



GED Discussion Paper

# The impact of foreign-owned firms in the EU and Germany

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GED Discussion Paper

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## EXECUTIVE SUMMARY

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Multinational firms locate abroad because they expect that the investment will improve the long-term profit and value of the firm. Such investments not only benefit the firms themselves but also have the potential to benefit local firms through buyer-supplier linkages and productivity spillovers. Foreign-owned firms therefore have the potential to bring significant economic benefits to the host economy through several transmission channels – and most EU governments offer a range of investment promotion services to attract foreign-owned firms.

The EU is, by global standards, a large recipient of Foreign Direct Investment (FDI) from outside (extra-EU FDI) and within (intra-EU FDI). Data from UNCTAD shows that the EU accounted for around 30 per cent of the global stock of FDI in 2016.

The overall objective of this study is two-fold. *First*, we want to understand the characteristics of the FDI projects that have been located in the EU (FDI inflows). *Second*, we want to assess the impact of foreign-owned firms on the host economy. We combine two databases to meet these objectives. It is important to notice that the two databases use a different definition of FDI. When we analyse the characteristics of FDI projects into the EU (FDI inflows), we use the international standard definition of FDI and apply a 10 per cent threshold. When we assess the impacts of foreign-owned firms on jobs and GDP in the EU, we use a 50 per cent threshold because this is the only data available. The study also provides a deep dive of FDI into Germany.

### Characteristics of FDI in the EU

In the 15-year period between 2003 to 2017, the EU registered 130,000 FDI projects. This amounted to a total value of EUR 6.4 trillion. The UK was the largest receiver of FDI in this period and the largest intra-EU investor, and so Brexit is likely to have long lasting impacts on FDI flows towards the EU and among Member States. Going forward, the FDI attractiveness of the EU Member States will to some extent depend on their ability to further harmonise and remove barriers to trade and investments in the Single Market.

Of the 130,000 FDI projects, 55 per cent (72,000) were mergers and acquisitions (M&As), whilst the remaining 45 per cent (58,000) were greenfield investments. M&A projects have an average value four times that of greenfield investments. Given this split, M&A projects account for 70 per cent of the total value in the period, equivalent to EUR 4.5 trillion. The remaining value of EUR 1.8 trillion is attributed to greenfield investments.

There is a clear tendency for FDI to flow to large, mature economies due to their attractive markets and numerous consumers with high purchasing power. There is also a tendency for FDI to flow to the Central European countries where neighbouring countries can be served at a low cost. The Western European Member States thus received more, and larger, FDI projects than the Eastern European Member States. Once we take the size of the host economies into consideration, however, the Eastern European Member States perform better and generally attract more FDI than their economic size would have predicted.

In terms of sectoral distribution, the service sector received 75,000 projects (58 per cent) valued at EUR 2.9 trillion. In contrast, the manufacturing sector received 44,000 projects valued at EUR 2.2 trillion, and the category, other sectors, received 11,000 projects at EUR 1.3 trillion. Investments are made in both high-productive sectors such as computer programming but also in low productive sectors such as retail. The largest investments are found in the manufacturing sector, where the average size was EUR 66 million. The specific sub-sectors that pull this average up are the pharmaceuticals and food products manufacturing industries.

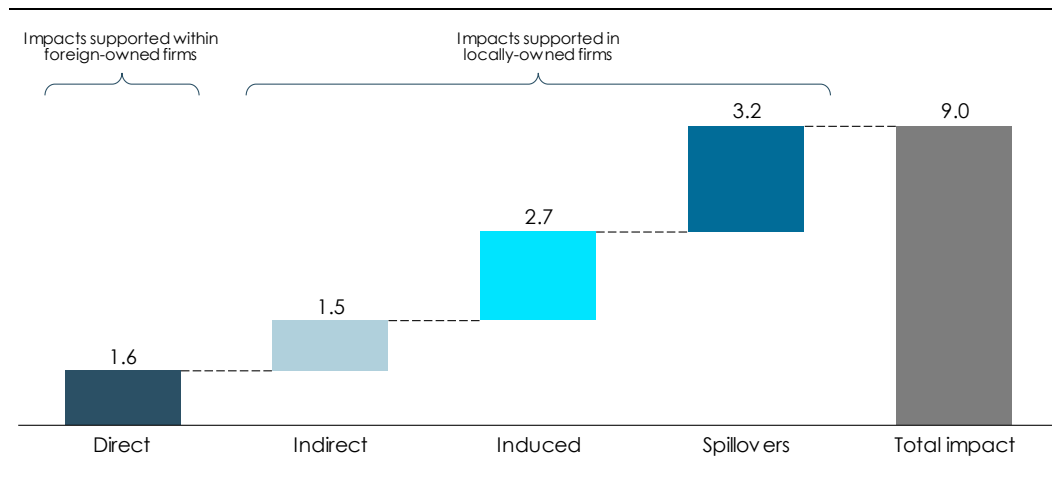
### **Foreign-owned firms support EUR 9 trillion of EU GDP**

When foreign-owned firms establish themselves in a country or expand an existing foreign affiliate, new economic activity and jobs are created within the firm (direct impact). Likewise, a foreign takeover of a local firm can preserve economic activity in the firm and enhance economic growth. When the foreign-owned firm buys goods and services at local firms, and when its employees spend their wage income in the host country, the foreign-owned firm supports economic activity and jobs throughout the host economy (indirect and induced impacts). In addition, foreign-owned firms are generally highly productive, and local firms can tap into this knowledge (spillovers) and thereby improve their own productivity.

In 2017, 22 million people were employed in almost 290,000 foreign-owned firms located in the EU. Foreign-owned firms are especially important in several of the Eastern European Member States where they account for a large share of total employment. In total, 82 million jobs are supported by foreign-owned firms in the EU when we add jobs supported in local firms. The foreign-owned firms themselves added around EUR 1.6 trillion to EU GDP in 2017. Taking also the economic activity supported in local firms through buyer-supplier linkages and productivity spillovers into consideration, the economic activities of foreign-owned firms add around EUR 9 trillion to EU GDP. Of this GDP contribution, EUR 7.4 arises through local firms.

## GDP supported by foreign-owned firms in the EU, 2017

EUR trillion



Note: Numbers have been forecasted with the development in EU GDP from 2014 to 2017. The effect is a net effect where potential double counting in the indirect and induced impacts have been deducted. See Annex A for a detailed description.

Source: Copenhagen Economics, based on Eurostat and WIOD

The study also includes a deep dive of FDI projects of FDI into Germany and the impacts of foreign-owned firms on the German economy. The key findings are summarised in the box below.

### FDI in Germany – Summary

Characteristics of FDI in Germany:

- A total of 16,500 FDI projects were made by foreign-owned firms in Germany in the period 2003–2017 compared to the EU total of 130,000
- Investments into Germany were split evenly between M&As and greenfield investments
- The average deal size for M&As was EUR 141 million, compared to EUR 20 million for greenfield investments

Most investments (greenfield investments as well as M&As) locate in four Bundesländer in Southern and Western Germany. These Bundesländer are all among the richest areas in Germany, therefore FDI seems to offer little help for the poorer Bundesländer to catch up with the relatively wealthier Bundesländer (economic convergence). Rather, FDI appears to exacerbate the economic structures and concentration of economic activity.

Impact of foreign-owned firms in Germany:

- Germany accounts for a little over EUR 1.5 trillion out of the EUR 9 trillion GDP supported by foreign-owned firms in the EU
- Foreign-owned firms support almost 15 million jobs in Germany

### Policy initiatives can help optimise benefits from FDI

Firms locate abroad because they expect that the investment will improve the long-term profit and value of the firm. The investment decision of foreign-owned firms will invariably be guided by the firm's motives for engaging in FDI in the first place and the firm's internationalisation strategy. Many factors will impact the location choice of foreign-owned firms, and attracting foreign-owned firms will require good framework conditions for establishing and doing business in the host economy.

While foreign-owned firms offer significant potential benefits to the host economy, their presence can also pose a challenge to local firms. Foreign-owned firms may outcompete local firms, and economic activity in foreign-owned firms may therefore crowd out economic activity in local firms. Foreign-owned firms may also create bottlenecks in the local economy and make it difficult for local firms to access key production factors such as skills and land. Benefits to local firms will also be limited if they are not able to tap into the knowledge inherent in the foreign-owned firm or if there is little interaction between the foreign-owned firms and local firms. A net positive impact should therefore not be taken for granted, and it is important for policy makers in the host economy to ensure that the right policies are in place to optimise the potential benefits from foreign-owned firms. Such policies could focus on:<sup>1</sup>

- The **political, regulatory and legal environment** to reduce the risk of investing in the host country, and ensuring a level playing field for local firms that compete with the foreign-owned firms.
- **Infrastructure and market access** to make it easy for the foreign-owned firms to trade across borders and engage in global value chains.
- Expanding the **knowledge and innovation capacity** to attract highly productive foreign-firms, avoid skill shortages and enhance the absorption capacity of the local firms
- Improve the **cost competitiveness** to increase the return to locating in the country.
- Focus FDI promotion around existing **strongholds and clusters** to strengthen interactions and the absorption capacity of the local firms.

EU Member States compete to some extent for investments from non-EU firms who wish to locate in the EU to get access to the Single Market. The opening-up of emerging, high-growing economies intensifies competition for global investments. Thus, the EU's share of the global FDI stock has dropped from around half before the global crisis to less than 30 per cent. **Deepening the Single Market** will make the EU as a whole more attractive for foreign-owned firms. **Strengthening EU value chains** will also limit imports from non-EU suppliers and enhance benefits to local firms.

Cross-border FDI within the EU (intra-EU) will to some extent reallocate capital, and sometimes jobs, between Member States, but there are also productivity gains from these cross-border investments. Investing abroad (outward FDI) increases the productivity and international competitiveness of EU firms through, e.g., economies of scale, lower costs and knowledge spillovers. Likewise, the presence of foreign-owned firms (inward FDI) impacts local firms through the productivity spillovers described above.

**Intra-EU FDI is therefore not a zero-sum game** but rather increases the overall economic activity in the EU.

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<sup>1</sup> See also Copenhagen Economics (2018) for policy implications at the sub-national regional level.

## CHAPTER 1

**HOW AND WHY FIRMS INVEST ABROAD**

Multinational firms locate abroad because they expect that the investment will improve the long-term profit and value of the firm. The investment decision of foreign-owned firms will invariably be guided by the firm's motives for engaging in FDI in the first place and the firm's internationalisation strategy. Many factors impact the location choice of foreign-owned firms and attracting foreign-owned firms requires good framework conditions for establishing and doing business in the host economy.

**1.1 HOW FOREIGN-OWNED FIRMS INVEST IN THE EU**

The literature on foreign investments distinguishes between portfolio investments and foreign direct investments. Portfolio investments take place when an investor acquires a minority stake in an existing firm and holds less than 10 per cent ownership. According to the international standard definition, a foreign *direct* investment (FDI) takes place when a foreign investor gains a controlling interest in the company abroad and has a minimum of 10 per cent ownership<sup>2</sup>. FDI therefore takes place when:

1. An investor from another country buys 10 per cent or more of an existing business in the host economy through a **merger or acquisition (M&A)**.
2. A foreign-owned firm establishes a new affiliate in the host economy through **greenfield or brownfield investments**. Brownfield investments occur when the firm purchases or leases existing production facilities to launch a new production activity, while greenfield investments refer to the construction of a new plant.
3. A foreign-owned firm in the host economy expands its business **through reinvested earnings** or locally raised capital.

**1.2 WHY FOREIGN-OWNED FIRMS INVEST ABROAD**

Multinational firms locate abroad because they expect that the investment will improve the long-term profit and value of the firm. The location of foreign investments will invariably be guided by the firm's motives for engaging in FDI in the first place.

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<sup>2</sup> UNCTAD (2016).

The motives for why firms conduct cross-border investments have been well researched:<sup>3</sup>

- 1) **Market-seeking FDI.** Firms may wish to pursue business opportunities in local or nearby markets and will choose the location that offers the best access to the largest market at the lowest cost of trade and transportation.
- 2) **Natural resource-seeking FDI.** Firms may invest in resource-rich countries in order to secure their access to raw materials vital for their production. This is particularly important if the availability of these raw materials in their home country is either limited or non-existent.
- 3) **Efficiency-seeking FDI.** Firms may also wish to improve their productivity by diversifying production to take advantage of different factor endowments and other FDI attraction factors such as investor incentives, economic policies and market structures.
- 4) **Strategic-asset seeking FDI.** Alternatively, firms may locate in foreign markets to secure access to new or complementary resources, such as human capital, technology or managerial skills. In this context, FDI may also be motivated by strategic considerations where the firm seeks to sustain or advance its long-term global competitiveness.

### 1.3 DATA ON INVESTMENTS BY FOREIGN-OWNED FIRMS

The overall objective of this study is two-fold. *First*, we want to understand the characteristics of the FDI projects that have located in the EU and Germany. Using data on such FDI inflows can inform us about the origin of the investment, the sector, the regional location, the type of investment, etc. *Second*, we want to assess the impact of foreign-owned firms on the host economy. Looking across the entire stock of foreign-owned firms, we can quantify the number of jobs and GDP contribution of the foreign-owned firms, and we can assess the knock-on impacts on local firms. As explained in Box 1, we combine two databases to meet these objectives.

It is important to notice that the two databases use a different definition of FDI. When we analyse the characteristics of FDI projects into the EU and Germany (FDI inflows), we apply the international standard definition of FDI and apply a 10 per cent threshold. However, when we assess the impacts of foreign-owned firms (FDI stock), we use a 50 per cent threshold because this is the only data available.

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<sup>3</sup> See Jungbluth (2015) for an overview of related literature.

**Box 1 Data on investments by foreign-owned firms**

We combine two databases to analyse the characteristics and the impacts of foreign-owned firms' investments in the EU and Germany. The two databases supplement each other and are generally used for the two different types of analyses:

- **Data on FDI projects.** We need detailed information about the FDI projects to understand the characteristics of foreign investments into the EU and Germany. These data are obtained from the Orbis Cross-Border database. Providing an overview of the number of FDI projects and their value over time, this FDI database can be used to benchmark FDI performance and identify patterns in FDI inflows across time, locations, origins, sectors, types of investments, etc. Using this data with respect to FDI inflows, we follow the standard definition and include FDI projects where a minimum 10 per cent ownership share is acquired.
- **Data on foreign-owned firms.** We need data on the economic activities of foreign-owned firms in the EU and Germany to assess their impacts on the host economy. These data are obtained from the Foreign Affiliate Trade Statistics (FATS) and reflect the cumulative net impact of all the FDI inflows. This measure takes into consideration that foreign-owned firms are dynamic and that their impact will change over time. A foreign-owned firm may change ownership and economic importance, i.e., if it shuts down, expands, is resold, etc. The number of foreign-owned firms will thus vary significantly from the number of FDI inflows over time. Likewise, the cumulative value of investments by foreign-owned firms will differ from the value of the foreign-owned firms that are present in the host economy. The FATS database uses another FDI definition than the international and applies a 50 per cent threshold. The two measures of investments by foreign-owned firms therefore do not match each other completely.

Source: Copenhagen Economics based on the databases described in the appendix

CHAPTER 2

## HOW FOREIGN-OWNED FIRMS IMPACT THE HOST ECONOMY

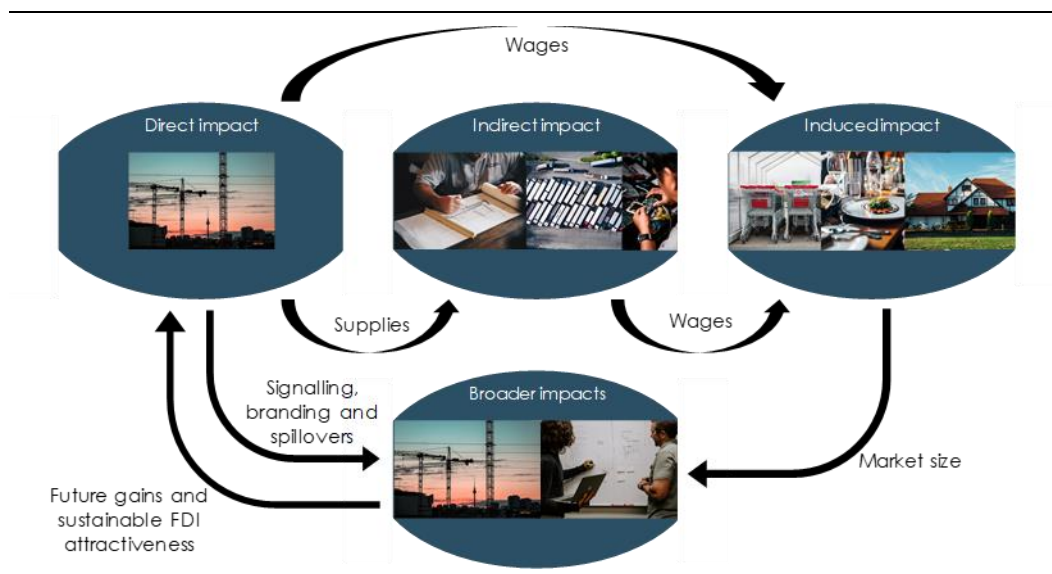
Investments from abroad create economic activity directly in the foreign-owned firms themselves (direct impact). When the foreign-owned firm buys goods and services through local firms, and when its employees spend their wage income in the host country, the firm supports economic activity and jobs throughout the host economy (indirect and induced impacts). In addition, foreign-owned firms are generally highly productive, and local firms can tap into this knowledge and thereby improve their own productivity (spillovers).

Foreign-owned firms thus have the potential to bring significant economic benefits to the host economy through a number of transmission channels, and a net positive impact of foreign-owned firms should therefore not be taken for granted. Hence, it is important that the host economy implements policies to optimise benefits from the foreign-owned firms.

### 2.1 HOW FOREIGN-OWNED FIRMS CAN BENEFIT THE LOCAL ECONOMY

Foreign-owned firms may benefit the host economy through multiple transmission channels as illustrated in Figure 1. Each of these channels are described below.

**Figure 1**  
**Possible transmission channels from foreign-owned to local firms**



Source: Copenhagen Economics. Pictures are from [www.unsplash.com](http://www.unsplash.com)



**Direct impacts** arise when the foreign investment creates new economic activity or retains economic activity within the host economy. The contribution to the host economy stems from the value added (salaries and profits) created in the foreign-owned firm. The larger the number of jobs and the higher the value added per job, the larger the direct impact. Greenfield investments create new economic activity in the short-term, but the change of ownership associated with M&As may also retain and/or create economic activity over time.

#### Example of direct impacts

- On **jobs**: A foreign company sets up a factory in Germany and employs 100 people.
- On **GDP**: The GDP contribution stems from the wages earned by people employed in the foreign-owned firm, the firm's profits and production taxes paid to the government.

**Indirect impacts** arise through the foreign-owned firm's purchases of goods and services from local suppliers. Through these purchases, the foreign-owned firm creates economic activity that supports jobs within local firms and contributes to GDP. The more the foreign-owned firm integrates into local supply chains, the larger the indirect impact.

#### Example of indirect impacts

- On **jobs**: A foreign-owned firm buys intermediaries from local suppliers. These sales support about 120 jobs in the supplying firms.
- On **GDP**: The foreign-owned firm's local suppliers pay wages, earn profits and pay production taxes related to their sales to the foreign company. If 10 per cent of a local supplier's sales go to the foreign-owned firm, 10 per cent of the wages, profits and production taxes are included in the indirect GDP impact.

**Induced impacts** arise when wages, paid out to the directly and indirectly employed workers, are spent within the host economy. The demand generated via this channel supports jobs in most sectors and reflects the general consumption pattern in the economy. The larger the number of jobs, the higher the wages paid and the lower the import share of consumption, the larger the induced impacts.

#### Example of induced impacts

- On **jobs**: People directly and indirectly employed by a foreign-owned firm buy goods and services with their wages, and thus support a further 200 jobs in different companies and industries.
- On **GDP**: People directly and indirectly employed by the foreign-owned firm buy goods and services locally. The consumption produces wages, profits and production taxes in, for example, retail and thus supports induced GDP.

**Spillover impacts** materialise mainly through knowledge transfers, increased competition and vertical linkages in local supply chains:

- 1) **Knowledge transfer** arises when the knowledge inherent in foreign-owned firms ‘spill-over’ to local firms. Foreign-owned firms are typically larger, more productive and more trade-oriented than the average EU firm in the same industry. Foreign-owned firms therefore tend to comprise large amounts of technical, operational and managerial knowledge.<sup>4</sup> This knowledge can therefore ‘spill-over’ to local firms and enhance their productivity and growth via three channels:
  - **Labour mobility.** When local firms hire employees, who once worked in a foreign-owned firm, they benefit from the knowledge that these employees have built up from their former positions. This is, for example, knowledge about specific ways of doing things, e.g., technical or managerial know-how, which are transferred to local firms and increase their productivity directly.
  - **Imitation/demonstration.** Local firms may learn from foreign-owned firms via less tangible channels, such as informal knowledge exchanges or via imitation (reverse engineering). Local firms may also imitate foreign-owned firms’ production methods or managerial practices.<sup>5</sup> Foreign-owned firms can also demonstrate the viability of a given technology through their production methods, which local firms may adopt in their own production.
  - **Exporting.** The knowledge that foreign-owned firms hold about foreign markets (e.g. knowledge regarding consumer tastes, international standards, distributional channels, etc.) and their potential network of affiliates across multiple markets can help local firms get a foothold in export markets and increase their international competitiveness.<sup>6</sup> Foreign-owned firms can also help local firms become more productive and thereby increase their chances of starting to export.<sup>7</sup>
  
- 2) Another spillover effect arises from **increased competition**. On one hand, the increased competition from foreign-owned firms entering the market have positive impacts on the productivity of local firms. Increased competition results in productivity enhancements among local firms in the same industry. This can occur if the competitive pressure gives local firms an incentive to use their resources more efficiently or to adopt new technologies to survive in the market. These effects increase the average productivity in the industry. Another reason for why the average productivity increases stems from the least efficient local firms losing market share to the more efficient firms when the foreign-owned firms invest. This restructuring, combined with productivity enhancements among the surviving local firms, cause the average local industry productivity to increase.

On the other hand, foreign-owned firms may also push up the average cost of production for the local firms and thus have a negative impact on the productivity and profitability of their local competitors. This can occur if the foreign-owned firms take over

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<sup>4</sup> Markusen (1995) refers to such assets as ‘knowledge capital’, which include factors such as superior production processes, technology, management techniques or marketing and advertisement campaigns. See Copenhagen Economics (2018).

<sup>5</sup> Görg and Greenaway (2004).

<sup>6</sup> Aitken, Hanson and Harrison (1997).






<sup>7</sup> Kneller and Pisu (2007).

significant market shares from local firms, in which case the local firms' fixed costs of production will be spread across fewer units. The firm's productivity will thus be lower when its market share is reduced (from dis-economies of scale).<sup>8</sup> Finally, increased competition for specialised labour and other key inputs to production may drive up prices, and higher prices will have a negative impact on the productivity of local firms within and across industries.

- 3) The third spillover effect arises from **vertical linkages in local supply chains**. Vertical linkage spillovers arise from buyer-supplier relations between foreign-owned firms and their local suppliers. These relations lead to local productivity enhancements. If the foreign-owned firm brings its knowledge with it into the local supply chain on how to optimise the production of the inputs the foreign-owned firm uses, then suppliers in the EU can benefit from increased productivity. However, if the foreign-owned firm sources all their inputs from suppliers outside of the local market, and at the same time crowd out local competitors that did purchase inputs locally, it reduces the productivity among local suppliers via dis-economies of scale.

An overview of the possible productivity spillovers on local firms can be found in Figure 2.

**Figure 2**  
**Possible productivity spillovers from foreign-owned to local firms**

Spillovers can occur via	Impact on local competitors	Impact on local firms in other industries
 Labour mobility	+	+
 Imitation/demonstration	+	+
 Exporting	+	+
 Competition	+ / -	-
 Vertical linkages		+ / -

Note: The figure shows the various channels through which spillover effects can arise. A plus sign means that any spillover effects arising via the given channel is expected to be positive, while a minus sign means that any spillover effects are expected to be negative. If both signs are present, this means that the spillover effects can be both positive and negative.

Source: Copenhagen Economics (2018)

<sup>8</sup> Dis-economies of scale arise when production decreases and the fixed costs become a larger share of the total costs. This lowers the overall profitability and competitiveness of the firm.

**Example of spillovers**

- On **jobs**: Higher productivity can in the short term have a negative impact on jobs because the local firm can produce the same output with less labour input. Over time the impact should be expected to be positive because higher productivity will enhance competitiveness and may even spur exports. The econometric analysis we have conducted finds that spillovers have no measurable overall impact on jobs. While foreign-owned firms support jobs in local firms through supply chain impacts (indirect and induced), the productivity-enhancing impact on average does not materialise in higher employment within the local firms. Negative impacts net out positive impacts and neutralise the spillover impact on employment.
- On **GDP**: The foreign-owned company brings knowledge about products, supply chains, and technologies that "spill over" to local firms in the form of higher productivity. These spillovers have a positive impact on the competitiveness of local firms, who gain market access and scale up production. This will add to the GDP of the host country.

Direct impacts are supported **within the foreign-owned firm**, whereas indirect impacts, induced impacts and productivity spillovers are supported **within local firms**. An overview of possible FDI transmission channels is provided in Figure 1.

## 2.2 BENEFITS FROM FOREIGN-OWNED FIRMS CANNOT BE TAKEN FOR GRANTED

While FDI has the potential to benefit the EU economy, foreign-owned firms may also create bottlenecks and displace local activity in the host economy. A net positive impact of FDI should therefore not be taken for granted for two main reasons.

*Firstly*, some of the possible impact described above may be weak. Most of the potential benefits from FDI will not materialise if the foreign-owned firm does not integrate into local and EU supply chains. Likewise, knowledge spillovers will be limited if the foreign-owned firm is not at the frontier within the industry (e.g. if the underlying motive of the firm is to access knowledge available in the EU), if local firms do not have the capacity to absorb the knowledge in the foreign-owned firm (e.g. if the local industry is at an infant stage) or if labour mobility is low (e.g. if there are very few local firms in close proximity to the foreign-owned firm).

*Secondly*, increased economic activity in the foreign-owned firm may reflect lower economic activity in local firms due to crowding out and displacement effects, leaving the total economic activity largely untouched.

- Crowding out can take place in the **factor market** if the presence of foreign-owned firms creates bottlenecks in the market for key production factors, drives up prices and limits growth prospects for local firms. Foreign-owned firms will therefore be more likely to create new jobs in recessions compared to booms. The risk of this type of crowding out can be reduced through structural reforms that increase the labour supply, education policies targeting skills that are in short supply, attracting foreign talent with the required competences, etc. Crowding out may also diminish through market dynamics in the long run if local suppliers scale increase their production or if new suppliers enter the market.

- Foreign-owned firms also pose a risk of crowding out or displacing local economic activity in the **final goods market**. The foreign-owned firm may enter the market with the purpose of selling their products in the host country (market-seeking investment), which can take over market shares for domestic firms. While this type of FDI may lower prices (because the more productive firm gains market share) and/or increase the variety of products, the economic activity recorded in the foreign-owned firm will reflect a shift in ownership and not a net expansion of economic activity in the economy. This type of crowding out will, however, tend to make a positive net contribution to the host economy because the overall productivity improves when highly productive firms gain market share and when local firms benefit from various spillovers.
- Finally, there is a risk that FDI projects displace **local investments**. If a local firm decides not to expand because a foreign-owned firm entered the market, the net expansion of economic activity in the economy may be limited. In the case of an M&A, however, a foreign takeover may free up capital for the seller(s) that can be invested elsewhere in the economy. In such cases the displacement effect may be limited.

It is important that the host economy undertakes the required investments to avoid bottlenecks and develops strategies to optimise benefits from FDI. This could for example be done by stimulating the integration of foreign-owned firms in local value chains and steering FDI promotion towards key strategic areas and cluster development.

## 2.3 HOW IMPACTS OF FDI CAN SPREAD ACROSS EU BORDERS

When we analyse the impacts of FDI on the EU economy, it is important to consider the specifics of the EU Single Market with its closely interlinked value chains. The Single Market is a large attraction factor for FDI towards the EU (**extra-EU FDI**). When a non-EU firm invests in an EU Member State, it gets access to 500 million high-value costumers in the Single Market. Some empirical evidence finds that EU membership alone increases FDI inflows by 30-40 per cent.<sup>9</sup>

To some extent, the EU Member States compete over foreign-owned firms from non-EU countries, e.g., for the establishment of a new Facebook data centre.<sup>10</sup> However, an investment in one Member State is likely to also benefit the other Member States through buyer-supplier linkages within the Single Market. Benefits to EU suppliers arise when foreign-owned firms located in one Member State import goods and services from other Member States. The size of this effect depends on how deeply the foreign-owned firms are integrated in EU value chains.

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<sup>9</sup> Bruno et al. (2017) estimate 30 per cent and ECB (2018) estimates 44 per cent.

<sup>10</sup> Apart from the direct, indirect and induced impacts, such benefits include branding as a high-tech area or branding an area that has high reliability of electricity supply which is needed for data centres.

The establishment of a Facebook data centre in Denmark, for example, will increase imports into the Danish construction sector. Imported goods and services from Germany constitute almost 5 per cent of Danish construction revenue.<sup>11</sup> The construction of a data centre in Denmark worth EUR 100 million, for example, is thus expected to increase German exports to Denmark by EUR 5 million.<sup>12</sup> The investment made in Denmark therefore has a positive impact on economic activity in Germany. In addition to this, benefits to EU consumers occur when the foreign-owned firm exports to the other Member States and thereby increases competition and/or product variety. The data centre may, for example, offer services to EU businesses that increase their productivity.

Cross-border FDI within the EU (**intra-EU FDI**) will to some extent reallocate capital and sometimes jobs between Member States, but there are also productivity gains from these cross-border investments. Investing abroad (outward FDI) increases the productivity and international competitiveness of EU firms through, e.g., economies of scale, lower costs and knowledge spillovers. Likewise, the presence of foreign-owned firms (inward FDI) impacts local firms through the productivity spillovers described above. Intra-EU FDI is therefore not a zero-sum game but rather increases the overall economic activity in the EU.

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<sup>11</sup> Based on data from 2014 from the World Input Output Database (WIOD).

<sup>12</sup> This assumes a strict elasticity of one, i.e., the trading ratio remains the same.

## CHAPTER 3

**CHARACTERISTICS OF FDI INTO THE EU**

During 2003 to 2017, a total of 130,000 FDI projects entered the 28 current EU Member States. The UK was the largest receiver of FDI in this period and the largest intra-EU investor – therefore Brexit is likely to have long lasting impacts on FDI flows towards the EU and among Member States. Going forward, the FDI attractiveness of the EU Member States will to some extent depend on their ability to further harmonise and remove barriers to trade and investments in the Single Market.

**3.1 OVERVIEW OF FDI INTO THE EU**

The EU is a large recipient of FDI from non-EU investors (extra-EU FDI), and firms also invest heavily across borders within the EU (intra-EU FDI). In the 15-year period from 2003 to 2017 covered in this study, a total of 130,000 FDI projects entered the 28 EU Member States, see Figure 3.<sup>13</sup>

**Figure 3**  
**FDI into the EU, 2003-2017**



Note: FDI flow data are used for this figure. Measured in 2015 value, 37,515 projects do not have information on the deal value and are not included in the total FDI value. The average deal value is calculated on the investments that have deal values. FDI projects that are not categorised as 'Manufacturing' or 'Services' fall into 'Other sectors', including agriculture, forestry, mining, construction and utilities. Extra-EU investors origin outside the EU, whereas intra-EU investors origin in one of the other 27 EU Member States.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and Orbis databases

<sup>13</sup> Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia joined the EU in May 2004, Bulgaria and Romania joined the EU in January 2007, and Croatia joined the EU in July 2013.

The total value of all FDI projects, where data on the deal value is available, was around EUR 6.4 trillion. Of the 130,000 FDI projects, 72,000 were M&A projects (55 per cent) and 58,000 FDI projects were greenfield investments (45 per cent).<sup>14</sup> M&A projects have an average value that is four times that of greenfield investments (EUR 130 million on average per M&A vs. EUR 30 million on average per greenfield investment). The 130,000 FDI projects were equally split between extra-EU and intra-EU investments.

### 3.2 THE DISTRIBUTION OF FDI ACROSS EU COUNTRIES

Looking across Member States, the UK was the main destination for FDI projects and accounted for 23 per cent of all intra-EU and extra-EU investments from 2003 to 2017 (30,000 projects), see Figure 4. Brexit is likely to have an impact on FDI flows towards both the UK and other EU Member States. However, the extent to which Brexit will influence the location of future FDI inflows towards Europe and cause reallocations of existing investments between the UK and the EU remains to be seen. Some of the mechanisms through which Brexit may impact on FDI towards Europe are summarised below.

*First*, higher uncertainty and lower growth may make the UK a less attractive location relative to the EU in the short term. Likewise, the lower size of the Single Market (the UK accounts for 16 per cent of the combined EU GDP<sup>15</sup>) is likely to make it harder for EU Member States to compete for global FDI flows relative to other parts of the world, including the US, Singapore and the emerging markets in the BRIC countries. In the long term, the UK's attractiveness will depend on the new policy regime that will be put in place after Brexit on the one hand, and the ability of the remaining EU Member States to further harmonise and remove barriers to trade and investments in the Single Market on the other.

*Second*, trade between the EU and the UK is likely to experience more friction, which will increase cross-border trade costs. Increased costs of intermediate goods trade may disrupt cross-border value chains, and increased costs of final goods trade will tend to make it more profitable to locate production closer to consumption. Firms based in the UK that are either highly integrated in European value chains or dependent on selling to the EU market will likely find the EU relatively more attractive after Brexit. The opposite is the case for firms based in the EU that are dependent on trade with the UK. Higher trade costs will also tend to make the EU more attractive relative to the UK for firms from third countries that seek access to consumers in the Single Market.

Germany and France are also large receivers of FDI projects and accounted for 13 per cent and 9 per cent of all the FDI projects respectively from 2003 to 2017 (16,000 and 11,000 FDI projects). There is thus a clear tendency for FDI to flow to large, mature economies due to their attractive markets and consumers with high purchasing power. There is also a tendency for FDI to flow to the Central European countries where neighbouring countries can be served at a low cost.

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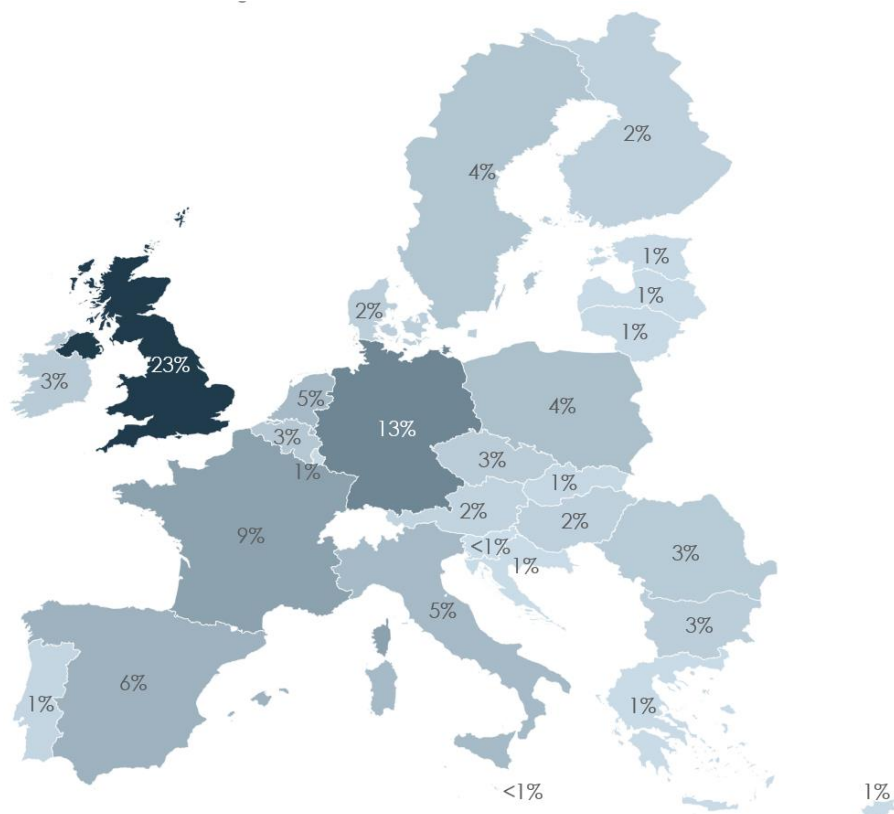
<sup>14</sup> Reinvested earnings, locally raised capital, brownfield and greenfield investments are grouped under 'Greenfield investments' in this report.

<sup>15</sup> Based on data from Eurostat, <http://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20170410-1>.



**Figure 4**  
**FDI into the EU across destinations, 2003-2017**

Per cent of total FDI projects



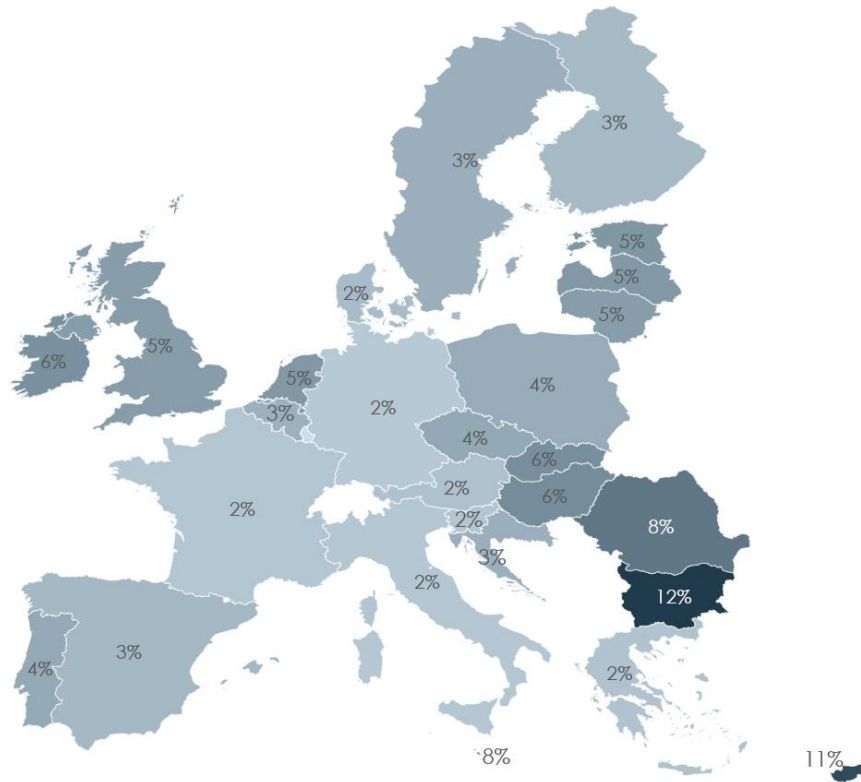
Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Darker colour indicates a higher value.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and Orbis databases

When we take the size of the host economies into consideration (the FDI share of GDP), the Eastern European Member States perform relatively better than the Western European Member States, see Figure 5. Summing up over the period 2003 to 2017, the FDI projects in Bulgaria amounted to 12 per cent of GDP compared to an EU average of 3 per cent. For Cyprus, the share was 11 per cent and the Romanian share was 8 per cent. In contrast, the Western European Member States had low shares of FDI to GDP in the range of 2 to 5 per cent, except for Luxembourg which had 33 per cent in the period.<sup>16</sup>

<sup>16</sup> Luxembourg had 25 FDI projects with a deal value above EUR 1 billion and many other large investments in the period. Luxembourg has particularly large inflows through special purpose entities in the financial sector. The large number of FDI projects in Luxembourg reflects that part of the FDI inflows into the EU are channelled through holding companies in Luxembourg.

**Figure 5**  
**FDI share of GDP in the EU, 2003-2017**  
FDI value per cent of GDP



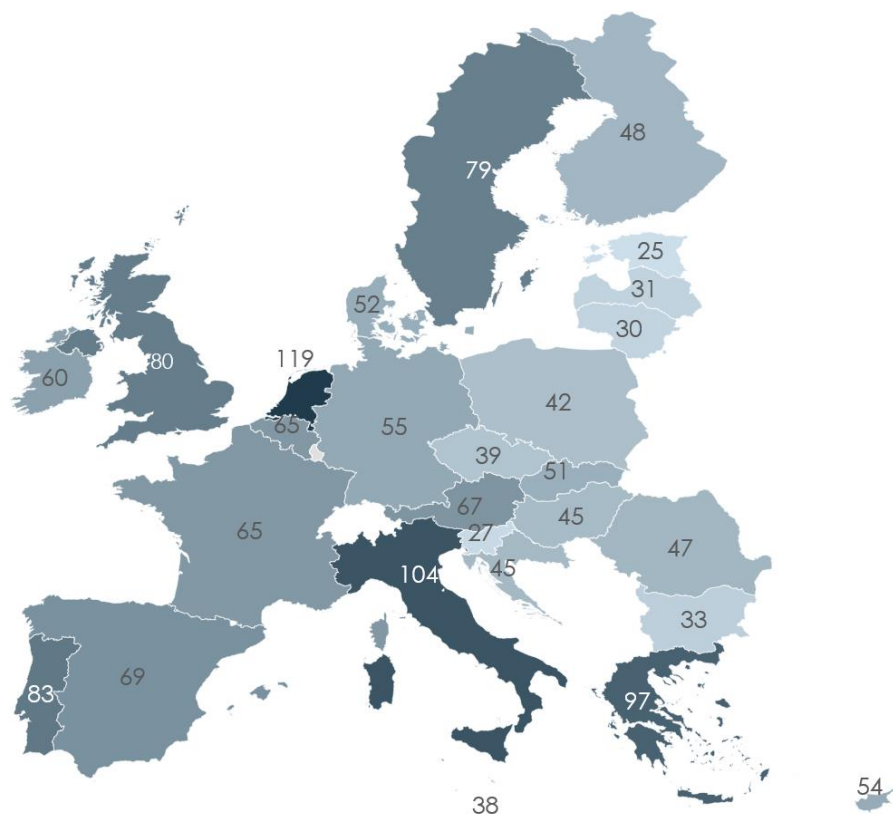
Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measures the sum of deal values over the years 2003-2017 divided by the sum of GDP over the years 2003-2017. In 2013, there is a break in the data from Zephyr and fDi Markets to Orbis. Luxembourg has been excluded as it represents an outlier (33%). Darker colour indicates a higher value.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and Orbis databases and Eurostat

There is a large dispersion in the average size of the investments (deal values) of FDI when looking across the EU Member States, see Figure 6. The Eastern European Member States have lower average deal values than the Western European Member States from 2003 to 2017. This can be explained partly by the lower cost levels in the Eastern European Member States. It can also be explained by the many large M&As of multinational firms located in Western European Member States that drive up the average deal value in the Western European Member States. The Eastern European Member States tend to have fewer large firms that are mature for foreign takeover, and they tend to attract more greenfield investments where deal sizes tend to be smaller than for M&As.

Again, Luxembourg is an outlier with almost EUR 300 million per project on average, whereas the Netherlands, Italy and Greece have relatively large average deal values – around EUR 100 million per project. The average deal sizes are much lower in the Eastern European Member States, as they range from EUR 25 million to EUR 50 million per project.

**Figure 6**  
**Average deal value of FDI projects into the EU, 2003-2017**  
EUR million per project



Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measured in 2015 value. There were 37,515 projects that do not have information on the deal value. The average deal value is calculated on the investments that have deal values. Luxembourg has been excluded as it represents an outlier (EUR 294 million per project). Darker colour indicates a higher value.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and Orbis databases

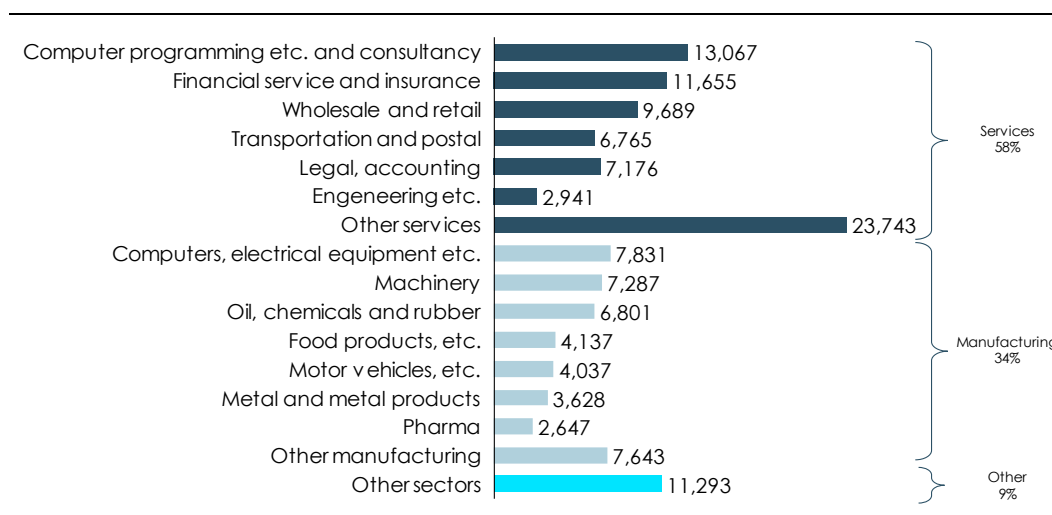
### 3.3 THE SECTORAL SPREAD OF FDI INTO THE EU

Most FDI projects are made in the service sectors in the EU. Of the total number of FDI projects in the EU, 58 per cent were investments in the service sectors from 2003 to 2017, see Figure 7. Almost 25,000 FDI projects (19 per cent) were invested in the high-productivity sectors for computer programming, consultancy, financial service and insurance from 2003 to 2017. These FDI projects were mainly made in the Western European Member States, especially in the UK, with almost 7,000 FDI projects in the period.

Manufacturing accounted for 34 per cent of the FDI projects. Computers and electronic equipment, machinery and oil, chemicals and rubber were the sectors with the most investments. A larger share of the investors in manufacturing invest in new production facilities relative to investors in services. In manufacturing, 52 per cent of the FDI projects from 2003 to 2017 were greenfield investment relative to only 42 per cent in services. As many of these greenfield investments are intra-EU, this

also underlines the importance of the Single Market when it comes to vertical investments in an international supply chain for EU firms. The remaining 8 per cent was invested in other sectors (agriculture, forestry, mining, construction and utilities).

**Figure 7**  
**Sectoral distribution of FDI projects into the EU, 2003-2017**  
FDI projects



Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Other sectors include agriculture, forestry, mining, construction and utilities. In 2013, there is a break in the data from Zephyr and fDi Markets to Orbis.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis

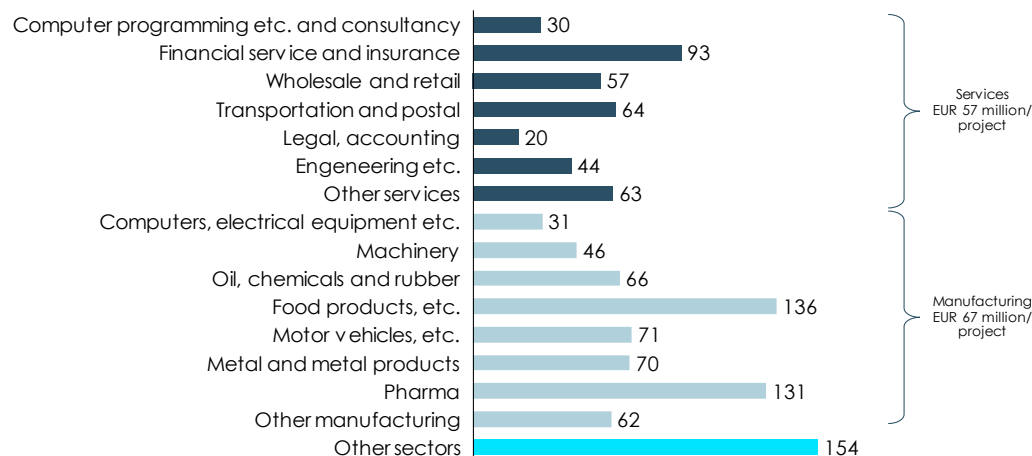
FDI projects in manufacturing sectors had a larger average deal value than FDI projects in service sectors. The average M&A project was valued at EUR 67 million relative to EUR 57 million in services from 2003 to 2017, see Figure 8. There are large differences in the average deal values across FDI projects in different sectors. Typically, financial services and insurance yield the largest investments in the service sectors, mainly via large M&As in banks by investors from other EU Member States. As such, many of these are intra-EU FDI projects.

Investments in food products and pharma yield the largest average deal values in manufacturing – more than EUR 130 million per investment on average. This average value reveals the capital costs of these investments. An investment in the manufacturing of food products, for example, would often require large material assets in production facilities to capture the benefits of large-scale production (economies of scale). This could either be from acquiring an existing firm or by building new production facilities (greenfield investments). An investment in pharmaceuticals could, additionally, be an acquisition of a pharmaceutical company to acquire their immaterial assets such as medical patents, which sometimes yield large deal values. Highlighting this, *Teva Pharmaceutical Industries Ltd's* (Israel) purchase of the Irish pharma company *Allergan Plc's Actavis Global Generic Pharmaceuticals Business* in 2016. In this transaction, the deal value was EUR 36 billion.<sup>17</sup>

<sup>17</sup> TEVA (2016).

**Figure 8**  
**Average deal value of FDI into the EU across sectors, 2003-2017**

EUR million per project



Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measured in 2015 value. Some projects do not have information on the deal value. The average deal value is calculated on the investments that have deal values. Other sectors include agriculture, forestry, mining, construction and utilities. In 2013, there is a break in the data from Zephyr and fDi Markets to Orbis.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis

### 3.4 THE ORIGIN OF FDI INTO THE EU

The origin of the FDI projects in the EU is interesting in relation to several topics. Some EU Member States have expressed concerns that investments from certain countries are taking over high-tech knowledge inherent in EU companies. Therefore, these Member States have put FDI screening on the EU agenda, which resulted in a screening framework for FDI in the EU.<sup>18,19</sup> FDI screening is usually focussed on specific high-risk sectors. One worry is that state-owned enterprises (SOEs) may take control of essential infrastructure, which can pose a threat to national security. This includes, for example, investments in defence, critical infrastructure, public IT and healthcare systems.

There are other reasons for looking at the origin of FDI projects. The origin of FDI projects can be used to see the effectiveness of investment treaties and free trade agreements or to see which countries have a high propensity to invest in the EU.

Half of the FDI projects that came into the EU from 2003 to 2017 were intra-EU investments, see Figure 9. Of the total stock of FDI projects made in the 28 EU Member States, 67,000 came from the other 27 EU Member States from 2003 to 2017 (51 per cent). The Single Market in the EU has had both positive and negative effects in this respect. On one hand, the Single Market facilitates trade within the EU. Therefore, market entry (horizontal) FDI projects become less attractive as ex-

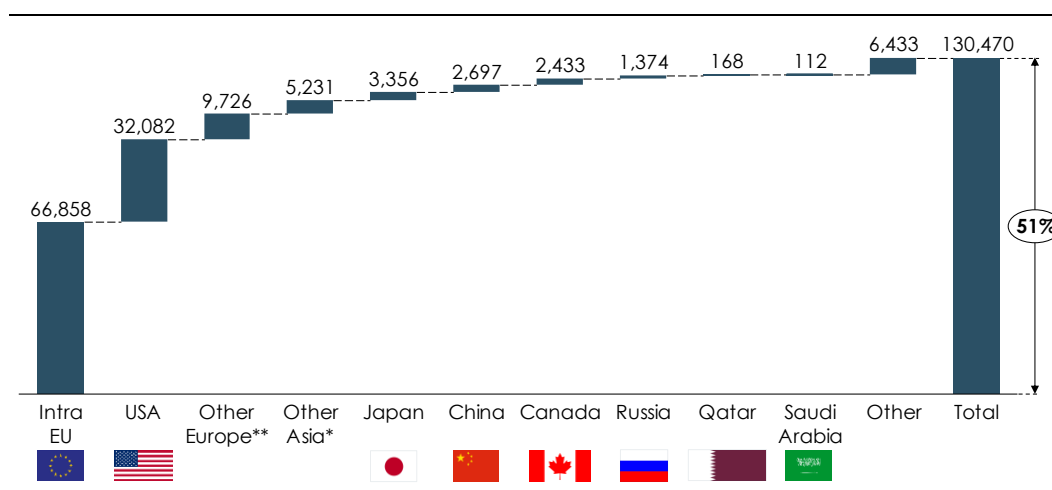
<sup>18</sup> Nikkei Asian Review (2018).

<sup>19</sup> European Commission (2019).

porting within the EU is relatively cheap. On the other hand, the low trade cost and regulatory convergence make (vertical) investments in supply chains relatively more attractive for optimising the value chain. This can also explain the large share of greenfield investments in the Eastern European Member States.

The US is the largest single non-EU investor with 32,000 investments (25 per cent), accounting for half of the extra-EU FDI projects. The UK received 38 per cent of this incoming FDI from the US. These investments in turn constituted 40 per cent of all FDI projects in the UK. The rest of the US investments were more evenly distributed among the other EU Member States.

**Figure 9**  
**Origin of FDI into the EU across selected origins, 2003-2017**  
FDI projects



Note: \*Excluding China, Japan, Qatar and Saudi Arabia, \*\* Excluding EU, FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. In 2013, there is a break in the data from Zephyr and fDi Markets to Orbis. Intra-EU investors origin in one of the 27 EU Member States.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis

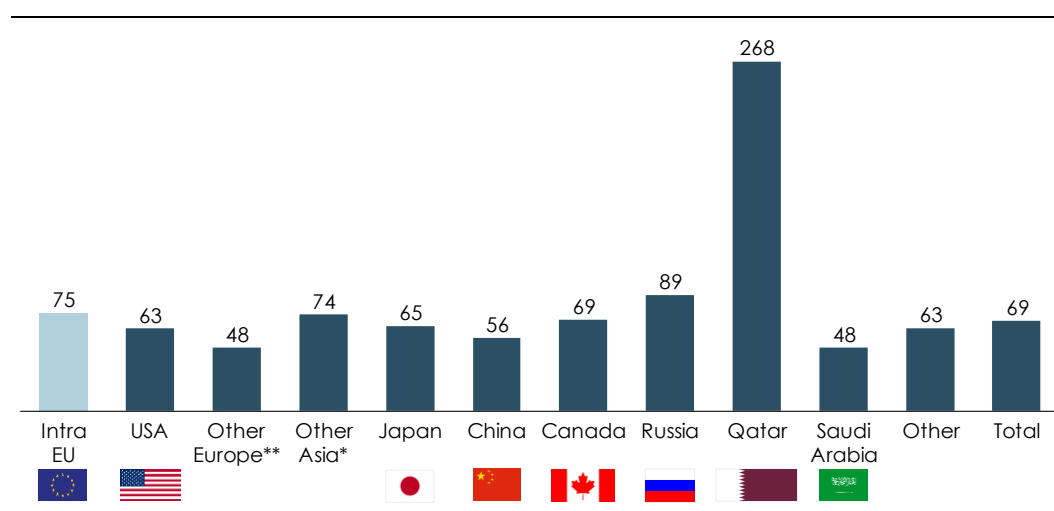
The average values of FDI projects in the EU are relatively similar when split by origin. From 2003 to 2017, they range in between EUR 55 million and EUR 75 million per project for most of the selected origins in Figure 10. There are, however, some countries that have more extreme average deal values.

Of their 168 FDI projects, Qatar made nine EUR 1+ billion investments in the EU from 2003 to 2017. The largest of these investments was made by *Qatar Intermediate Industries Holding Company Ltd* in the UK in 2008. This was a capital increase in *Barclays Plc* worth EUR 4 billion. When excluding the nine large investments, the average deal value would still be large for Qatar. Doing so, the average deal value would fall to EUR 133 million per project, still more than twice the average US deal value.

Russian FDI projects in the EU had an average deal value of EUR 89 million per project from 2003 to 2017. This mainly stems from three large greenfield investments in the construction of pipelines for transporting natural gas in Germany (2) and Poland (1) worth a total of EUR 13.8 billion from 2003 to 2005. The investor was the state-owned enterprise Gazprom.

**Figure 10**  
**Average deal value of FDI into the EU across selected origins, 2003-2017**

EUR million per project



Note: \*Excluding China, Japan, Qatar and Saudi Arabia, \*\* Excluding EU. FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measured in 2015 value. Some projects do not have information on the deal value. The average deal value is calculated on the investments that have deal values. In 2013, there is a break in the data from Zephyr and fDi Markets to Orbis. Intra-EU investors origin in one of the other 27 EU Member States.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis

## CHAPTER 4

**IMPACTS OF FOREIGN-OWNED FIRMS ON  
JOBS AND GDP IN THE EU**

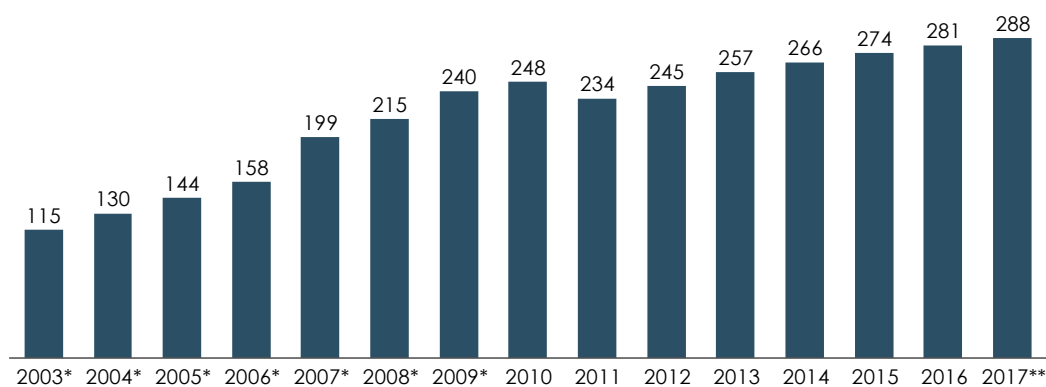
The stock of foreign-owned firms that are currently located in the EU reflect the net accumulated FDI inflow. Some of the foreign-owned firms may have shut down again or merged with a domestic firm, in which case, they are no longer registered as foreign-owned firms. The foreign-owned firms that have located, stayed and survived within the EU contribute to the EU economy by employing workers (direct impact), buying goods and services from local suppliers (indirect impacts), paying wages that in turn are spent on consumer goods (induced impacts) and through spillovers that enhance the productivity of local firms.

**4.1 IMPACTS ON JOBS IN THE EU**

The number of foreign-owned firms in the EU has more than doubled in the period 2003-2017, see Figure 11. In 2017, there were almost 290,000 foreign-owned firms in the 28 EU Member States. The share of foreign-owned firms has been stable at 1.0 per cent in 2008 and 1.1 per cent in 2017.

**Figure 11**  
**Number of foreign-owned firms in the EU, 2003-2017**

Thousand firms



Note: \*The numbers of enterprises from 2003-2009 are estimated because data from some EU countries are missing. Missing data have been estimated based on the development in the EU countries where data are available. \*\*The number of enterprises for 2017 is extrapolated based on the development in real GDP from 2016 to 2017. The figure is based on data from two different statistics with a change in statistics in 2008. There is a small difference in the definition. The number of enterprises is based on enterprises in the total business economy, except financial and insurance activities.

Source: Copenhagen Economics based on Eurostat

In 2017, these foreign-owned firms employed around 22 million EU workers. This is 9 per cent of the total employment in the EU.<sup>20</sup>

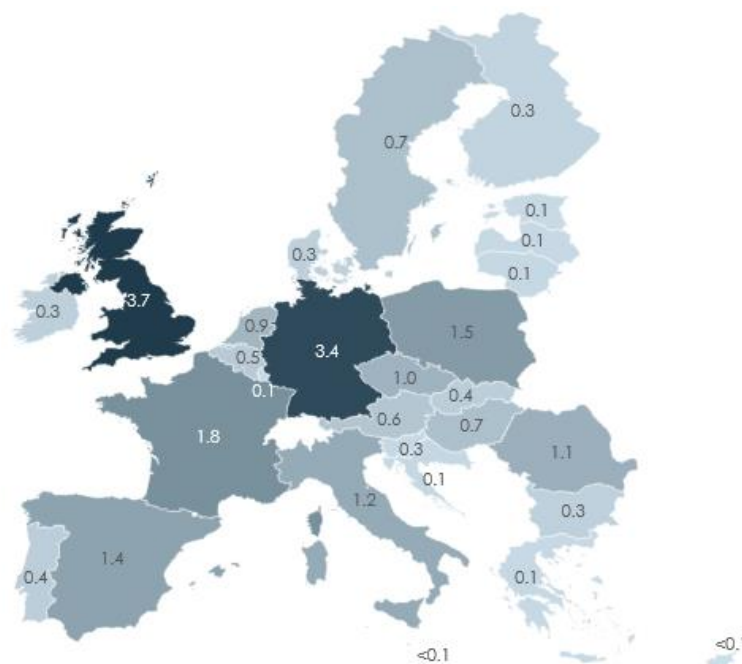
<sup>20</sup> The number of employed in foreign-owned firms is forecast from 2014 to 2017. The employment in the EU was 240 million in 2017 (Eurostat).



For the economies of the Eastern European Member States, foreign-owned firms are an important source of employment. In Romania, 1.1 million people are employed in foreign-owned firms, see Figure 12. This constitutes 27 per cent of total employment in the business economy in Romania.<sup>21</sup> In the Czech Republic, 1 million workers are employed in foreign-owned firms (27 per cent of the business economy), and the number is 0.7 million in Hungary (26 per cent of the business economy).

The UK and Germany also have a considerable share of employment in foreign-owned firms: In 2017, more than three million individuals were working in foreign-owned firms in both countries. This is almost 20 per cent of the employment in the business economy in the UK and eight per cent in Germany. In contrast, Greece's share of employment in foreign-owned firms in the EU was 5 per cent (0.1 million) in 2017.

**Figure 12**  
**Jobs in foreign-owned firms in the EU across destinations, 2017**  
Million jobs



Note: FDI stock data are used for this figure. Numbers have been forecasted from 2014 to 2017.  
Source: Copenhagen Economics based on Eurostat

As explained above, foreign-owned firms do not only impact employment directly by providing jobs to the local population. In 2017, foreign-owned firms supported 23 million jobs in the EU by purchasing goods and services from suppliers in the host country or in any other EU Member State (indirect impact). Furthermore, 38 million jobs were supported via consumption by those directly and

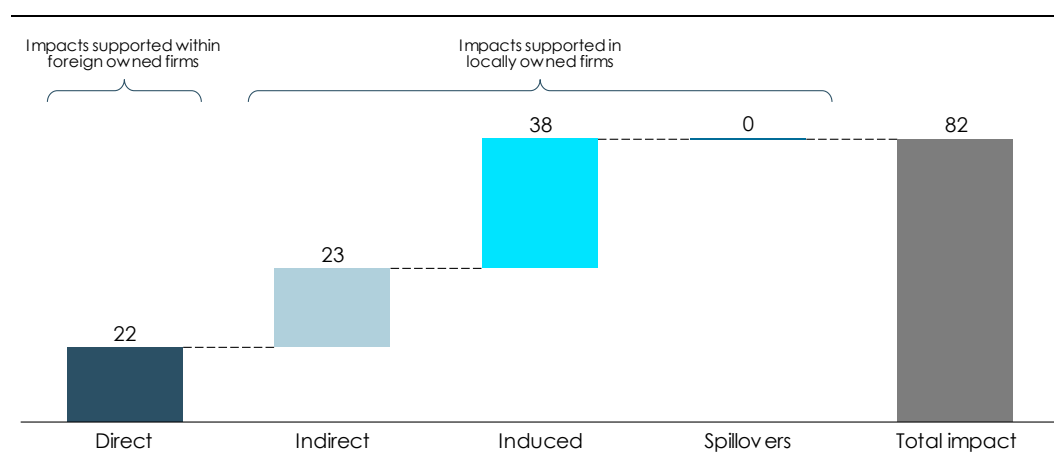
<sup>21</sup> The business economy covers typically private sectors with NACE Rev.2 codes 05-82 and 95.

indirectly employed in 2017 (induced impact). Again, these impacts are supported in the host countries and in the other EU Member States, where wages are consumed. To sum up, 82 million jobs in the EU were supported by foreign-owned firms through direct, indirect and induced impacts (see Figure 13). This is equivalent to 35 per cent of total employment in the EU.

In order to better understand the meaning of the job numbers resulting from indirect and induced impacts, it is important to note that these jobs are not created *by* foreign-owned firms. Rather, they are supported by domestic firms triggered through the demand for products by the foreign-owned firms and their employees. The effect of foreign-owned firms on job creation is the direct impact only.

The econometric analysis did not show any spillover effects on employment. As explained above, this suggests that any positive and negative effects that foreign-owned firms have on employment among local firms – via, e.g., FDI-induced productivity enhancements, increased demand for local produced goods and services, or competition effects – do not materialise with higher employment within the local firms. Rather, they net out each other.

**Figure 13**  
**Jobs supported by foreign-owned firms in the EU, 2017**  
Million jobs



Note: FDI stock data are used for this figure. Numbers have been forecasted with the development in EU employment from 2014 to 2017. The econometric analysis did not find a job effect from productivity spillovers. Potential double counting in the indirect and induced impacts have been deducted. See Annex A for a detailed description.

Source: Copenhagen Economics, based on Eurostat and WIOD

## 4.2 IMPACTS ON GDP IN THE EU

The jobs supported by foreign-owned firms also contribute to GDP in the EU from the wages earned, company surpluses, and through spillover impacts on local firms. The direct jobs contributed EUR 1.6 million to EU GDP in 2017, see Figure 14. Indirect jobs supported EUR 1.5 million, while the number was EUR 2.7 million for induced jobs. It is important to note that these numbers do not refer to GDP created by the foreign-owned firms only, but to GDP created in local firms triggered through the demand of foreign-owned firms and their employees. The GDP actually created by the foreign-owned firms is the direct impact only.

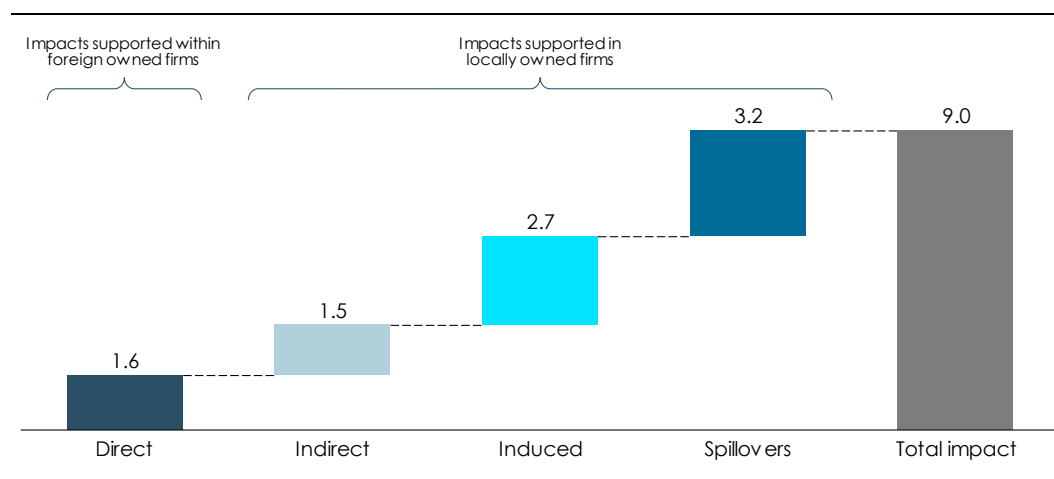
Together, direct, indirect and induced impacts, which could be measured for jobs and GDP, accounted for EUR 5.8 trillion, i.e., 38 per cent of EU GDP. The slightly higher share of EU GDP to employment (38 vs. 35 per cent) reflects relatively higher productivity, on average, among those jobs supported by foreign-owned firms. The jobs are primarily supported in the private sector, which is typically seen as being more productive than the traditional public sector, such as public administration and education.

While the econometric analysis did not find spillover impacts on employment, it showed that foreign-owned firms impact productivity in domestic firms. They thus supported another EUR 3.2 trillion of the GDP in the EU in 2017. Spillover impacts are therefore very important for the overall GDP impact. Again, it should be noted that GDP coming from spillovers is not created by foreign-owned firms, but by domestic firms triggered by the foreign-owned firms.

Spillover impacts arise from the share of employment in foreign-owned firms that ‘spill-over’ in such a way that local domestic firms become more productive. The spillover impacts have been found statistically significant for certain sectors. For other sectors, no impact was found (for example in the sector ‘Manufacture of motor vehicles’), suggesting that the sector is already at the technology frontier. Thus, foreign-owned firms in these sectors do not yield a significant spillover impact on domestic firms.

**Figure 14**  
**GDP supported by foreign-owned firms in the EU, 2017**

EUR trillion



Note: FDI stock data are used for this figure. Numbers have been forecasted with the development in EU GDP from 2014 to 2017. Potential double counting in the indirect and induced impacts have been deducted. See Annex A for a detailed description.

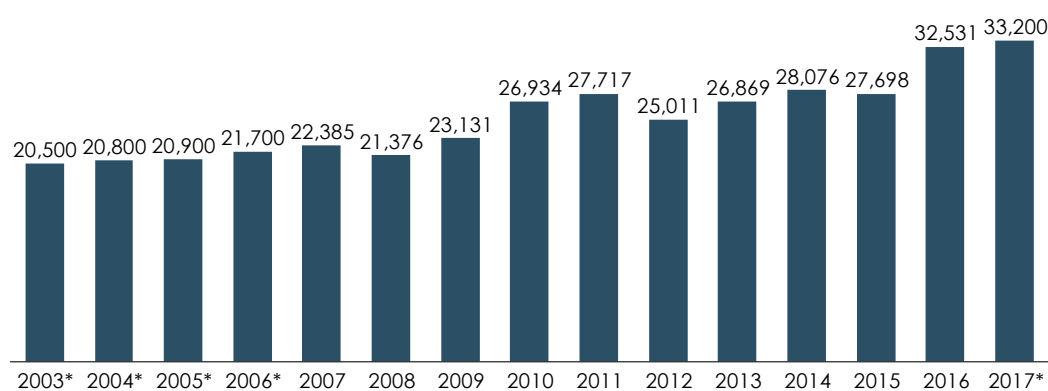
Source: Copenhagen Economics, based on Eurostat and WIOD

## CHAPTER 5

**CHARACTERISTICS AND IMPACTS OF  
FOREIGN-OWNED FIRMS IN GERMANY**

In this chapter, we estimate the characteristics and impacts of foreign-owned firms in Germany. According to our estimations, there were 33,200 foreign-owned firms in Germany in 2017, see Figure 15. That is 1.3 per cent of all firms registered.

**Figure 15**  
**Number of foreign owned firms in Germany 2003-2017**  
Enterprises



Note: The numbers of enterprises from 2003-2006 and 2017 are estimated because numbers were missing. The numbers are estimated from the development in real GDP. The figure is based on data from two different statistics with a change in statistics in 2008. There is a small difference in the definition. Based on enterprises in the total business economy, except financial and insurance activities.

Source: Copenhagen Economics based on Eurostat

Foreign-owned firms supported almost 15 million jobs in Germany in 2017. This corresponds to 33 per cent of the total employment in Germany. Furthermore, foreign-owned firms in Germany supported EUR 1,540 billion in GDP in 2017 through direct, indirect, induced and spillover impacts.

Most investments (greenfield investments as well as M&As) locate in four Bundesländer in Southern and Western Germany. These Bundesländer are all among the richest areas in Germany, and FDI therefore seems to offer little opportunity for the poorer Bundesländer to catch up with the relatively wealthier Bundesländer (economic convergence). Rather FDI appears to exacerbate the economic structures and concentration of economic activity.

For certain sectors in Germany, foreign-owned firms support many jobs directly in the firm. These jobs are located within wholesale and retail trade, administrative and support service activities, manufacture of machinery and manufacture of motor vehicles. The category, other sectors, has a high number of jobs per investment. In our dataset, such sectors include construction, air transport and warehousing for greenfield investments. Many jobs do not necessarily result in a large GDP

contribution as some sectors are less productive than others. In Germany, for example, the construction sector is less productive than air transport, meaning that one job in air transport on average creates a larger GDP contribution than a job in construction because the average wage and company surplus (value added) per job is higher in air transport.

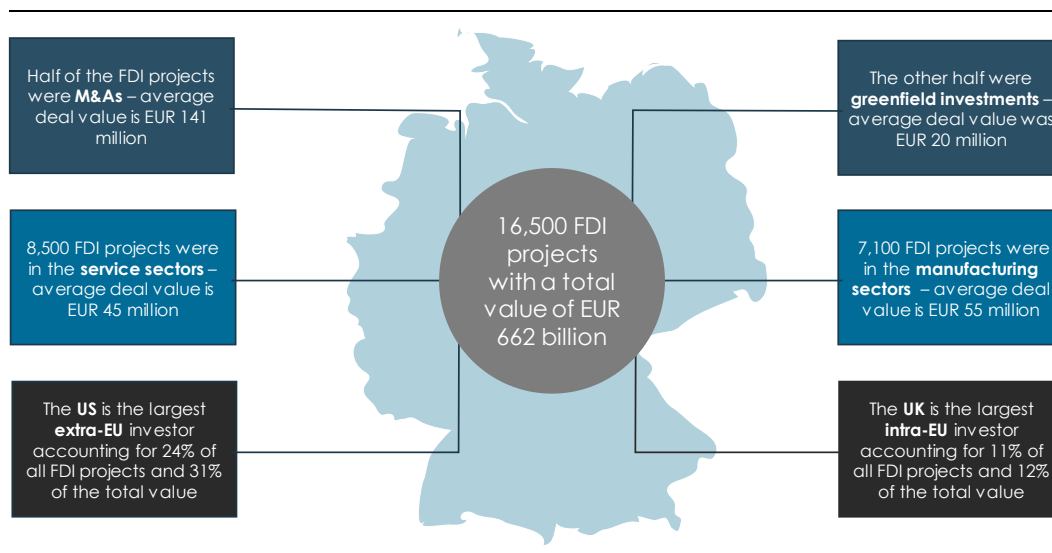
This chapter is divided into three sections. In Section 5.1, we provide an overview of FDI into Germany, and in Section 5.2 we characterise FDI into Germany across the location, type, sector and origin of FDI projects. The impacts of foreign-owned firms in Germany are quantified in section 5.3.

## 5.1 OVERVIEW OF FDI INTO GERMANY

During 2003-2017, there were around 16,500 FDI projects in Germany. Of these investments, 52 per cent (8,500) were greenfield investments and 48 per cent (8,000 projects) were M&As, see Figure 16. The average deal value for the M&As was EUR 140 million per project, seven times larger than the average deal value for greenfield investments (EUR 20 million per project). The total value of the investments where data on deal value is available was EUR 660 billion for the whole period.

The US is the largest foreign investor in Germany, accounting for a quarter of the FDI projects and almost a third of the value from 2003 to 2017. The UK is the largest EU investor in Germany. The UK accounted for a bit more than 10 per cent of the FDI projects as well as value of the investments, see Figure 16.

**Figure 16**  
**FDI into Germany, 2003-2017**



Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measured in 2015 value. There were 4,550 projects that do not have information on the deal value. The average deal value is calculated on the investments that have deal values. Other sectors include agriculture, forestry, mining, construction and utilities. Extra-EU investors origin outside the EU, whereas intra-EU investors origin in one of the other 27 EU Member States.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and Orbis databases

## 5.2 CHARACTERISTICS OF FDI INTO GERMANY

The FDI projects into Germany from 2003 to 2017 were scattered around the 16 Bundesländer, see Figure 17. While all 16 Bundesländer have received FDI inflows in the period, there are large differences in the distribution of the FDI projects, and FDI into some Bundesländer appears to be relatively limited. Four Bundesländer in the Southern and Western regional part of Germany (Baden-Württemberg, Bavaria, North Rhine-Westphalia and Hessen) accounted for more than two-thirds of the investments that had information on the host Bundesland. In total, 10,000 FDI projects (5,600 greenfield investments and 4,400 M&As) were located in the four Bundesländer. Of the total number of FDI projects into Germany, 68 per cent entered the four states, which also constitute 57 per cent of the German population and 63 per cent of the German GDP.<sup>22</sup>

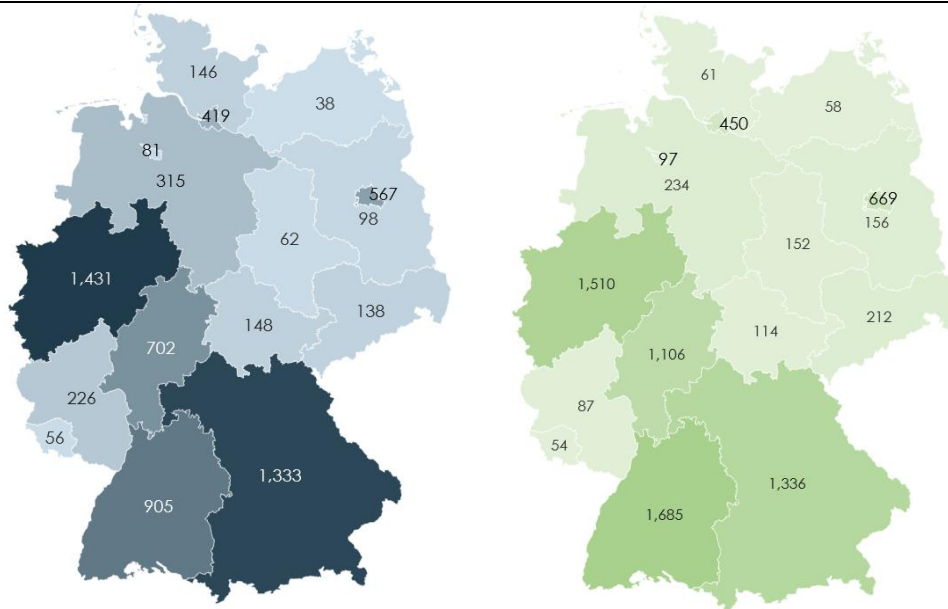
**Figure 17 FDI into Germany across Bundesländer, 2003-2017**

**M&As**

FDI projects

**Greenfield investments**

FDI projects



Note: FDI flow data are used for this figure. 546 greenfield investments (6%) and 1,352 M&As (17%) in Germany 2003-2017 do not have information on Bundesländer. Darker colour indicates a higher value.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and Orbis databases

Traditionally, greenfield investments locate in areas with low production costs (e.g. low rents and relatively high unemployment). This is, however, not the case in Germany. Greenfield investments into Germany tend to locate in the same Bundesländer as M&As. The FDI projects tend to concentrate where there is already a high level of economic activity (where there are many local firms attractive for takeover), and FDI should therefore not be expected to support regional convergence in Germany, i.e., that greenfield investments could “lift” the less wealthy Bundesländer such that the Bundesländer would converge into a more symmetrical German economy. The underlying reasons for the greenfield investments going into the same Bundesländer as the M&As could be agglomeration effects, market attractiveness and skill availability.

<sup>22</sup> Based on numbers from Eurostat.

When looking at the average deal values of the FDI projects, the four Bundesländer with the most investments are also among the Bundesländer with the lowest average deal values from 2003 to 2017, see Figure 18. The reason for the low average deal value is a high number of low-value greenfield investments in these Bundesländer.

In general, the city Bundesländer Berlin, Bremen and Hamburg have relatively low average deal values. The main reason for this is that these Bundesländer have lower than average deal values for M&As, of EUR 87 million per project, relative to EUR 140 million per project for the whole of Germany. The average M&A deal value in Bremen was just EUR 31 million per project.

Mecklenburg-Vorpommern in the North-Eastern part of Germany had the largest average deal value of EUR 176 million per project from 2003 to 2017. This is partly because of two large investments made in the Bundesland and partly because a relatively low total number of FDI projects were invested into the Bundesland. The largest investment was the Russian state-owned enterprise Gazprom that started their EUR 5.8 billion greenfield investment in the Nord Stream pipeline from Vyborg in Russia to Mecklenburg-Vorpommern.<sup>23</sup> This topic is currently on the EU agenda as to how best to govern imports of gas in relation to the Nord Stream II pipeline that is currently being built.<sup>24</sup>

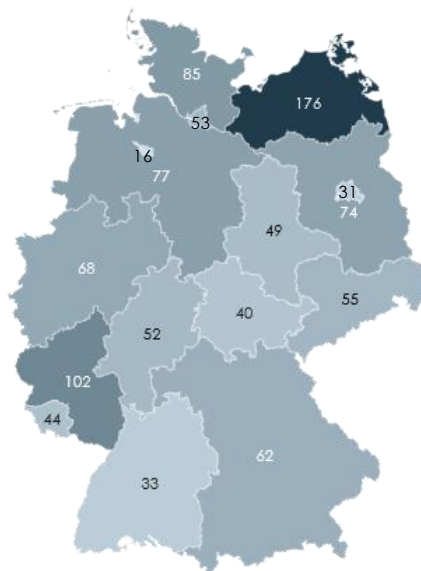
The second largest investment was an 80 per cent acquisition of the company *WindMw Mgbh* by the Chinese firm *China Three Gorges Corporation* in 2016 with a deal value of EUR 1.7 billion.

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<sup>23</sup> Nord Stream (2013).

<sup>24</sup> Reuters (2019).

**Figure 18**  
**Average deal value of FDI into Germany across Bundesländer, 2003-2017**  
EUR million per project



Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measured in 2015 value. There were 4,550 projects that do not have information on the deal value. The average deal value is calculated on the investments that have deal values. Darker colour indicates a higher value.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr, BvD Orbis

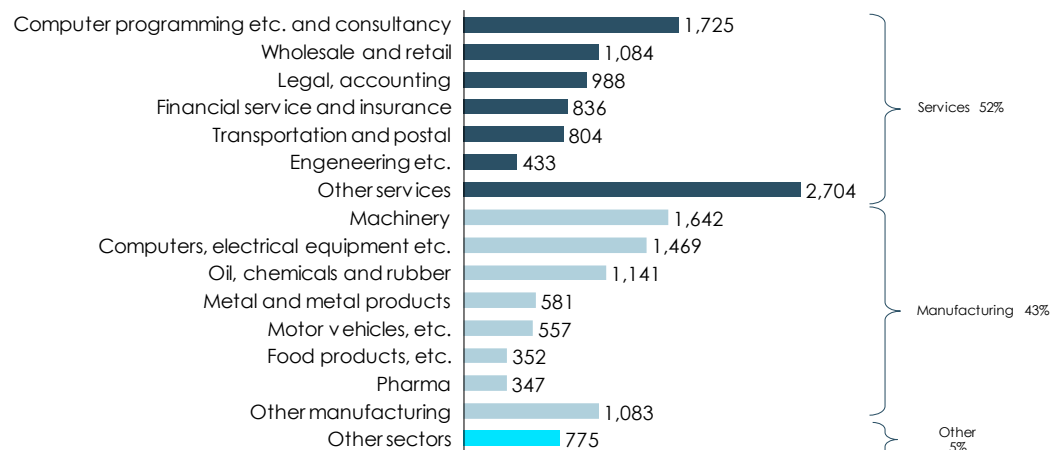
During 2003 to 2017, 52 per cent of the FDI projects into Germany were made in the service sector, while 43 per cent of the investments were made in the manufacturing sector, see Figure 19. The remaining 5 per cent of the investments were in other sectors (agriculture, fishing, forestry, mining, construction and utilities). These shares are almost the same when the projects are split on greenfield investments and M&As.

The service sub-sector with most investments is the highly productive sector for computer programming and consultancy. More than 1,700 investments were made in this sector in Germany from 2003 to 2017, of which 1,050 were M&A. In manufacturing, the sectors for machinery, computers and electrical equipment had more than 3,000 investments in total in the period. The computer and electrical equipment sector is also among the most productive sectors in manufacturing. The large German motor vehicles sector received just 560 investments in the period.



**Figure 19**  
**FDI into Germany across sectors, 2003-2017**

FDI projects



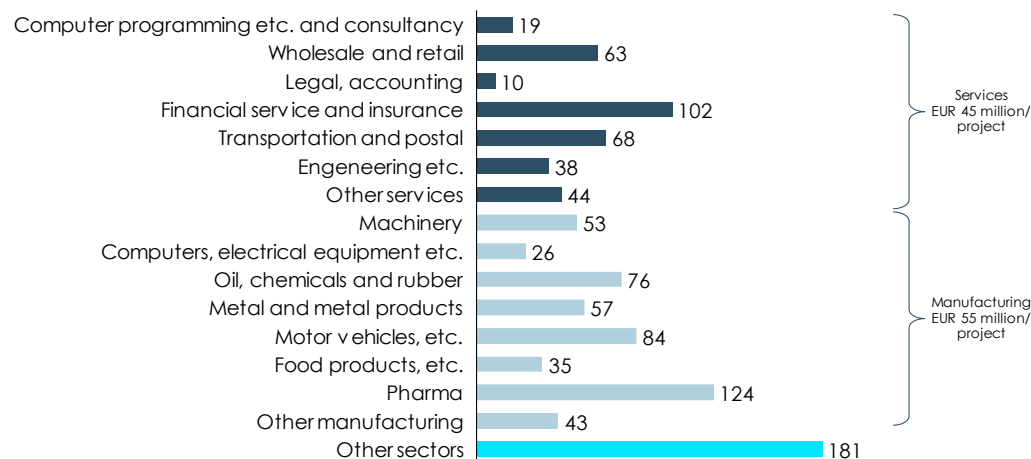
Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Other sectors include agriculture, forestry, mining, construction and utilities.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis

FDI projects in the pharmaceutical and the financial service & insurance sectors have high average deal values from 2003 to 2017 of EUR 125 million per project and EUR 100 million per project, respectively, see Figure 20. On average, the service sectors have a slightly lower average deal value (EUR 45 million per project) than manufacturing (EUR 55 million per project).

In our dataset, greenfield investments in services created 39 jobs per FDI project on average, whereas greenfield investments in manufacturing sectors created 41 jobs per FDI project. In the category, other sectors (agriculture, forestry, mining, construction and utilities), 70,000 jobs (18 per cent) were supported with an average of 90 jobs per investment. The high number of jobs per investment in other sectors comes predominately from the German construction sector where almost 400 jobs supported on average per investment for the 150 greenfield investments. These investments were mainly commercial and industrial building construction projects, but a few projects were residential buildings.

**Figure 20**  
**Average deal value from FDI projects into Germany across sectors, 2003-2017**  
EUR million per project



Note: FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measured in 2015 value. There were 4,550 projects that do not have information on the deal value. Other sectors include agriculture, forestry, mining, construction and utilities.

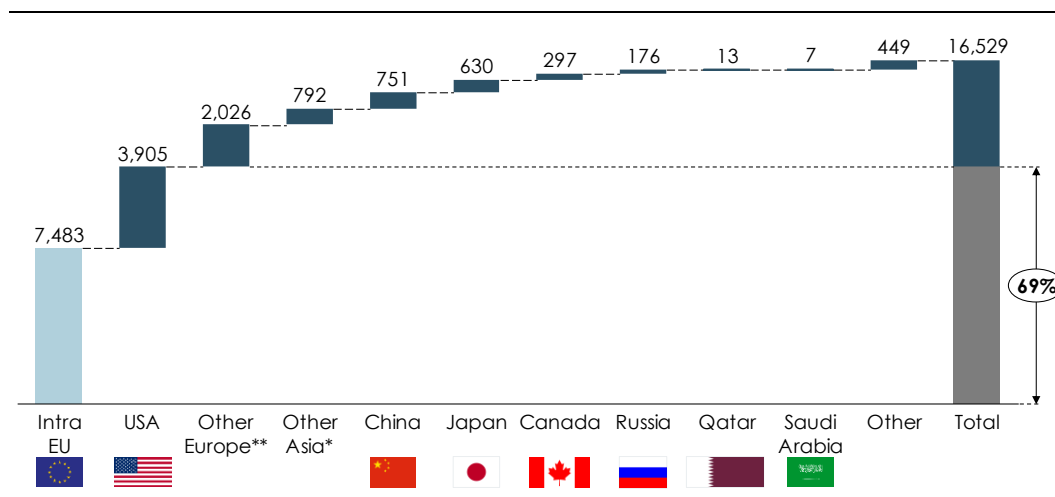
Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis

FDI into Germany comes from many different countries all over the world but the bulk of investments are made by investors from relatively few countries. From 2003 to 2017, 45 per cent of the investments made were undertaken by investors in the other EU Member States, see Figure 21. Investors from the US accounted for almost 24 per cent of all FDI projects into Germany. China made 750 investments (5 per cent) in Germany from 2003 to 2017, whereas Russian investors made 176 investments. Of China's and Russia's FDI flows into Germany, 67 per cent were in manufacturing sectors, which is a larger share than the average of FDI projects into Germany (43 per cent).

There is a much larger dispersion of average deal values for FDI projects in Germany than there was for the EU from 2003 to 2017, see Figure 22. The average deal values for FDI projects from China and Japan were just EUR 20-30 million per project, whereas they range EUR 60-70 million for FDI project that originated in intra-EU, Canada and the US. The extreme average deal values are the projects from Russia and Qatar. Russian investors on average invested EUR 140 million per FDI project but for Qatari investors, the average deal value per project was EUR 440 million. That said, Russia and Qatar had a few very large investments that increased their averages significantly. For example, Qatar had a EUR 3.6 billion investment in Germany in 2009. This was a share increase by *Qatar Intermediate Industries Holding Company Ltd* in *Volkswagen AG*. The average deal value for Qatar would be EUR 140 million without this investment, though this is still relatively high compared to other countries. This also constitutes an example of an investment that could be debated in connection to national security and, hence, FDI screening in general.

**Figure 21**  
**FDI into Germany across selected origins, 2003-2017**

FDI projects

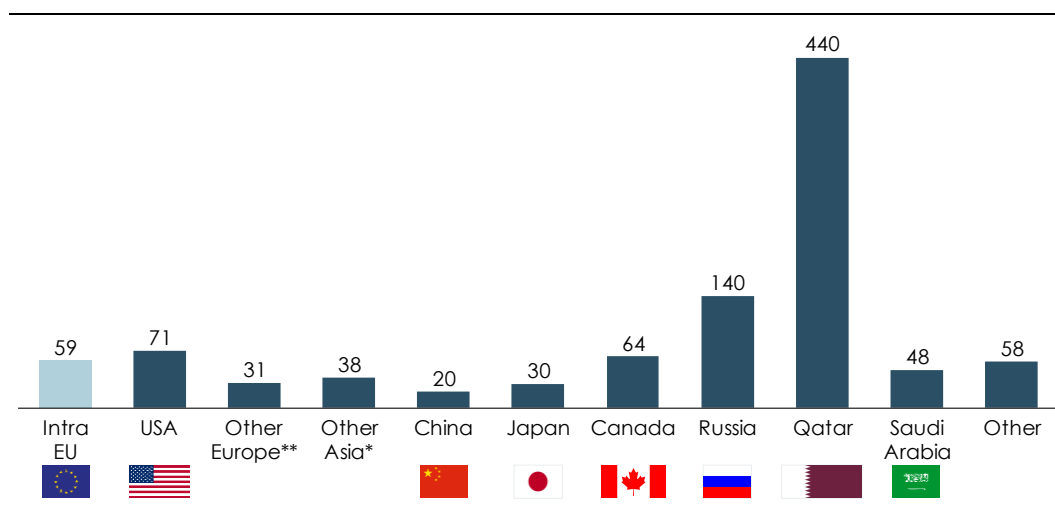


Note: \*Excluding China, Japan, Qatar and Saudi Arabia, \*\* Excluding EU, FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. In 2013, there is a break in the data from Zephyr and fDi Markets to Orbis. Intra-EU investors origin in one of the other 27 EU Member States.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and Orbis databases

**Figure 22**  
**Average deal value of FDI into Germany across selected origins, 2003-2017**

EUR million per project



Note: \*Excluding China, Japan, Qatar and Saudi Arabia, \*\* Excluding EU, FDI flow data are used for this figure. The figure includes both greenfield and M&A projects. Measured in 2015 value. There were 4,550 projects that do not have information on the deal value. The average deal value is calculated on the investments that have deal values. In 2013, there is a break in the data from Zephyr and fDi Markets to Orbis. Intra-EU investors origin in one of the other 27 EU Member States.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis

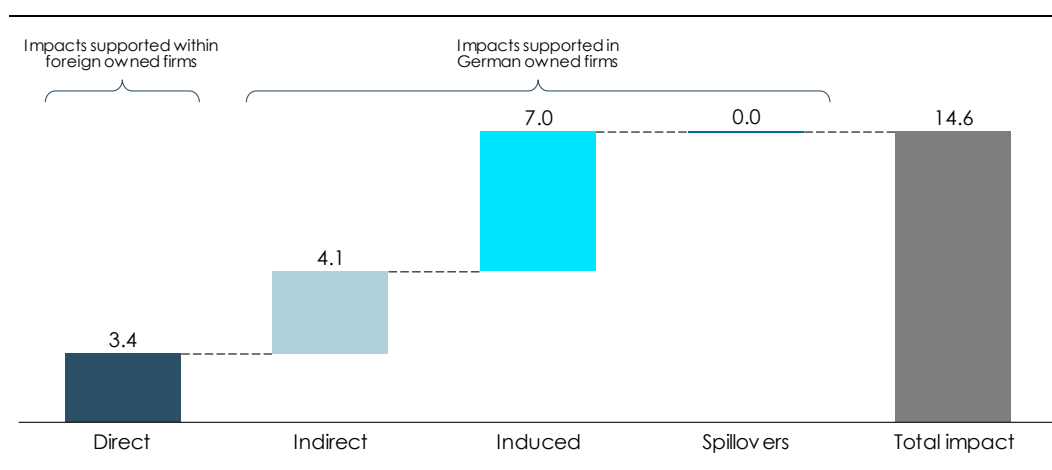
### 5.3 IMPACTS OF FOREIGN-OWNED FIRMS ON JOBS AND GDP IN GERMANY

Foreign-owned firms are highly represented in the German economy. In 2017, 3.4 million people in Germany were employed in the 33,000 foreign-owned firms (direct impact), see Figure 23. Including the indirect and induced impacts, almost 15 million jobs were supported by foreign-owned firms in Germany in 2017. This was equivalent to 33 per cent of total employment. Almost half of the jobs were induced jobs from private consumption.

The econometric analysis did not show evidence of any spillover effects on employment.<sup>25</sup> This suggests that any positive and negative effects that foreign-owned firms have on employment among local firms, via, e.g., FDI-induced productivity enhancements, increased demand for local produced goods and services, or competition effects, is averaged out. The reason for this is that FDI is assumed to have no impact on jobs in the long run, i.e., 30 years. If there were no FDI at all, jobs would still be created by domestic investors. But it could take longer and produce higher unemployment in the short run.

**Figure 23**  
**Jobs supported by foreign-owned firms in Germany, 2017**

Million jobs



Note: FDI stock data are used for this figure. Numbers have been forecasted with the development in German employment from 2014 to 2017. The econometric analysis did not find a job effect from spillovers.

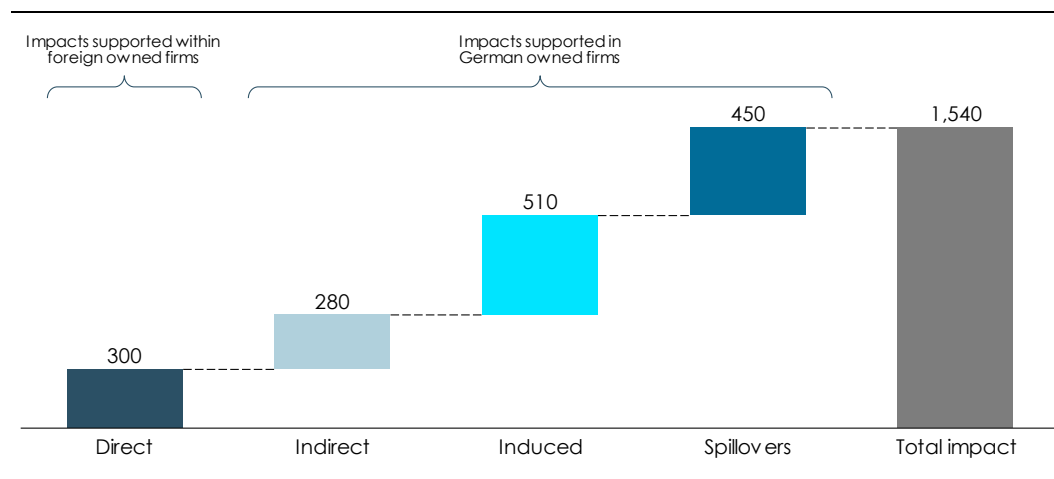
Source: Copenhagen Economics, based on Eurostat and WIOD

The GDP supported by foreign-owned firms was EUR 1,540 billion in 2014, see Figure 24. Their direct impact on GDP was EUR 300 billion in 2017. Indirect impacts supported EUR 280 billion and induced effect supported another EUR 510 billion (see Figure 24). The GDP from direct, indirect and induced impacts were almost EUR 1,100 billion, which was equivalent to 33 per cent of German GDP in 2017. This is the same per centage as the share of employment, suggesting that the supported jobs yielded the same productivity as the average productivity in the German economy.

<sup>25</sup> See Annex A for more information.

The supported GDP via the spillover impact from foreign-owned firms in Germany constitutes EUR 450 billion in 2014. These impacts arise because the foreign-owned firms enhance the productivity of the local firms, which enhances their competitiveness.

**Figure 24**  
**GDP supported by foreign-owned firms in Germany, 2017**  
EUR billion



Note: FDI stock data are used for this figure. Numbers have been forecasted with the development in Germany's GDP from 2014 to 2017.

Source: Copenhagen Economics, based on Eurostat and WIOD

## REFERENCES

- Aitken, B., G. H. Hanson, and A. E. Harrison (1997), "Spillovers, Foreign Investment, and Export Behavior." *Journal of International Economics*, Volume 43, Issues 1–2, August 1997, Pages 103-132.
- Bruno, R.L., Campos, N.F., Estrin, S. and Tian, M. (2017), *Foreign direct investment and the relationship between the United Kingdom and the European Union*. In *the Economics of UK-EU Relations* (pp. 139-173). ISBN 978-3-319-55495-2. Palgrave Macmillan, Cham.
- Copenhagen Economics (2018), "The world in Europe, global FDI flows towards Europe - Impacts of extra-European FDI towards Europe".
- ECB Economic Bulletin, Issue 4/2018.
- European Commission (2019), <http://ec.europa.eu/trade/policy/accessing-markets/investment/>.
- Fyens Stiftstidende (2018), "1500 mand bygger Facebook: 55 procent af arbejdskraften er lokal", <https://www.fyens.dk/odense/1500-mand-bygger-Facebook-55-procent-af-arbejdskraften-er-lokal/artikel/3235434>.
- Görg, H. and Greenaway, D. (2004), "Much ado about nothing? Do domestic firms really benefit from foreign direct investment?". *The World Bank research observer*, Volume 19, no. 2, pages 171-197.
- Kneller, R. and Pisu, M. (2007), "Industrial Linkages and Export Spillovers from FDI." *The World Economy*, Volume 30, no. 1, pages 105-134.
- Jungbluth, C. (2015), *Going Global: "Die internationale Expansion chinesischer Unternehmen"*. ISBN 978-3-8487-1792-7. Nomos Verlagsgesellschaft.

Markusen, J. R. (1995), "The Boundaries of Multinational Enterprises and the Theory of International Trade", *Journal of Economic Perspectives*, Volume 9, no. 2, pages 169-189.

Nikkei Asian Review (2018), "Europe pushes back as Chinese investment spree continues", <https://asia.nikkei.com/Business/Business-deals/Europe-pushes-back-as-Chinese-investment-sprees-continues>.

Nord Stream (2014), "Secure Energy for Europe: The Nord Stream Pipeline Project, 2005-2012", [www.nord-stream.com](http://www.nord-stream.com).

Reuters (2019), "EU reaches deal on rules to govern Russia's Nord Stream 2 pipeline." <https://www.reuters.com/article/us-eu-gazprom/eu-reaches-deal-on-rules-to-govern-russias-nord-stream-2-pipeline-idUSKCN1Q20QM>.

Teva (2016), "Teva to Acquire Allergan Generics for \$40.5 Billion Creating a Transformative Generics and Specialty Company Well Positioned to Win in Global Healthcare." [https://www.tevapharm.com/news/teva\\_to\\_acquire\\_allergan\\_generics\\_for\\_40\\_5\\_billion\\_creating\\_a\\_transformative\\_generics\\_and\\_specialty\\_company\\_well\\_positioned\\_to\\_win\\_in\\_global\\_healthcare\\_07\\_15.aspx](https://www.tevapharm.com/news/teva_to_acquire_allergan_generics_for_40_5_billion_creating_a_transformative_generics_and_specialty_company_well_positioned_to_win_in_global_healthcare_07_15.aspx).

Timmer, M. P., Dietzenbacher, E., Los, B., Stehrer, R. and de Vries, G. J. (2015), "An Illustrated User Guide to the World Input–Output Database: The Case of Global Automotive Production", *Review of International Economics*, Volume 23, issue 3, pages 575–605.

United Nations Conference of Trade and Development (UNCTAD) (2016). "World Investment Report 2016: Methodological Note." Geneva 2016.

UNCTAD data (2016): <https://unctad-stat.unctad.org/wds/TableView/tableView.aspx>

## ANNEX A

# DATA AND METHODOLOGY

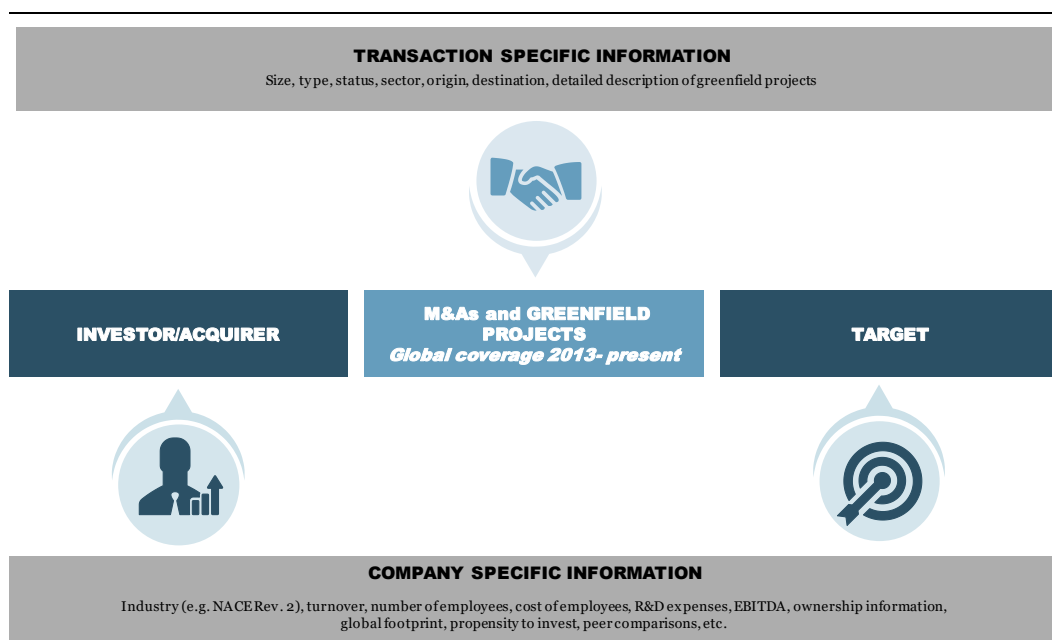
## FDI PROJECT DATA

Copenhagen Economics has collected a database with investment data on greenfield investments and M&As (> 10 per cent of shares). Copenhagen Economics continuously updates the database to include new investments and changes to previously reported investments. The database contains detailed transaction-specific information, company-specific information and information about the acquirer firm and the target firm, see Annex figure 1. The database combines data from three sources:

- fDi Markets includes greenfield investments from 2003 to 2012
- BvD Zephyr includes M&A projects from 2003 to 2012
- BvD Orbis includes greenfield and M&A projects from 2013 to today

In this report, the FDI project data are used to describe FDI inflows into the EU and Germany in terms of the origin and destination of FDI, types of FDI, sectoral distribution of FDI and average sizes of FDI projects. The FDI projects included in this report contain both investments from outside the EU into an EU Member State (extra-EU FDI) and investments from one EU Member State to another (intra-EU FDI). Deal values have been adjusted for EU inflation so that the value of FDI is in constant 2015 value.

**Annex figure 1**  
**Overview of database information**



Source: Copenhagen Economics



## DIRECT IMPACTS

The number of jobs within the foreign-owned firms (direct impact) come from Eurostat's employment numbers in foreign-owned (controlled) firms for 2014. The definition of foreign control is “*an enterprise resident in a country which is under the control of an institutional unit not resident in the same country. Control is determined according to the concept of the 'ultimate controlling institutional unit' (UCI). The UCI is the institutional unit, proceeding up a foreign affiliate's chain of control, which is not controlled by another institutional unit*”.<sup>26</sup>

To quantify the GDP contribution of each of the direct jobs, we use an input-output table from the World Input-Output Database (WIOD)<sup>27</sup>. This database contains data from 2014 split on 43 countries, including the 28 EU Member States. From this table, we can see purchases between 56 sectors for each country (a [43 x 56] X [43 x 56] matrix), and we have information on the GDP contribution for each sector. Furthermore, we have employment in each of the sectors for the 28 EU Member States from Eurostat. We have combined national input-output tables into one common EU input-output table (a [56] X [56] matrix).

We compute the direct GDP-contribution by multiplying the number of jobs in foreign-owned firms with the average GDP contribution per job within each sector:

$$\begin{aligned} & \text{Direct GDP contribution from foreign – owned firms in sector } i \\ &= \frac{\text{GDP in sector } i}{\text{Employment in sector } i} * \text{Employment in foreign – owned firms in sector } i \end{aligned}$$

The GDP contribution includes value added (wages and firm surplus), production taxes. Potential subsidies are deducted from the GDP contribution.

The job numbers and GDP numbers are extrapolated to 2017 from 2014 numbers. There is not enough available information to extrapolate the numbers into more recent numbers.

## INDIRECT AND INDUCED IMPACTS

The indirect and induced impacts are quantified by multipliers from the input-output table using a so-called input-output model. The model uses matrix-calculations on the input-output tables to calculate the multipliers. Multipliers make the calculations of indirect and induced impacts straightforward as only the direct impact is needed for the calculations of the impacts.

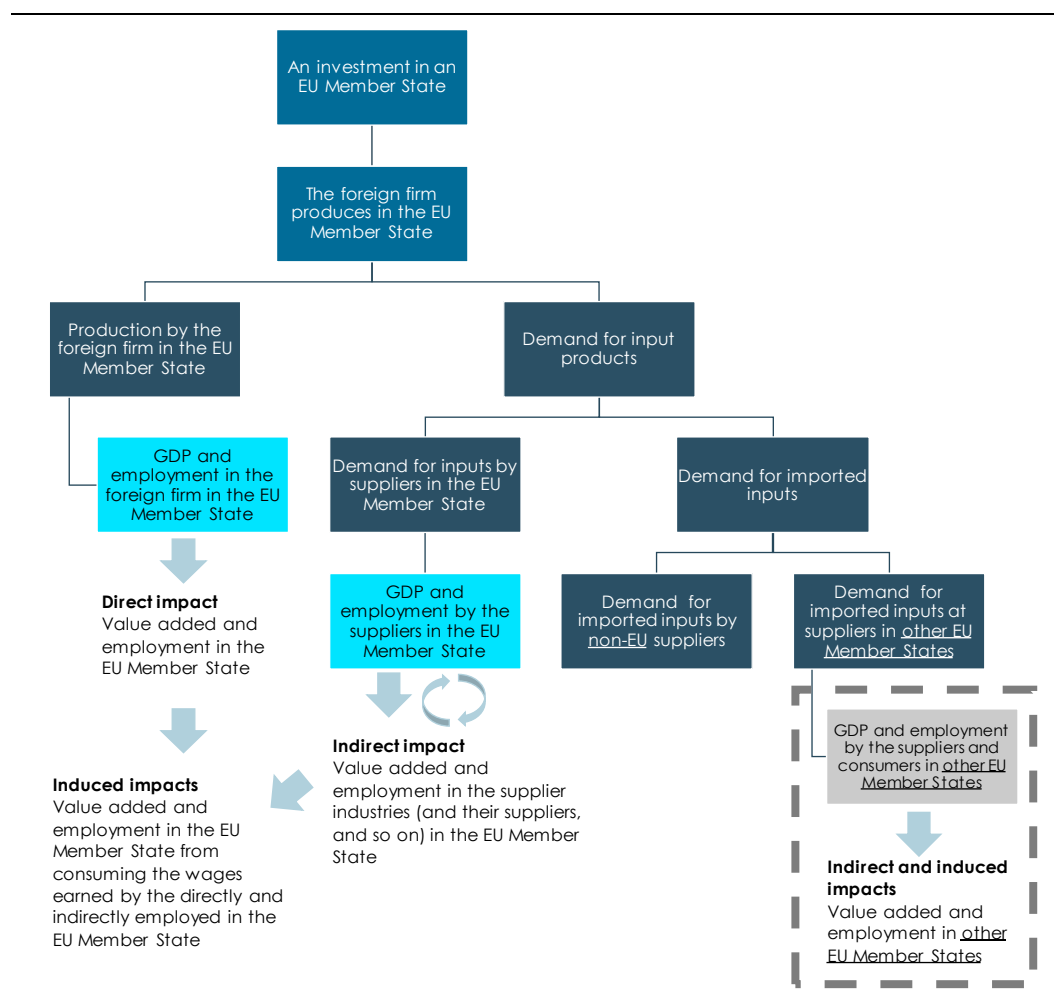
The indirect impacts arise when foreign-owned firms buy goods and services at local suppliers and the local suppliers in turn buy inputs from their local suppliers and so on. These impacts work all the way through the EU supply chain. This economic activity supports jobs and GDP indirectly. The induced impacts arise when wage income from directly and indirectly supported jobs are spent. The indirect and induced impacts can be measured in *per direct job* or *per direct GDP-contribution* (e.g. in Euro). These are the so-called multipliers. An example of the impacts of an investment can be seen in Annex figure 2.

<sup>26</sup> Eurostat FATS, [www.ec.europa.eu/eurostat/statistics-explained/index.php?title=Foreign-controlled\\_enterprises&oldid=372139#Inward\\_FATS](http://www.ec.europa.eu/eurostat/statistics-explained/index.php?title=Foreign-controlled_enterprises&oldid=372139#Inward_FATS).

<sup>27</sup> WIOD tables: [www.wiod.org/database/wiots16](http://www.wiod.org/database/wiots16).

The indirect and induced jobs and GDP are supported in the host Member State through supplier linkages and other Member States through imports, see Annex figure 2. Had the impact been calculated on separate input-output models for each Member State, the impact on the other EU Member States would not be included. Impacts across the EU Member States are included in the multipliers when combining the input-output table.

**Annex figure 2**  
**An example of direct, indirect and induced impacts from an investment in an EU Member State**



Note: See the explanation of spill-over impacts in two pages.  
Source: Copenhagen economics

The estimation of the jobs and GDP supported by foreign-owned firms requires certain assumptions for direct, indirect and induced impacts:

- Assumption 1: The foreign-owned firm has the same productivity as the average firm in the same sector. This is a reasonable assumption because competition will ensure that systematic differences in productivity between firms within a sector will be reduced. Nevertheless,

foreign-owned firms on average still tend to be more productive than domestic firms. Thus, this assumption is likely to slightly underestimate the impact of the direct effects. Foreign-owned firms are more concentrated in high-productivity sectors (e.g. there are no foreign-owned firms in the public sector where productivity tends to be low). In addition, there is a tendency for sectors with a high concentration of foreign-owned firms to be more productive (e.g. ICT and business services).

- Assumption 2: The foreign-owned firm has the same purchasing patterns as the average firm in the same industry. The assumption is likely to slightly overestimate the impact of the indirect and induced effects. The reason for this is that foreign-owned firms are more likely to engage in international supply chains than domestic firms are. This is however only problematic for the supply chain *outside* of the EU. Supply chains inside the EU are covered by the model.
- Assumption 3: The people whose employment is supported by foreign-owned firms consume their wage with the same distribution as the whole economy do. For example, if people in the economy on average spend 20 per cent of their wage on cars, then the people whose employment is supported by foreign-owned firms also spend 20 per cent of their wages on cars. The assumption does not have a large effect on the induced impacts, and if it has the difference is ambiguous. If the people whose employment is supported by foreign-owned firms tend to spend their wages differently, the induced impact would just be supported in other sectors, although not with the exact magnitude.

Overall, the assumptions are expected to yield conservative results.

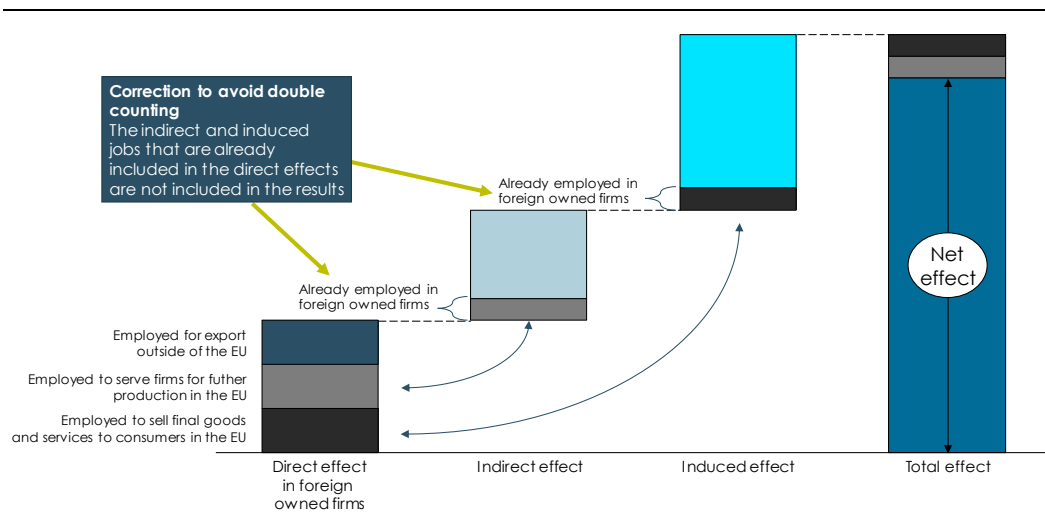
In the input-output model, the indirect and induced job effects will automatically contain some jobs which are already included in foreign-owned firms in other sectors. These jobs are included in the direct impacts since we include all jobs in foreign-owned firms in the EU. The direct job effect in one EU Member State contains three types of jobs, see Annex figure 3:

1. Employed for exports outside the EU
2. Employed to serve firms for further production in the EU
3. Employed to sell final goods and services to consumers in the EU

Some of the indirect jobs are already employed in the direct jobs as they are employed in the direct job-group 'Employed to serve firms for further production in the EU'. For the induced jobs, some jobs are already included in the direct job-group 'Employed to sell final goods and services in the EU'. These jobs can both be in the EU Member State, where the investment is made, or in the other EU Member States that the foreign-owned firm imports from.

We correct for this by lowering the number of jobs, so that the indirect and induced jobs only include the share of the employment that is employed in domestically owned firms, such that the net effect is not double counting.

**Annex figure 3**  
**Correction of the indirect and induced effects in the IO model for EU28**  
Jobs, illustrative example



Note: This is only for illustrative purpose.  
Source: Copenhagen economics

## SPILLOVERS

Foreign-owned firms can affect local firms through several spillover channels, including knowledge transfer, increased competition and vertical linkages in local supply chains.

We quantify the spillover impacts based on estimates from an econometric analysis.<sup>28</sup> The estimates are based on firm-level data from 2015 for foreign-owned and domestic firms in 34 European countries. Based on this data, we have estimated the impact of an increase in the concentration of foreign-owned firms on labour productivity<sup>29</sup> among local firms within:

1. The same industry and region (industry-specific spillovers)
2. The same region, regardless of industry (broader regional spillovers)

The model we use to estimate **industry-specific spillovers** looks as follows:

$$\ln \text{labour productivity}_{ijk} = f(\text{FDI concentration}_{ji}, \ln \text{capital intensity}_{ijk}, \text{age}_{ijk}, \text{age}_{ijk}^2, \text{region/industry size}_{ij}, \text{growth GDP per capita}_i)$$

Where the log of labour productivity of a given firm (k) in a given 2-digit NACE industry (j) in a given NUTS3 region (i) is modelled as a function of the concentration of foreign-owned firms in the given industry and region. We measure the concentration of foreign-owned firms as the share of all employees working in foreign-owned firms within the given industry and region.

<sup>28</sup> For a more in-depth methodology description and literature, see Copenhagen Economics (2018), "The world in Europe, global FDI flows towards Europe - Impacts of extra-European FDI towards Europe".

<sup>29</sup> Labour productivity is approximated by turnover per employee.

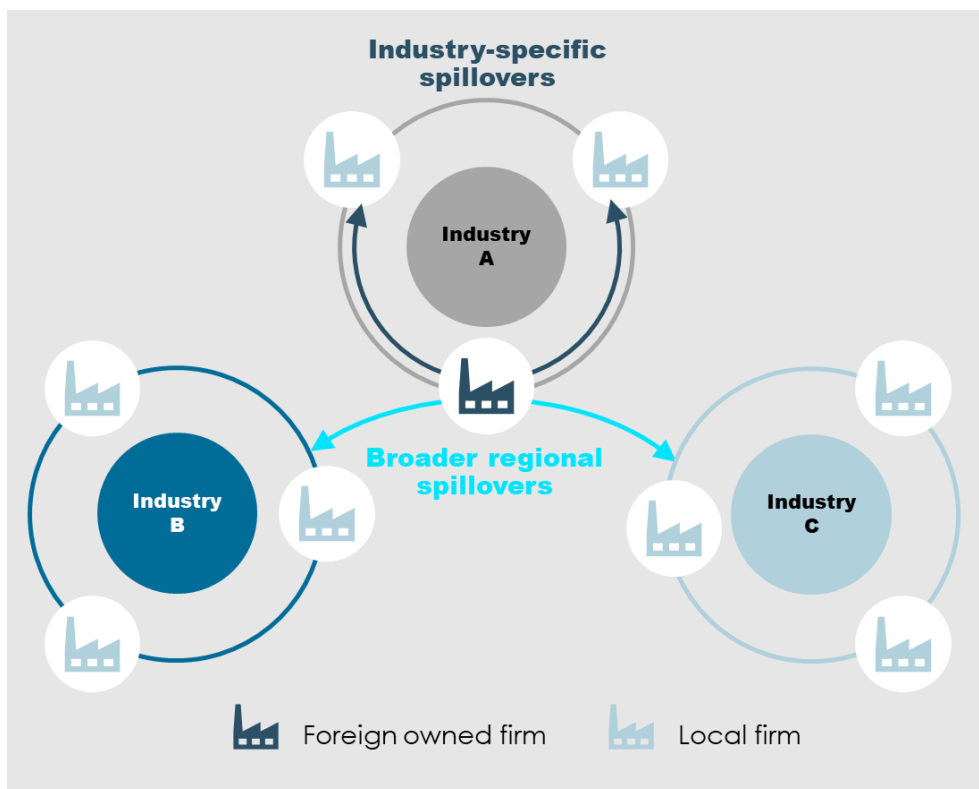
The model we use to estimate **broader regional spillovers** is very similar. However, as the focus now lies in identifying spillovers from foreign-owned firms across all industries within a given NUTS3 region, we measure the concentration of foreign-owned firms at the regional level instead. In this case, we thus measure concentration as the share of all employees working in a foreign-owned firm within a given region.

In both cases, we control for several other firm-specific factors, industry-specific and regional factors, which can also impact the productivity of local firms. The model includes NACE 2 and country dummies. The methodology and the control variables used have been selected based on a review of the existing empirical literature on spillover effects. These are for example capital intensity, GDP growth per capita, size of region and industry, etc. We quantify the spillovers on an EU-level to have enough observations to calculate the impacts, which cannot be done on a German level as there are too few observations. Therefore, we use the EU spillovers on a sectoral basis for the calculation of spillover impacts in Germany. This means that we use detailed information about the concentration of foreign-owned firms on a sectoral basis in Germany but assume that the productivity spillovers to domestic firms in Germany are the same as the EU average within the same sector.

Annex figure 4 illustrates the concept of both industry-specific and regional spillovers and depicts a given region, where there is a total of three different industries with a foreign investment in industry A only. The investment leads to productivity spillovers to domestic firms within the same industry (industry-specific spillovers), as well as to domestic firms in industry B and industry C (broader regional spillovers). The results from the econometric analysis show that there are spillovers that have a significant, positive effect on the productivity level in domestic firms. These results are however only for some, not all, sectors.

The results from the econometric analysis show that spillovers do not impact the number of jobs in the economy for any of the sectors. A theoretical explanation for this is that the labour supply in an economy is not determined by the level of investment in the long run. Instead, the labour supply is determined by labour regulation and the alternative option to working (e.g. unemployment benefit etc.). Therefore, increased foreign investments to an area will not impact the number of jobs in other industries through spillovers because in the long run, if the investment had not been made, the people would find a domestic job instead.

**Annex figure 4**  
**Illustration of spillovers**



Note: The figure illustrates industry-specific that works between firms in the same industry. The figure also illustrates broader regional spillovers that work within a given region on firms in other industries.

Source: Copenhagen Economics

## ANNEX B

**Table 1**  
**FDI into the EU across different investment types, 2003-2017**

<b>TYPE OF INVESTMENT</b>	<b>NUMBER OF FDI PROJECTS</b>	<b>AVERAGE VALUE, EUR MILLION PER PROJECT</b>	<b>NUMBER OF FDI PROJECTS WITH DEAL VALUE</b>
M&A	72,000	132	35,000
Greenfield	58,000	31	58,000
Total	130,000	69	93,000

Note: Measured in 2015 value. Some projects do not have information on the deal value. The average deal value is calculated on the investments that have deal values. Numbers are rounded to the nearest 1,000.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis.

## ANNEX C

**Table 2**  
**FDI into Germany across investment types, 2003-2017**

<b>TYPE OF INVEST- MENT</b>	<b>NUMBER OF FDI PRO- JECTS</b>	<b>AVERAGE VALUE, EUR MILLION PER PROJECT</b>	<b>NUMBER OF FDI PRO- JECTS WITH DEAL VALUE</b>
M&A	8,000	141	3,500
Greenfield	8,500	20	8,500
Total	16,500	55	12,000

Note: Measured in 2015 value. Some projects do not have information on the deal value. The average deal value is calculated on the investments that have deal values. Numbers are rounded to the nearest 100.

Source: Copenhagen Economics based on fDi Markets, BvD Zephyr and BvD Orbis.



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