shares of the different Spanish manufacturing sub-sectors to match those of Germany, Spanish IPI would have grown by 1.9% between January and July 2022, as compared with the same period a year earlier, rather than the 2.9% indicated above.

Chart 1
Manufacturing in Spain: recent developments (cont'd)

5 Change in the IPI in 2022 and bottlenecks, by sub-sector in Spain



6 Breakdown of the determinants of IPI heterogeneity in 2022 (d)



SOURCES: INE, Eurostat, European Commission and OECD Inter-Country Input-Output Tables (ICIO-2018).

- a Average rate of change in the IPI between January and July 2022 compared with the same period of 2021.
 c Drawing on European Commission opinion surveys, for each sub-sector the difference is calculated between the percentage of firms affected by a shortage of material and/or equipment in 2022 Q3 and the 90th percentile of its historical distribution.
 d Based on a regression that correlates the average year-on-year change in the IPI in 2022 by sub-sector and the three factors (energy dependence, recovery in contact-intensive activities and bottlenecks) as determinants. The R² of the regression is approximately 65% and each determinant's contribution to that R² is decomposed using the methodology devised by F. Hüttner and M. Sunder (2011), "Decomposing R² with the Owen value", *Working Paper* No 100, Leipzig, Universität Leipzig, Wirtschaftswissenschaftliche Fakultät.

⁵ In 2019, the share of the manufacturing sector, measured in terms of GVA, in the total economy amounted to 12.1% in Spain, 21.7% in Germany, 11.2% in France and 16.6% in Italy.