This article presents an overview of statistics for the European Union’s (EU) manufacturing sector, as covered by NACE Rev. 2 Section C. It belongs to a set of statistical articles on ‘Business economy by sector’. The manufacturing sector includes a vast range of activities and production techniques, from small-scale enterprises using traditional production techniques, such as the manufacture of musical instruments, to very large enterprises sitting atop a high and broad pyramid of parts and components suppliers collectively manufacturing complex products, such as aircraft. An analysis of the manufacturing sector as a whole gives an idea of the scale of this sector. It should be noted, however, that indicators of its inputs (for example, labour or capital goods), its performance, or its size structure are effectively an average across very different activities. While this can also be said of other large and diverse sectors, such as distributive trades and transport services, the manufacturing sector is probably the most varied activity within the non-financial business economy at the NACE section level of detail.
Structural profile

Around 1 in 10 (8.7 %) of all enterprises in the EU-28’s non-financial business economy (Sections B to J and L to N and Division 95) were classified to manufacturing (Section C) in 2016, a total of 2.1 million enterprises. The manufacturing sector employed 30.4 million persons in 2016 and generated EUR 1 912 billion of value added. By these two measures, manufacturing was the second largest of the NACE sections within the EU-28’s non-financial business economy in terms of its contribution to employment (21.4 %) and the largest contributor to non-financial business economy value added, accounting for more than one quarter of the total (26.6 %).

<table>
<thead>
<tr>
<th>Key indicator, Manufacturing (NACE Section C), EU-28, 2016</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main indicators</strong></td>
</tr>
<tr>
<td>Number of enterprises (number)</td>
</tr>
<tr>
<td>Number of persons employed (number)</td>
</tr>
<tr>
<td>Turnover (EUR million)</td>
</tr>
<tr>
<td>Purchases of goods and services (EUR million)</td>
</tr>
<tr>
<td>Personal costs (EUR million)</td>
</tr>
<tr>
<td>Value added (EUR million)</td>
</tr>
<tr>
<td>Gross operating surplus (EUR million)</td>
</tr>
<tr>
<td><strong>Share in non-financial business economy total (%)</strong></td>
</tr>
<tr>
<td>Number of enterprises</td>
</tr>
<tr>
<td>Number of persons employed</td>
</tr>
<tr>
<td>Value added</td>
</tr>
<tr>
<td><strong>Derived indicators</strong></td>
</tr>
<tr>
<td>Apparent labour productivity (EUR thousand and per head)</td>
</tr>
<tr>
<td>Average personnel costs (EUR thousand and per employee)</td>
</tr>
<tr>
<td>Wage-adjusted labour productivity (%)</td>
</tr>
<tr>
<td>Gross operating rate (%)</td>
</tr>
</tbody>
</table>

Table 1: Key indicators, manufacturing (NACE Section C), EU-28, 2016

Source: Eurostat (online data code: sbs_na_ind_r2)

In 2016, the EU-28’s manufacturing sector recorded apparent labour productivity and average personnel costs above non-financial business economy averages: the apparent labour productivity of the manufacturing sector was EUR 63 000 per person employed, some EUR 12 500 more than the non-financial business economy average (EUR 50 500 per person employed), while average personnel costs in the manufacturing sector were EUR 40 100 per employee, some EUR 6 300 above the non-financial business economy average (EUR 33 800 per employee). Combining these two ratios into the wage-adjusted labour productivity ratio shows that value added per person employed in the EU-28’s manufacturing sector was equivalent to 156.0 % of average personnel costs per employee, which was slightly above the average for the non-financial business economy (149.4 %).

The gross operating rate (the relation between the gross operating surplus and turnover) was 10.2 % for the EU-28’s manufacturing sector in 2016, below the 11.0 % average for the non-financial business economy, and as such this sector had the second lowest level of profitability (using this measure) among any of the NACE sections within the non-financial business economy, with only distributive trades recording a lower gross operating rate (5.5 %).

Sectoral analysis

At the NACE division level the manufacturing sector is composed of 24 different subsectors. The largest EU-28 subsectors in 2016 in terms of value added were the manufacture of motor vehicles, trailers and semi-trailers (Division 29) and the manufacture of machinery and equipment (Division 28), while in terms of employment manufacture of food products (Division 10) and the manufacture of fabricated metal products, except machinery and equipment (Division 25) were the largest — see Figure 1.

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Manufacturing subsectors are very diverse, combining activities with relatively low apparent labour productivity and average personnel costs, such as the manufacture of wearing apparel (Division 14), leather products (Division 15), furniture (Division 31), wood and of products of wood and cork (Division 16) and textiles (Division 13), with other activities that have considerably higher values for the same indicators, such as manufacture of coke and refined petroleum products (Division 19), tobacco manufacturing (Division 12) and the manufacture of basic pharmaceutical products and pharmaceutical preparations (Division 21)—see Table 2b.

Table 2a: Sectoral analysis of key indicators, manufacturing (NACE Section C), EU-28, 2016
Source: Eurostat (sbs_na_ind_r2)
In 2016, apparent labour productivity within the EU-28’s manufacturing subsectors ranged from EUR 21 000 per person employed or more for the manufacture of wearing apparel, furniture, leather and related products, and wood and products of wood to EUR 241 000 per person employed for the manufacture of coke and refined petroleum products.

In line with their very low apparent labour productivity, the manufacture of wearing apparel and of leather and related products recorded the lowest average personnel costs in the EU-28’s manufacturing sector, at EUR 16 400 per employee and EUR 21 800 per employee respectively. Average personnel costs per employee were EUR 78 100 per employee for the manufacture of coke and refined petroleum products, the highest among the manufacturing subsectors and close to double the manufacturing average.

The two subsectors, manufacture of coke and refined petroleum products (241.0 %) and manufacture of tobacco products (186.0 %), recorded the second and third highest apparent labour productivity among NACE division within the whole of the non-financial business economy. Along with the manufacture of basic pharmaceutical products and pharmaceutical preparations, these subsectors recorded the highest wage-adjusted labour productivity ratio among manufacturing subsectors, while the repair and installation of machinery and equipment (Division 33) recorded the lowest (120.0 %) — see Table 2b.

An analysis of the EU-28’s gross operating surplus (value added less personnel costs) gives an idea of the operating profit before depreciation charges. The gross operating surplus for the manufacture of basic pharmaceutical products and pharmaceutical preparations was equivalent to 22.0 % of turnover, substantially above the 15.7 % recorded for second best in subsector, the other manufacturing (Division 32). The remaining subsectors mainly recorded gross operating rates between 5.9 % for the manufacture of basic metals (Division 24) and 15.4 % for the manufacture of beverages (Division 11). The one exception was the manufacture of coke and refined petroleum products which had a gross operating rate of 5.1 %, its low rate explained, in part, by the capital-intensive nature and relatively high turnover of this transformation activity.

**Country overview**

Because of the tradable (export and import) nature of manufactured goods it follows that the relative importance of manufacturing within the non-financial business economy varies greatly between EU Member States and also that specialisations at the subsector level are sometimes very pronounced. Figure 2 shows that the share of manufacturing within the non-financial business economy’s value added varied in 2016 from 12.3 % in Cyprus and 12.8 % in Malta to more than 36.0 % of the total in Slovakia, Slovenia, Hungary and Czechia, with Ireland having the highest share (46.2 %). The range in employment terms was similar, from 12.3 % in the Netherlands to 35.3 % in Czechia.
Among the five largest EU Member States, Germany stood out as its manufacturing sector contributed more than one quarter (29.8%) of the EU-28’s value added in 2016, well above its 23.1% share of value added in the EU-28’s non-financial business economy as a whole. Italy also recorded a larger share (11.8%) of the value added generated in the EU-28’s manufacturing sector than it did for the non-financial business economy as a whole (9.8%), while the reverse was true for France, Spain and the United Kingdom.

Figure 3: Concentration of value added and employment, manufacturing (NACE Section C), 2016(cumulative share of the five principal Member States as a % of the EU-28 total)Source: Eurostat (sbs_na_sca_r2)
Table 3: Largest and most specialised EU Member States in manufacturing (NACE Section C), EU-28, 2016

In value added terms, Germany was the largest EU Member State in 19 of the 24 manufacturing subsectors (see Table 3) in 2016; Italy was largest in three (the textiles, wearing apparel, and leather and related products manufacturing subsectors); France was the largest for the manufacture of beverages and the manufacture of other transport equipment. In Czechia, the specialisation rate for the manufacture of motor vehicles, trailers and semi-trailers was very high and amounted to 8.5 % of non-financial business economy value added. Equally remarkable was the Greek specialisation rate for the manufacture of food products which contributed 5.6 % of non-financial business economy value added. Other high specialisation ratios were recorded in Slovenia for the manufacture of fabricated metal products (Division 25) and in Germany for the manufacture of machinery and equipment n.e.c. (Division 28).

Among the EU Member States, the highest apparent labour productivity in manufacturing in 2016 was recorded in Ireland, where this measure reached EUR 406 500 per person employed. This was quite ahead of the next highest level of apparent labour productivity, namely EUR 111 600 per person employed recorded in Belgium. In Iceland, Norway and Switzerland the apparent labour productivity in manufacturing was above the EU-28 average, and in the case of Norway the average personnel costs (EUR 65 900 per head) were higher than the figures for the EU Member States. Denmark recorded the next highest level of average personnel costs within the manufacturing sector in 2016, EUR 64 900 per employee, just above the value of EUR 64 000 per employee in Sweden. Average personnel costs were also greater than or equal to EUR 50 000 per employee in Belgium, the Netherlands, Luxembourg, Austria, Germany, France, Ireland and Finland. On the other hand, average personnel costs were below EUR 10 000 per employee in Romania and Bulgaria where the lowest levels were recorded (EUR 6 200 per employee). Combining these two indicators gives the wage-adjusted labour productivity ratio, which is a measure of labour productivity that takes into account the very different levels of pay and social charges between Member States and activities. The highest such ratios were recorded in Ireland (763.7 %), Bulgaria (208.1 %), Hungary (204.5 %), Poland (193.7 %) and the United Kingdom (188.0 %). The lowest wage-adjusted labour productivity ratios in manufacturing were registered in France (133.8 %), Germany (140.3 %), Sweden (140.6 %) and Italy (143.6 %).
Table 4a: Key indicators, manufacturing (NACE Section C), 2016
Source: Eurostat (sbs_na_ind_r2)

Table 4b: Key indicators, manufacturing (NACE Section C), 2016
Source: Eurostat (sbs_na_ind_r2)

Size class analysis

Large enterprises (employing 250 or more persons) contributed more to the EU-28’s manufacturing sector than is typical for the non-financial business economy as whole — in 2016, some 58.6 % of the manufacturing sector’s value added was generated by 16 100 large enterprises and these employed 42.4 % of the manufacturing workforce; for comparison, the non-financial business economy average for large enterprise was a 43.7 % share of value added and a 33.4 % share of the workforce.
Table 5: Key size class indicators, manufacturing (NACE Section C), EU-28, 2016
Source: Eurostat (sbs_na_sca_r2)

<table>
<thead>
<tr>
<th>All enterprises</th>
<th>Small</th>
<th>Medium</th>
<th>Large</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of enterprises (thousands)</td>
<td>702.6</td>
<td>442.9</td>
<td>54.4</td>
</tr>
<tr>
<td>Number of persons employed</td>
<td>7.821</td>
<td>7.641</td>
<td>7.191</td>
</tr>
<tr>
<td>Value added (€ million)</td>
<td>18.737</td>
<td>18.557</td>
<td>18.407</td>
</tr>
<tr>
<td>Apparent labour productivity (€ per person employed)</td>
<td>24.5</td>
<td>24.5</td>
<td>24.5</td>
</tr>
</tbody>
</table>

Figure 4: Relative importance of enterprise size classes, manufacturing (NACE Section C), EU-28, 2016 (% share of sectoral total) Source: Eurostat (sbs_na_sca_r2)
The contribution of large enterprises (employing 250 or more persons) to EU-28 value added in 2016 was concentrated in the manufacture of coke and refined petroleum products, of motor vehicles, trailers and semi-trailers, of tobacco products, and of other transport equipment.

The contribution of medium-sized enterprises (employing 50 to 249 persons) to EU-28 value added in 2016 was highest (across the manufacturing sector) in textiles, rubber and plastic products, fabricated metal products except machinery and equipment and in subsector printing and reproduction of recorded media.

In the manufacture of fabricated metal products (except machinery and equipment and in subsector printing and reproduction of recorded media, small enterprises (employing 10 to 49 persons) contributed more than 30.0 % of the subsectors’ value added.

In none of the manufacturing subsectors did micro enterprises (employing fewer than 10 persons) contribute the largest share of value added among the four size classes shown in Figure 6; their greatest contribution was 21.9 % of the value added generated in the printing and reproduction of recorded media and 20.1 % in the repair and installation of machinery and equipment.
Among the EU Member States the relative importance of large enterprises was at its greatest in Ireland in 2016, as these enterprises contributed to 85.6 % of the large enterprises total value added generated in the manufacturing sector. Value added for large enterprises recorded on EU-28 level (58.6 %) indicates high importance of large enterprises in the sector.

Medium-sized enterprises made a considerable contribution to manufacturing value added in Latvia with 43.7 % of the total value added for this size-class; while this contribution was only around 5.9 % in Ireland and 18.4 % in Hungary.

Table 6a: Number of persons employed by enterprise size class, manufacturing (NACE Section C), 2016

Source: Eurostat (sbs_na_ind_r2)
Table 6b: Value added by enterprise size class, manufacturing (NACE Section C), 2016
Source: Eurostat (sbs_na_ind_r2)

Regions

The northern Italian region of Lombardia (including the city of Milan) and the French capital city region of the Île de France recorded the highest number of persons employed in 2016 in manufacturing, across NUTS level 2 regions within the EU-28. In Lombardia, the manufacturing workforce was 904 800 strong, while in the Île de France it numbered 811 000 persons; this represented almost 3 % of the EU-28 total employment in the manufacturing sector in both cases.

Figure 7: Ten largest NUTS 2 regions in terms of employment, manufacturing (NACE Section C), EU-28 with Norway and Iceland, 2016 (thousands)
Source: Eurostat (sbs_r_nuts06_r2)

The regions with the next largest manufacturing workforces were Stuttgart (Germany) and Veneto (Italy), both with workforces of over half a million persons.

Overall, the top 20 list of regions with the highest numbers of persons employed within the manufacturing sector in 2016 was dominated by German regions of which there were nine, accompanied by five regions from Italy, two regions from Poland, two from France, and one from Spain and Portugal each. Île de France was the only capital city region in the top 20.

These top 20 regions together accounted for 26.7 % of the EU-28’s manufacturing workforce in 2016. The relative importance of the manufacturing sector can be analysed by comparing the employment of this sector with the non-financial business economy workforce.

Among the 211 NUTS level 2 regions for which data are available in 2016, the median share of the manufacturing sector in the non-financial business economy workforce was 19.6 %. Employment within the manufacturing sector was quite concentrated, with some regions recording very low shares of manufacturing employment in the
non-financial business economy total. At the top end of the scale, the Polish region of Mazowiecki regionalny, Czech region of Severovýchod and Hungarian region of Közép-Dunántúl recorded manufacturing shares of 49.9 %, 46.8 % and 43.0 % respectively, over double the median share for all EU regions. In 43 regions, manufacturing contributed more than 30.0 % of the non-financial business economy workforce and these were largely concentrated in central Europe but also across the European Union: nine regions in Poland, five in Czechia, Hungary, Italy, and Romania, four regions in Bulgaria, three regions in Slovakia and one region in Austria, Germany, Spain, Croatia, Portugal, Slovenia and Sweden. At the other end of the scale, there were 24 regions with the share of 10.0 % or less of the non-financial business economy workforce with the lowest share (1.1 %) recorded in the British capital city region of Inner London.

Data sources

Coverage

Manufacturing includes the physical or chemical transformation of materials, substances, or components into new products. The raw materials are products of agriculture, forestry, fishing, mining or quarrying as well as products of other manufacturing activities. Substantial alteration, renovation or reconstruction of goods is generally considered to be manufacturing. Selling to the general public products that have been made on the same premises from which they are sold, such as bakeries and custom tailors, is also included in manufacturing rather than retailing.

Manufacturing units may process their own materials, subcontract a part of the processing of their own materials, own legal rights and concepts of the product but subcontract the whole processing, or carry out the aforementioned subcontracted processes. Assembly of the component parts (whether self-produced or purchased) of manufactured products is also considered manufacturing. The output of a manufacturing process may be finished in the sense that it is ready for use or consumption, or it may be semi-finished in the sense that it is to become an input for further manufacturing.

Specialised installation, maintenance and repair of industrial, commercial and similar machinery and equipment is considered as part of manufacturing, however the repair of computers and personal and household goods is classified as a service (Division 95), while the repair of motor vehicles is classified as part of distributive trades (Section G).

Some transformation processes are not classified as manufacturing: logging is classified in forestry (Section A); materials recovery is considered as primarily waste processing (Section E); on-site construction of structures which is classified as part of construction (Section F); activities of breaking bulk and redistribution (including, for example, packaging, bottling or sorting) are classified to distributive trades.

Data sources

The analysis presented in this article is based on the main dataset for structural business statistics (SBS), size class data and regional data, all of which are published annually.

The main series provides information for each EU Member State as well as a number of non-member countries at a detailed level according to the activity classification NACE. Data are available for a wide range of variables.

In structural business statistics, size classes are generally defined by the number of persons employed. A limited set of the standard structural business statistics variables (for example, the number of enterprises, turnover, persons employed and value added) are analysed by size class, mostly down to the three-digit (group) level of NACE. The main size classes used in this article for presenting the results are:

- small and medium-sized enterprises (SMEs): with 1 to 249 persons employed, further divided into:
  - micro enterprises: with less than 10 persons employed;
  - small enterprises: with 10 to 49 persons employed;
  - medium-sized enterprises: with 50 to 249 persons employed;
- large enterprises: with 250 or more persons employed.
Regional SBS data are available at NUTS levels 1 and 2 for most of the EU Member States and Norway, mostly down to the two-digit (division) level of NACE. Regional data for Croatia was not available for 2012. The main variable analysed in this article is the number of persons employed. The type of statistical unit used for regional SBS data is normally the local unit, which is an enterprise or part of an enterprise situated in a geographically identified place. Local units are classified into sectors (by NACE) normally according to their own main activity, but in some EU Member States the activity code is assigned on the basis of the principal activity of the enterprise to which the local unit belongs. The main SBS data series are presented at national level only, and for this national data the statistical unit is the enterprise. It is possible for the principal activity of a local unit to differ from that of the enterprise to which it belongs. Hence, national SBS data from the main series are not necessarily directly comparable with national aggregates compiled from regional SBS.

**Context**

European enterprise policy is conducted by the Directorate-General (DG) for Internal Market, Industry, Entrepreneurship and SMEs (GROW). The European Commission’s enterprise policies aim to create a favourable environment for business to thrive within the EU, creating higher productivity, economic growth, jobs and wealth. Policies are aimed at reducing administrative burden, stimulating innovation, encouraging sustainable production, and ensuring the smooth functioning of the EU’s internal market.

In March 2010, the *Europe 2020* strategy was adopted: this is the EU’s strategy for smart, sustainable and inclusive growth. It is a strategy to enhance the competitiveness of the EU and to create more growth and jobs. The latest revision of the *Integrated economic and employment guidelines* (revised as part of the Europe 2020 strategy) includes a guideline to improve the business and consumer environment and modernise Europe’s industrial base. An *integrated industrial policy for the globalisation era* was subsequently adopted by the European Commission in October 2010. As a flagship initiative of the Europe 2020 strategy, this policy sets out a strategy that aims to boost growth and jobs by maintaining and supporting a strong, diversified and competitive industrial base offering well-paid jobs while becoming less carbon intensive. The strategy puts forward a wide range of actions mixing broad cross-sectoral measures and actions for specific activities. Among the proposed actions are: the creation of framework conditions for sustainable supply and management of domestic primary raw materials; improving resource efficiency by addressing sector-specific innovation performance, for example in advanced manufacturing technologies; and addressing the challenges of energy-intensive activities through actions to improve framework conditions and support innovation.

Building on and updating the integrated industrial policy, in October 2012 the European Commission adopted a Communication titled ‘*A Stronger European Industry for Growth and Economic Recovery — Industrial Policy Communication Update*’ (COM(2012) 582 final), which put forward policies to lay the foundations for Europe’s industry of the future. In part this focused on investment in innovation, with the proposal to establish task forces to establish road maps for: markets for advanced manufacturing technologies for clean production; markets for key enabling technologies; bio-based product markets; sustainable industrial policy and construction and raw materials; clean vehicles; and smart grids. Furthermore, the communication looked at issues related to access to the internal and international markets, as well as access to finance and capital and also the role of human capital and skills, in particular developing skills in the labour force for industrial transformation.

**Other articles**

*Structural business statistics introduced* Other analyses of the business economy by NACE Rev. 2 sector

**Tables**

- Structural business statistics (t_sbs)
Database

- Structural business statistics (sbs), see:

  SBS — industry and construction (sbs_ind_co)
  - Annual detailed enterprise statistics — industry and construction (sbs_na_ind)
  - Annual detailed enterprise statistics for industry (NACE Rev. 2 B-E) (sbs_na_ind_r2)
  - SMEs — Annual enterprise statistics by size class — industry and construction (sbs_sc_ind)
  - Industry by employment size class (NACE Rev. 2 B-E) (sbs_sc_ind_r2)

  SBS — regional data — all activities (sbs_r)
  - SBS data by NUTS 2 regions and NACE Rev. 2 (from 2008 onwards) (sbs_r_nuts06_r2)

Dedicated section

- Structural business statistics

Publications

- Key figures on European Business — with a special feature section on SMEs — 2011 edition

Legislation

- Regulation 295/2008 of 11 March 2008 concerning structural business statistics

External links

- European Commission — Competition, see:
  - Agriculture and food
    - Consumer goods
    - Motor vehicles
    - Pharmaceuticals
  - European Commission — Directorate-General (DG) for Internal Market, Industry, Entrepreneurship and SMEs (GROWTH), see:
    - Industrial policy
      - Industry sectors
  - European Commission — Environment, see:
    - Chemicals
      - Industry and technology
      - Industrial emissions
      - Sustainable development
      - Waste
    - European Commission — Trade, see:
      - Industrial goods
      - European Environment Agency, see:
      - Industry