

# Economic footprint of the pharmaceutical industry in Europe

November 2024



# Foreword

PwC are delighted to have had the opportunity to work with the European Federation of Pharmaceutical Industries and Associations (EFPIA) to produce this economic impact report, that calculates the size of EFPIA's economic footprint in the European economy.

At PwC our purpose is to build trust in society and solve important problems. Economic impact reports help us deliver on that purpose as they provide a more holistic view of the value created by firms beyond what financial reporting alone provides. Economic impact modelling considers the total value created by a firm's activity, including the wider value generated by its entire supply chain, and spending by its employees throughout the economy. EFPIA members play a critical role in the European economy. Therefore, obtaining a comprehensive understanding of the mechanisms underpinning their reach is essential for informing leaders and decision-makers.

This report also explores the wider context for the pharmaceutical industry's economic contribution to Europe. The report outlines their role in contributing to research and development that enables the highly productive nature of Europe's pharmaceutical sector.

It has been a pleasure working alongside EFPIA and the EFPIA member associations' staff. I hope you enjoy reading about their contribution to the European economy in this report.



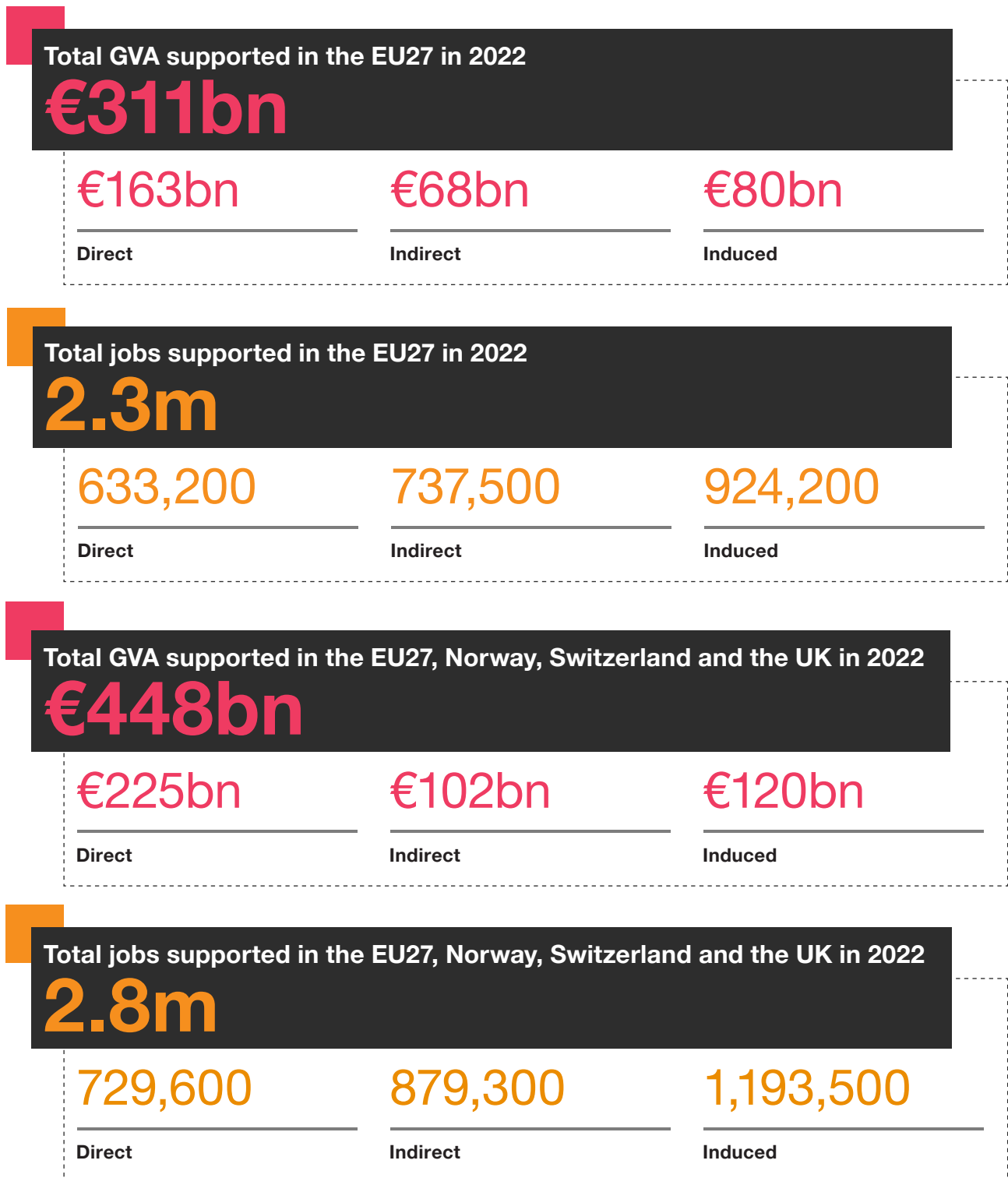
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# Executive Summary

The pharmaceutical industry in Europe<sup>1</sup> is highly productive compared to the economy as a whole, driven by consistently high levels of research and innovation. The sector contributed €311 billion GVA and 2.3 million jobs to the EU-27 economy in 2022.

Figure 1: Key findings on economic footprint of the pharmaceutical industry in Europe



1. For the purpose of this report, 'Europe' and 'European' refers to the EU27, the United Kingdom, Switzerland, and Norway.

Pharmaceutical R&D has grown on average 4.4% per year since 2010. This has resulted in a strong and growing industry in the manufacture of innovative pharmaceuticals, contributing a total of €311bn of GVA to the EU-27 economy in 2022.

The innovative nature of the industry means the manufacture of pharmaceuticals in Europe is highly productive. With a GVA per worker of €225,000 the industry is approximately three times as productive as the European economy as a whole, and is more productive than other similar industries.

The industry's contribution to EU-27 GVA is made up of €163bn direct GVA, €68bn of indirect GVA through the European supply chain, and €80bn of induced GVA through employee spending.

The sector also supported 2.3 million jobs in the EU-27 economy, consisting of 633,200 direct employees, 737,500 indirect jobs through the supply chain, and 924,200 jobs induced through direct and indirect employee spending in the economy.

Between 2016<sup>2</sup> and 2022, the GVA contribution of the pharmaceutical industry has increased by 6.9% per year in real terms, and the employment contribution has increased by 2.2% per year. Manufacturing of innovative pharmaceuticals is therefore an important sector for economic growth in Europe.

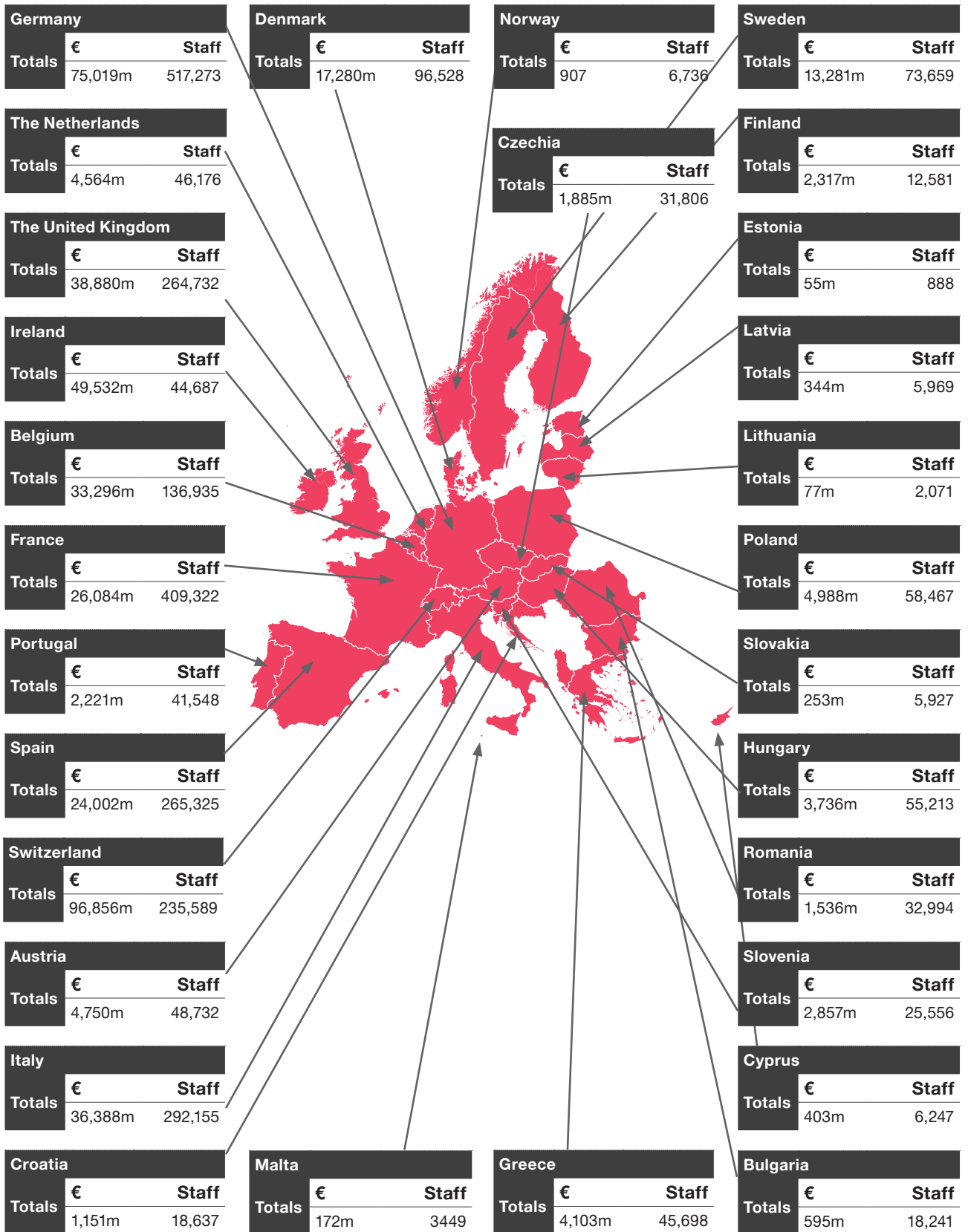
The industry is not, however, without its challenges. There is increased global competition in terms of R&D investment, growth in Europe was 4.4% per year between 2010 and 2022, whilst growth in the US was 5.5% and 20.7% for China. In recent years this growing gap in R&D investment between Europe, the US and China has been correlated with a relative decline in the number of European NME discoveries, compared to the US and China.

New Molecular Entities (NMEs), are new drugs with an active ingredient that is marketed for the first time; their discovery is a key product of R&D activity.



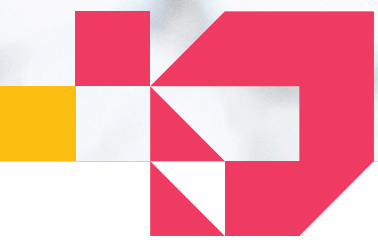
2. PwC (2019), "Economic and societal footprint of the pharmaceutical industry in Europe", for EFPIA. 2016 figures are from the previous iteration of the report, but have been inflation-adjusted to 2022 prices for comparability. For comparison purposes, percentage growth figures do not include Norway as this country was excluded from the previous report.

**Figure 2: Economic contribution by country**



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# 1

## Introduction

**In order to understand the total contribution of the manufacturing of pharmaceuticals industry in Europe, EFPIA has commissioned PwC to conduct a study focused on quantifying the economic impact of the industry.**

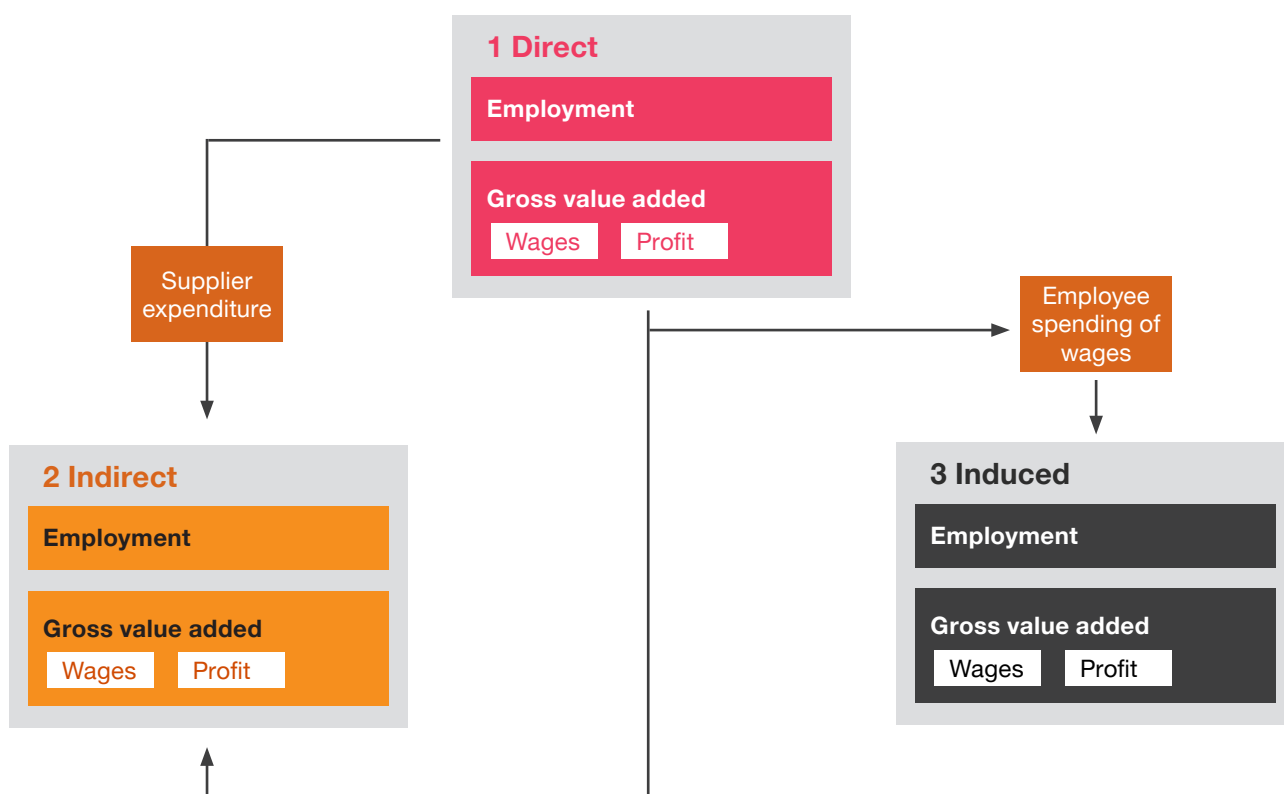
This work builds upon previous PwC analysis in 2019, and where possible this report presents where results have evolved over time.<sup>3</sup> The analysis presented in this report includes the European Union (EU), the United Kingdom, Switzerland, and Norway<sup>4</sup> (henceforth referred to as 'Europe').

The manufacture of pharmaceuticals is a subsector of the wider biopharmaceuticals industry. Whilst it is important to recognise that many EFPIA members may have productive activities in the wider

biopharmaceuticals industry, the focus of this analysis is the manufacture of innovative pharmaceuticals and vaccines; this approach provides consistency and comparability with the previous report.

PwC built Input-Output models for each domestic European economy to produce multipliers that estimate the total impact of the pharmaceuticals sector on the economy in Europe. These models allow us to capture the economic activity produced directly by the industry, the economic activity the industry indirectly supports through its supply chain, and the economic activity induced by direct and indirect employee spending in the wider economy. This concept of the economic impact is illustrated in Figure 3.

**Figure 3:** The interconnection between the direct, indirect and induced impact



EFPIA have inputted into the development of the report with information on R&D activities and NME discoveries in the pharmaceutical sector in Europe; PwC analysis of this information and all other data has been independent and EFPIA have not sought to influence this in any way.

This report outlines economic impacts in terms of two key indicators: Gross Value Added (GVA) and Employment. Additionally, we report GVA per employee as a proxy for the productivity of the industry.

The remainder of this report will present the methodology and findings from Input-Output analysis.

3. PwC (2019), "Economic and societal footprint of the pharmaceutical industry in Europe", for EFPIA.

4. Note that Norway was not included in the report produced in 2019 due to the lack of data available.





# 2

## Methodology



**We estimate the economic contribution of the manufacture of pharmaceuticals industry, defined using NACE<sup>5</sup> code C21, in Europe.**

This definition is consistent with the previous iteration of the report; it captures the core activity of EFPIA members and enables comparability with the previous report. It's important to note that the economic activity of the pharmaceuticals sector of some EFPIA members is beyond the scope of C21, and the industry in these countries will therefore have a larger overall economic footprint than is outlined in this report.

Our analysis examines how the manufacture of pharmaceuticals industry contributes to the economy through Gross Value Added (GVA)<sup>6</sup> and employment. GVA is a measure for assessing the economic contribution of a company, industry, or sector and is equivalent to GDP, after excluding taxes on products (including imports), and adding subsidies on products (including any on imports). Employment captures the number of people (ILO definition<sup>7</sup>) who are directly employed in a given sector, who have a contract of employment and receive compensation in the form of salaries.

In addition to the direct economic contribution of the industry, we used Input-Output analysis to estimate the industry's broader economic contribution through its supply chain and employee spending. The total contribution is made up of direct, indirect and induced effects, which we define as follows:

- **Direct impact:** This is the contribution resulting from the manufacture of pharmaceuticals industry's own day-to-day operations in Europe. Direct GVA is calculated as the sum of returns to labour and capital, while direct employment is the total number of employees for the year, in terms of employment.
- **Indirect impact:** This is the impact on the economy of Europe as a result of the pharmaceuticals industry's procurement, which includes both the economic value added from immediate suppliers and the wider supplier chain (for instance, the suppliers of the EFPIA member countries' suppliers).
- **Induced impact:** This is the impact generated through the spending by employees throughout the value chain from their earnings, including pharmaceutical companies' employees and their suppliers' employees.

The relationship between these three channels is shown opposite in Figure 4.

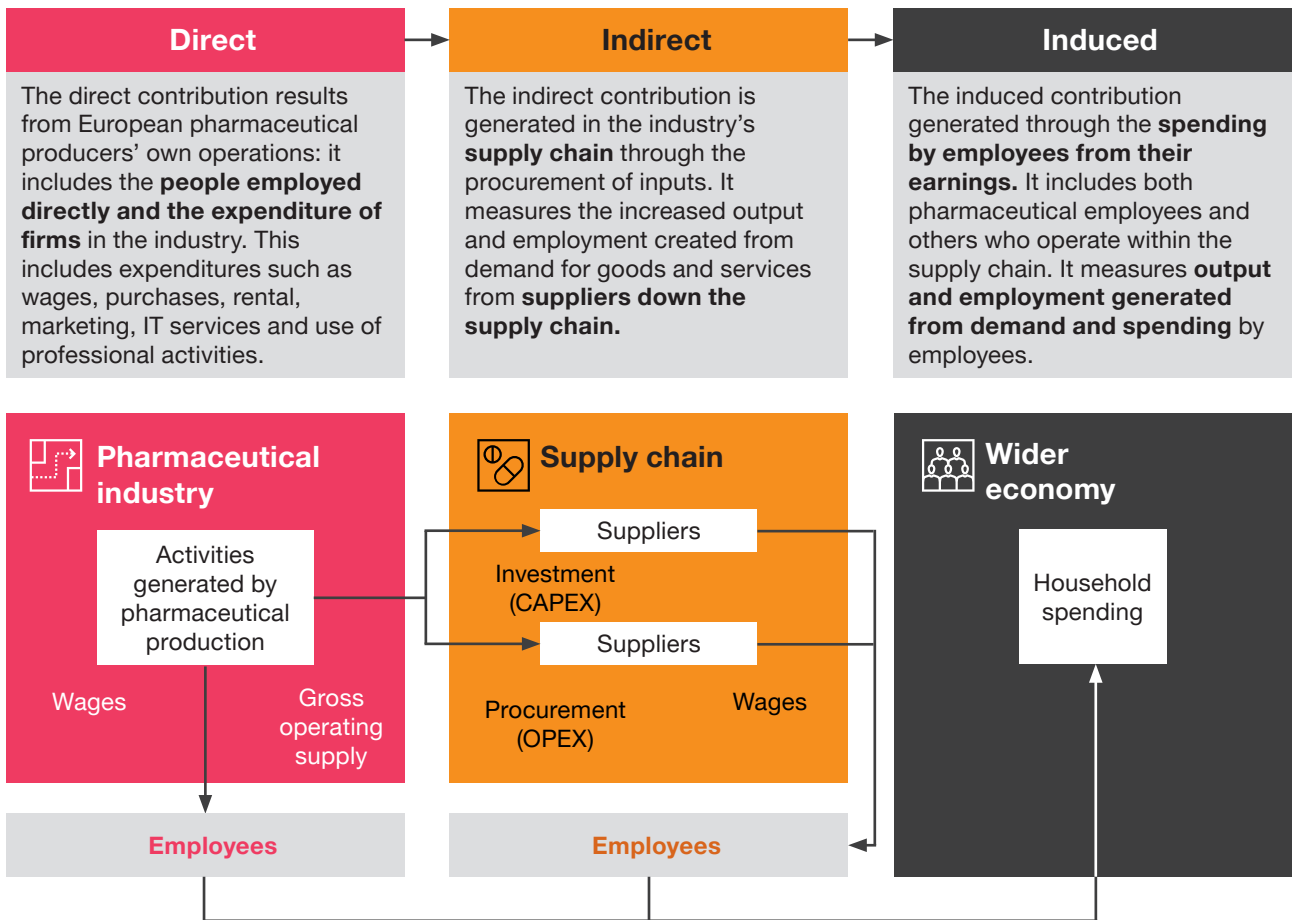
5. We have defined the pharmaceutical industry as using NACE code C21 (Manufacture of basic pharmaceutical products and pharmaceutical preparations). NACE codes are a Europe-wide standard classification for businesses, which allow us to conduct analysis across countries consistently.

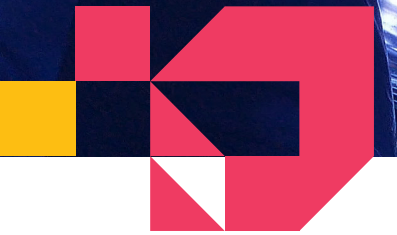
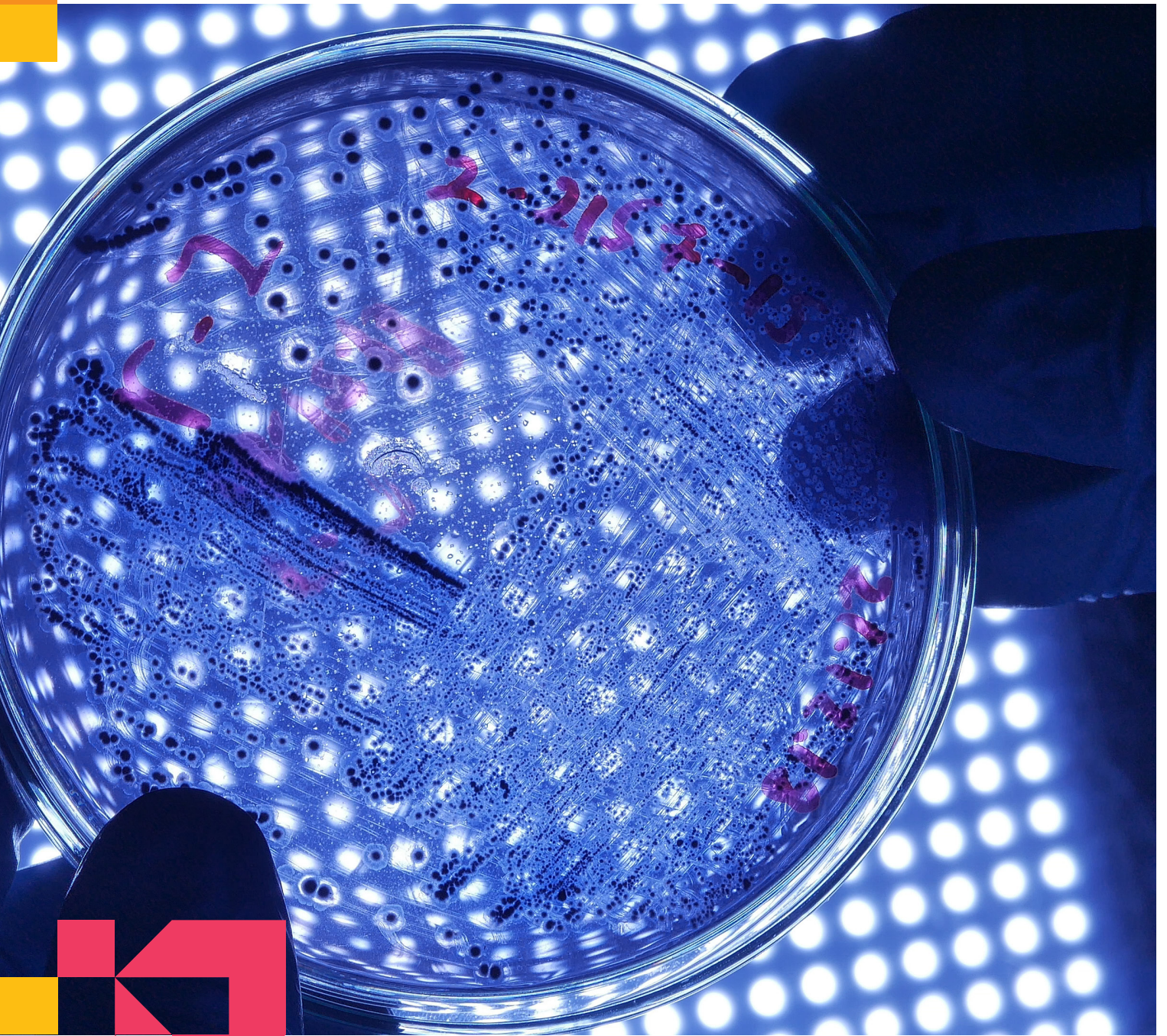
6. The formula to calculate GVA is: Direct GVA = Operating Profits + Depreciation + Amortisation + Direct employee costs. This measure is used in order to avoid potential double-counting, as it only includes the 'value added' at each stage of production.

7. The International Labour Organisation (ILO) defines an employed person as anyone aged 16, or over, who has completed at least one hour of work in the reference week, or is temporarily away from his or her job, such as being on holiday.



**Figure 4:** The relationships across the three impact channels





3

Economic  
impact



# Gross Value Added (GVA)

**Table 1:** The direct, indirect and induced GVA impact in 2016 and 2022 in the EU27 and Europe, in €m.

|        |      | GVA Impact (€m) |                         |                             |
|--------|------|-----------------|-------------------------|-----------------------------|
|        |      | Direct          | Supply Chain (Indirect) | Consumer Spending (Induced) |
| EU27   | 2016 | 107,600         | 48,100                  | 57,800                      |
|        | 2022 | 162,700         | 68,000                  | 80,200                      |
| Europe | 2016 | 154,600         | 72,600                  | 88,800                      |
|        | 2022 | 225,200         | 102,000                 | 120,400                     |

Source: PwC analysis. GVA is value added at factor cost - million Euro and all figures are in 2022 prices. Table 3 in the appendix contains a full list of data sources by nation.

**In 2022, the pharmaceutical industry contributed a total of approximately €311 billion to EU27 GVA and €448 billion to European GVA.**

**This is made up of:**

€163bn

Direct impact from business operations in the EU27, accounting for 6.8% of direct GVA in the EU27 manufacturing industry. The equivalent direct impact from business operations in Europe was €225 billion, accounting for 8.1% of direct GVA in the European manufacturing industry.

€68bn

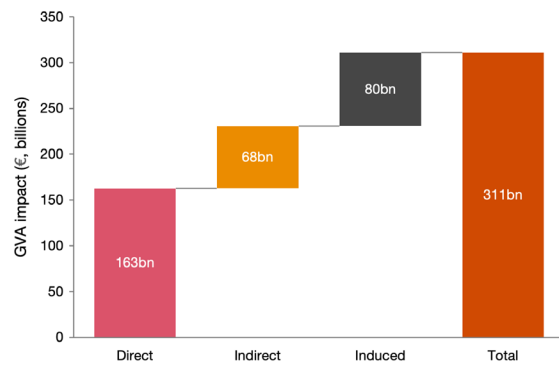
Indirect GVA impact in the EU27 (€102 billion in Europe), arising from pharmaceutical manufacturing supply chains.

€80bn

Induced GVA impact (€120 billion for Europe) arising from workers' spending in the EU27.

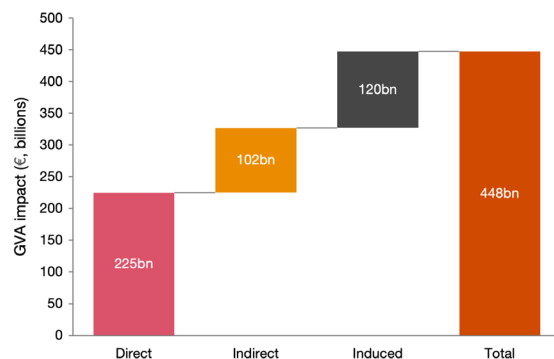
Total GVA in this sector accounts for 2.0% of total GVA in EU27 countries and 2.6% of the total GVA in Europe.

**Figure 5:** GVA contribution of the pharmaceuticals sector in the EU27, 2022<sup>8</sup>



Source: PwC analysis. GVA is value added at factor cost - million Euro and all figures are in 2022 prices. Table 3 in the appendix contains a full list of data sources by nation.

**Figure 6:** GVA contribution of the pharmaceuticals sector in Europe, 2022<sup>9</sup>



Source: PwC analysis. GVA is value added at factor cost - million Euro and all figures are in 2022 prices. Table 3 in the appendix contains a full list of data sources by nation.

8. Figures are in 2022 prices.

9. Figures are in 2022 prices.

# Employment

**Table 2:** The direct, indirect and induced employment impact 2016 and 2022 in the EU27 and Europe.

|        |      | Employment Impact<br>(total employment, ILO definition) |                            |                                |
|--------|------|---|----------------------------|--------------------------------|
|        |      | Direct  | Supply Chain<br>(Indirect) | Consumer<br>Spending (Induced) |
| EU27   | 2016 | 558,300   | 659,600                    | 824,600                        |
|        | 2022 | 633,200   | 737,500                    | 924,200                        |
| Europe | 2016 | 643,400   | 785,400                    | 1,068,600                      |
|        | 2022 | 729,600   | 879,300                    | 1,193,500                      |

Source: PwC analysis. Table 3 in the appendix contains a full list of data sources by nation.

**In 2022, the pharmaceutical industry supported a total of approximately 2.3 million jobs in the EU27 economy and 2.8 million jobs in the European economy.**

**This is made up of:**

**633,200**

people employed directly by the industry for EU27 countries and 729,600 direct employees in the European economy.

**737,500**

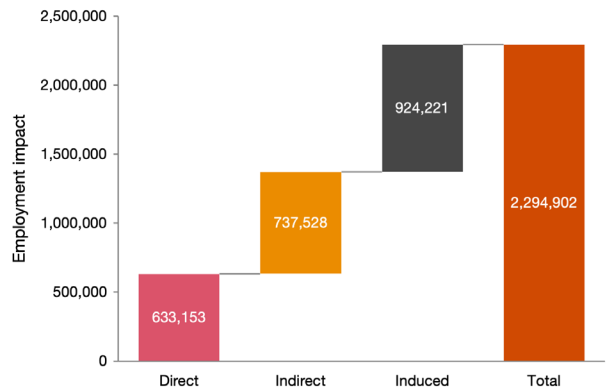
people employed in the industry's EU27 supply chain, and 879,300 people employed in the industry's European supply chain.

**924,200**

jobs that are supported by pharmaceutical and supply chain workers spending money in the EU27 economy. The equivalent figure for Europe is 1,193,500.

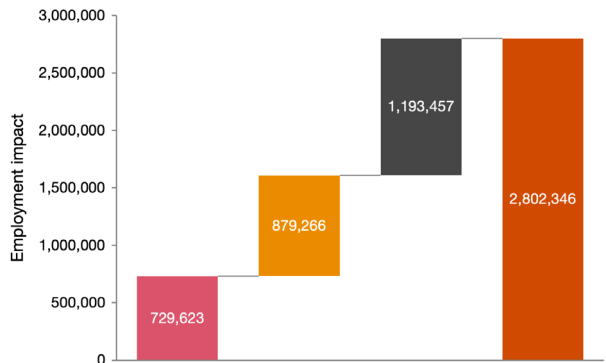
The jobs supported by the pharmaceutical sector account for 1.0% of employment in the EU27 and 1.3% of employment for Europe. Activity in the pharmaceutical sector supported 7.6% of the total manufacturing employment in the EU27 and 7.7% of total manufacturing employment in Europe.

**Figure 7:** Employment contribution of the pharmaceuticals sector in the EU27, 2022



Source: PwC analysis. Table 3 in the appendix contains a full list of data sources by nation.

**Figure 8:** Employment contribution of the pharmaceuticals sector in Europe, 2022



Source: PwC analysis. Table 3 in the appendix contains a full list of data sources by nation.



## GVA per employee

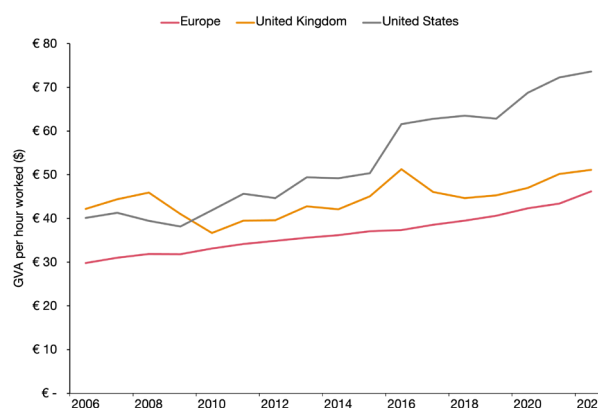
**Prior to the 2008 financial crisis, GVA per hour worked was similar in the US and UK, and approximately 25% lower in the EU27.**

Between 2008 and 2022, US productivity per hour has close to doubled. Over the same period productivity in the UK and EU27 has grown at a much slower rate, with US GVA per hour around double that of the EU27 and around a third higher than the UK in 2021. As referred to in a recent report by the European Commission<sup>10</sup>, there is significant focus on improving productivity amongst European policymakers.

The pharmaceutical industry is highly productive. In every country analysed in this report, productivity per worker is higher in the pharmaceutical industry than in the economy as a whole. Investment in the sector therefore has potential to contribute to regaining momentum in productivity growth.

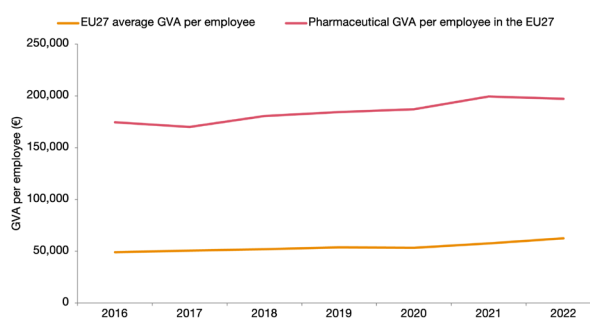
The innovative nature of the industry means the manufacture of pharmaceuticals in Europe is highly productive. With a GVA per worker of €225,000 the industry is approximately three times as productive as the European economy as a whole, and is more productive than other similar industries. When considering the EU27 alone, the pharmaceutical industry directly contributed an average €197,200 of direct GVA for every direct employee in 2022. Additionally, the productivity in the manufacture of pharmaceuticals sector is growing relatively faster compared to other sectors.

**Figure 9:** GVA per hour worked in Europe (EU27), the UK and the US, 2005 to 2022



Source: GVA data from World data, Employment data from OECD, Hours worked per employee data from OECD, PwC analysis.

**Figure 10:** Comparison of GVA per employee of the pharmaceutical industry to the national average GVA in the EU27, 2016-2022<sup>11</sup>

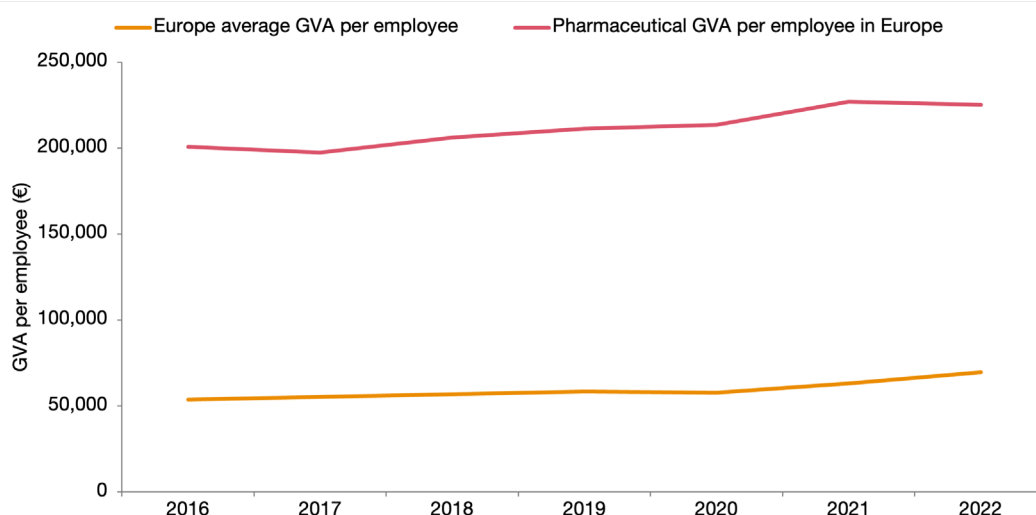


Source: PwC analysis. GVA is value added at factor cost - million Euro and all figures are in 2022 prices. Table 3 in the appendix contains a full list of data sources by nation.

10. EU competitiveness: Looking ahead, European Commission (September 2024)

11. Figures are in 2022 prices. Note that data over time was not available for Ireland so this figure includes an interpolation to produce data in the range between 2016 and 2022.





**Figure 11:**  
Comparison of GVA per employee of the pharmaceuticals sector to the national average GVA in Europe, 2016-2022<sup>12</sup>



Source: PwC analysis. GVA is value added at factor cost - million Euro and all figures are in 2022 prices. Table 3 in the appendix contains a full list of data sources by nation.

The pharmaceuticals sector is also more productive compared to similar key industries. For example, the GVA per employee in the telecommunications industry is €164,100, and the GVA per employee in the financial services industry is €175,800. Figure 12 below compares GVA per employee in similar industries to the pharmaceuticals sector in Europe.

**Figure 12:** Economic contribution of the pharmaceuticals sector versus other key industries in Europe (2021)<sup>13</sup>

|                             |   |   |
|-----------------------------|---|---|
| <b>Pharmaceuticals</b>      |  | <b>€448bn</b> in Gross Value Added (GVA)<br><b>2,801,300</b> in Employment<br><b>€225,300</b> in GVA per employee |
| <b>Telecommunications</b>   |  | <b>€153bn</b> in Gross Value Added (GVA)<br><b>883,300</b> in Employment<br><b>€164,100</b> in GVA per employee   |
| <b>Financial services</b>   |  | <b>€437bn</b> in Gross Value Added (GVA)<br><b>2,377,600</b> in Employment<br><b>€175,800</b> in GVA per employee |
| <b>Computer programming</b> |  | <b>€234bn</b> in Gross Value Added (GVA)<br><b>1,831,200</b> in Employment<br><b>€75,100</b> in GVA per employee  |

Source: Table 3 in the appendix contains a full list of data sources by nation for the pharmaceuticals sector, PwC analysis. Eurostat (2021) for other sectors, PwC analysis.

12. Figures are in 2022 prices. Note that data over time was not available for Ireland so this figure includes an interpolation to produce data in the range between 2016 and 2022.

13. Eurostat (2024), "Enterprises by detailed NACE Rev.2 activity and special aggregates". Figures are in 2022 prices. The latest data available for other industries was 2021 to produce the average European productivity level for each sector, and these are compared to the 2022 results for the pharmaceutical industry. GVA per employee is rounded to the nearest hundred for other European industries.





## R&D and global competition

**Whilst the pharmaceutical industry in Europe is highly productive and growing, investment is important in maintaining this activity. Europe and the US had similar levels of R&D expenditure until 2014.**

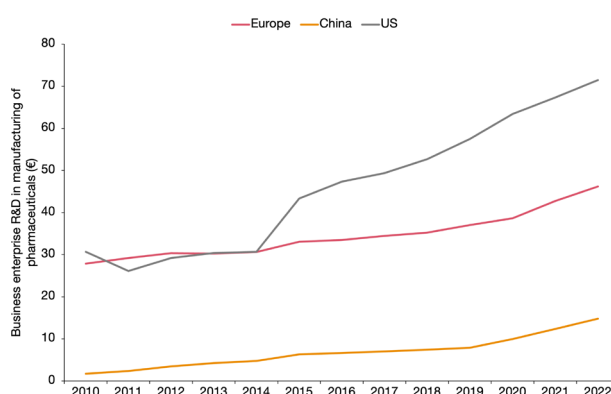
Thereafter the US has consistently invested the highest level of R&D in pharmaceuticals, and the gap is widening (see Figure 13). In Europe, R&D expenditure in pharmaceuticals has grown an average of 4.4% each year between 2010 and 2022, from €27.8 billion to €46.2 billion. In the US, R&D expenditure in pharmaceuticals has grown an average of 5.5% each year over the same period, from €30.7 billion to €71.5 billion.

Whilst in absolute terms R&D investment in China has been growing at a similar rate to Europe since 2010, the China trend starts at a low base such that relative growth is much higher than both Europe and the US in percentage terms. In China, pharmaceutical R&D expenditure has increased by an average of 20.7% each year over the same period, from €1.7 billion to €14.8 billion.

These changing growth rates of R&D expenditure are reflected in the pattern of New Molecular Entities (NMEs) discoveries worldwide. NMEs are new drugs with an active ingredient that is marketed for the first time; their discovery is a key product of R&D activity.

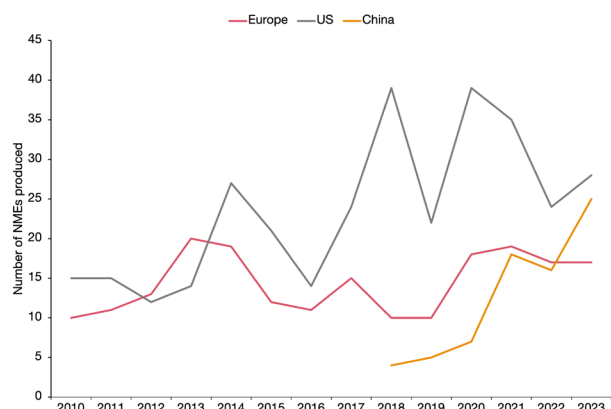
NME growth has been increasing in China since 2018<sup>15</sup>. Despite investment being approximately 25% of European investment in 2022, China achieved a similar number of NMEs in 2022 and more than Europe in 2023. NME discoveries were similar between US and Europe until 2013, with significant divergence since (reflecting higher US R&D spend). Between 2018 and 2023, 91 NMEs originated in Europe. This compares to 187 NMEs from the US and 75 NMEs from China. The trend of NMEs originating in the US, Europe, and China over time is presented in Figure 14.

**Figure 13:** R&D investment in the pharmaceuticals industry (billion, €) by territory, from 2010 to 2022<sup>14</sup>



Source: EFPIA member associations, PhRMA, China Statistical Yearbook, 2024

**Figure 14:** Number of NMEs originating in Europe, the US and China, 2010 to 2023



Source: Citeline April 2024 & SCRIP Publications - EFPIA calculations, PwC analysis.

14. Figures are in 2022 prices. Note that data over time was not available for Ireland so this figure includes an interpolation to produce data in the range between 2016 and 2022. This figure does include Norway data over time.

15. Data is not available for China prior to 2018 because it was included in 'other' category due to low levels.



# 4

## Appendix

# Appendix

**Table 3:** Data sources by country for GVA and employment.

| Country        | Employment   |
|----------------|--|
| Austria        | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Belgium        | 2020 enterprise data updated with national accounts growth rate to 2022 (GVA). Source: Eurostat. Employment 2022 production data. Source: EFPIA.   |
| Bulgaria       | 2020 enterprise data updated with national accounts growth rate to 2022 (employment). GVA method 1, 2019 enterprise data updated using growth rate from a range with the upper bound of 25% (Slovenia) and the lower bound of 3% (Cyprus). Source: Eurostat.   |
| Croatia        | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Cyprus         | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Czechia        | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Denmark        | 2022 employment data. Source: Denmark Statistics. GVA method 1, 2020 enterprise data updated using growth rate from a range with the upper bound of 15% (Germany) and the lower bound of 7% (the Netherlands). Source: Eurostat.                               |
| Estonia        | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Finland        | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| France         | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Germany        | 2020 enterprise data updated with national accounts growth rate to 2022 (GVA). Source: Eurostat. Employment 2022 with multiplier applied to estimate the size of "enterprise data" as the definition changes in 2017/18. Source: EFPIA production data.        |
| Greece         | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Hungary        | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Ireland        | Employment Method 2, 2022 national data, with percentage of the size of the pharmaceutical industry applied. Source: Eurostat. Employment 2022 with multiplier applied to estimate the size of "enterprise data" as data not available past 2014. Source: IDA. |
| Italy          | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Latvia         | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Lithuania      | 2022 employment and GVA data. Source: Lithuania Official Statistics.   |
| Malta          | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Netherlands    | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat   |
| Norway         | Data provided by Norway (2022). Data was not available or considered less reliable. Figures were tested for comparability.   |
| Poland         | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Portugal       | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Romania        | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Slovakia       | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Slovenia       | Method 2, 2022 national data, with percentage of the size of the pharmaceutical industry applied (GVA and employment). Source: Eurostat.   |
| Spain          | 2020 enterprise data updated with national accounts growth rate to 2022 (employment and GVA). Source: Eurostat.  |
| Sweden         | Method 1, GVA and employment. GVA upper bound 15% (Germany) and lower bound 7% (the Netherlands). Employment upper bound 12% (Austria) and lower bound 1% (Slovakia). Range narrowed using data source provided by Sweden.                                     |
| Switzerland    | 2022 Switzerland data from report provided (GVA and employment).   |
| United Kingdom | Employment: Business Register Data 2022. GVA: GDP Low Level Aggregates data 2022. Source: ONS. Employment and GVA data were not available from Eurostat due to the UK's exit from the European Union.  |

**Table 4:** Data sources by country for R&D investment.

| Country        | Employment  |
|----------------|---|
| Austria        | Statistik Austria   |
| Belgium        | pharma.be (firms doing basic research on medicines for human use in Belgium)  |
| Bulgaria       | 2018: KPMG; 2021: estimate based on data triangulation from several data sources  |
| Croatia        | Croatian Employers Association (HUP) & Association of Employers in Healthcare   |
| Cyprus         | EFPIA data  |
| Czechia        | Eurostat; CZSO (2018); AIFP study Innovation for Life (2019)  |
| Denmark        | Statistics Denmark  |
| Estonia        | No data available   |
| Finland        | Pharma Industry Finland +Orion  |
| France         | Ministry of Research  |
| Germany        | Stiftverband (Association for the Promotion of Sciences and Humanities)   |
| Greece         | National Ethics Committee (2011 clinical research), IOVE (as of 2013); Eurostat (2015); GSRI (General Secretariat for Research & Innovation - 2020) |
| Hungary        | Hungarian Central Statistical Office (KSH)  |
| Ireland        | PCI until 2012, Industrial Development Association (IDA) as of 2013   |
| Italy          | Farmindustria elaboration on Istat  |
| Latvia         | No data available   |
| Lithuania      | No data available   |
| Malta          | No data available   |
| Netherlands    | CBS - Nefarma estimate as of 2007 (10% of private business R&D spending)  |
| Norway         | LMI yearly R&D inquiry  |
| Poland         | Central Statistical Office  |
| Portugal       | IPCTN   |
| Romania        | ARPIM estimate  |
| Slovakia       | No data available prior to 2020 so excluded   |
| Slovenia       | Forum estimate based on latest available Slovenian Statistics Office data (2016)  |
| Spain          | Data include intra-mural and extra-mural R&D; 2019-2021: Farmindustria survey   |
| Sweden         | LIF members survey prior to 2013; Statistics Sweden (pharmaceutical products)   |
| Switzerland    | Interpharma   |
| United Kingdom | ONS Business Enterprise Research & Development; 2021 (OHE estimate)   |
| United States  | Pharmaceutical Research and Manufacturers of America, PhRMA Annual Survey, 2019   |
| China          | China Statistical Yearbook 2002-2022  |





# Thank you

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