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Economic Impact of Foreign-owned Firms in the EU and Germany

In times of Trump and Brexit, protectionist tendencies seem to be a global trend. The advantages that economic interconnectedness implies are increasingly receding into the background. Foreign-owned firms in the EU and Germany, however, make a considerable contribution to employment and gross domestic product (GDP).

Nowadays, production processes are globalized. There rarely is a product that is manufactured in just one country. Due to increasingly complex global value chains, goods and intermediates cross borders several times before they reach their final consumers. Multinational enterprises (MNEs) play a key role here by establishing factories, sales companies or research and development centers in another country, by investing in or acquiring local firms.

MNEs invest abroad because they expect a higher longterm profit. Their activities can also increase economic welfare in the host economy. A net positive effect should not be taken for granted, though, since new economic activity in foreign-owned firms may crowd out economic activity in local firms and create bottlenecks in the local economy.

This policy brief analyses the economic impact of the foreign-owned firms that have located,

stayed and survived within the EU and Germany and now contribute to their host economy by employing workers, buying goods and services from local suppliers and through spillovers that enhance the productivity of local firms. The analysis only covers foreign affiliates controlled by a foreign investor (see textbox below).

The following section offers a detailed explanation on the methodology of quantifying the economic impact of foreign-owned firms. Then the results for the EU and Germany are presented.

The analysis is based on a study by Copenhagen Economics on behalf of Bertelsmann Stiftung (see Bertelsmann Stiftung 2020). The results for Germany were first published in the German-language economic policy journal *Wirtschaftsdienst* (see Jungbluth et al. 2020).

Quantifying the economic impact of foreign-owned firms

Foreign-owned firms impact employment and gross domestic product (GDP) in their host country. This may happen through four main transmission channels: direct, indirect, induced and spillover impacts. The quantification of these impacts uses a bottom-up approach based on the following assumptions, which overall are expected to yield conservative results.

- The foreign-owned firm has the same productivity as the average firm in the same sector. This assumption is likely to underestimate the impacts of foreign-owned firms on GDP, as foreign-owned firms tend to be more productive than domestic firms.
- The foreign-owned firm has the same purchasing patterns as the average firm in the same industry. This 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 relevant for the supply chain outside of the EU. Supply chains inside the EU are covered by the model.
- The people whose employment is supported by foreign-owned firms consume their wages with the same distribution as the whole economy does. 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. This 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.

Definition of foreign-owned firm

In the analysis, foreign affiliates (FATs) are regarded as foreign-owned firms. A foreign affiliate as defined in the Eurostat (2012) Inward Foreign Affiliate Statistics (FATS) 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. FATS thus focus on the affiliates that are majority-owned by a single investor or by a group of associated investors acting in concert and owning more than 50% of ordinary shares or voting power.

1. Direct impacts

The starting point is the number of jobs within foreign-owned firms in the EU and Germany available at Eurostat. This number at the same time is the *direct* impact of foreign-owned firms on employment in their host economy.

In the next step, the direct impact of the jobs in foreign-owned firms on GDP is quantified. Copenhagen Economics uses an input-output table from the World Input-Output Database (WIOD), which yields information on the GDP contribution for each sector. Furthermore, employment in each of the sectors for the 28 EU Member States is also available. For Germany, the national input-output table is used, while for the EU the national input-output tables are combined into one common EU input-output table.

Copenhagen Economics computes the direct impact on GDP by multiplying the number of jobs in foreign-owned firms with the average GDP contribution per job within each sector:

$$\frac{\text{GDP in sector } i}{\text{Employment in sector } i} * \text{Employment in foreign-owned firms in sector } i$$

The GDP contribution includes value added and production taxes. Potential subsidies are deducted from the GDP contribution.

The impacts on jobs and GDP are measured for 2014, the last year currently available in the WIOD tables, and then forecast for 2014 to 2017 with the development in GDP and employment in

the economy from Eurostat (aggregate numbers). It is implicitly assumed that jobs and GDP in the foreign-owned firms and their value chains grow by the same rate as the rest of the economy. This is expected to be a reasonable but conservative assumption as foreign-owned firms tend to be highly productive and could therefore have grown more.

Example for direct impacts:

On jobs: A foreign-owned firm sets up a factory in Germany and employs 100 people there.

On GDP: The GDP contribution of the sector in which the foreign-owned firm operates amounts to 100,000 euros. In total, there are 10,000 employees in this sector. Each employee thus has a contribution to GDP of 10 euros. The 100 employees in the foreign-owned firm thus contribute 1,000 euros to GDP. This contribution results from the wages paid to the employees of the foreign-owned firm, the profits of the firm and the production taxes paid to the government.

2. Indirect impacts

The indirect impacts arise when foreign-owned firms buy goods and services at local suppliers and the local supplier in turn buys inputs from its local suppliers and so on. These impacts work all the way through the EU supply chain. This economic activity impacts jobs and GDP indirectly.

The indirect impacts are quantified with a multiplier model based on tables from WIOD. The indirect impacts can be measured in *per direct job* or *per direct GDP-contribution* (e.g. in euro).

These are the so-called multipliers. The model

Example for indirect impacts:

On jobs: A foreign-owned firm buys goods and services from local suppliers. This supports about 120 jobs in the supplying companies.

On GDP: The GDP contribution of the sectors in which the suppliers operate amounts to 200,000 euros. The total number of employees in these sectors is 25,000. Each employee thus has a contribution to GDP of 8 euros. The 120 employees in the local suppliers of the foreign company thus indirectly support a GDP contribution of 960 euros. If 10 percent of the turnover of a local supplier is due to sales to the foreign company, 10 percent of wages, profits and production taxes are included in the indirect GDP effects.

estimates the impact on jobs and GDP in firms supplying to the foreign-owned firm.

3. Induced impacts

The induced impacts arise when wage income from directly and indirectly supported jobs is spent. The induced impacts are quantified with the same model as for the indirect impacts, thus estimating the impact on consumption from the higher wage income supported by the direct and indirect impact on jobs.

Example for induced impacts:

On jobs: The 240 employees directly and indirectly employed by the foreign-owned firm spend their wages and salaries on goods and services. With their consumption, they support around 170 jobs in various companies and sectors.

On GDP: The GDP contribution of the sectors in which the consumption of those directly and indirectly employed by the foreign-owned firm takes place amounts to 360,000 euros. The total number of employees in these sectors is 40,000. Each employee thus contributes 9 euros to GDP. The 170 employees who are affected by the induced effects thus support a GDP contribution of 1,530 euros.

4. Spillover impacts






Foreign-owned firms can also impact their host economy through several spillover channels, including knowledge transfer (labour mobility; imitation/demonstration; exporting), increased competition and vertical linkages in local supply

Example for spillover impacts:

On Jobs: The econometric analysis that estimated the spillover impacts did not find any spill-over impact on jobs. While foreign-owned firms support job in local firms through supply chain impacts (indirect and induced), the productivity-enhancing impact on average does not materialize in higher employment within the local firms. Negative impacts net out positive impacts and neutralize the spillover impact on employment.

On GDP: However, the econometric analysis showed that foreign-owned firms positively impact productivity in domestic firms. The foreign-owned firm, for example, brings knowledge about products, supply chains, technologies that "spills over" to local firms in the form of higher productivity (see above). This results in a GDP-increasing spillover effect.

Figure 1: Possible spillovers

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)

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chains (figure 1). Some of these spillovers may have a positive or negative impact on local firms depending on the respective circumstances. For example, 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 diseconomies of scale.

The spillover impacts are quantified on estimates from an econometric regression.¹ The estimates are based on firm-level data from 2015 for foreign and domestically owned firms in 34 European countries. The results are forecasted until 2017 in the same way as for the other effect groups. Based on this data, Copenhagen Economics has estimated the impact of an increase in the concentration of foreign-owned firms on labour productivity, which is approximated by turnover per employee, among local firms within:

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

In the first case, the concentration of foreign-owned firms is measured as the share of all employees working in a foreign-owned firm, within a given industry and region. In the second case, the concentration is measured as the share of all employees working in a foreign-owned firm, within a given region. In both cases, several other firm-specific and regional factors, which can also impact productivity among local firms, are controlled for. The productivity spillover is then translated into a GDP contribution using the methodology also used to quantify the direct impacts. The spillovers are quantified on an EU-level. For the calculation of spillover impacts in Germany, the EU spillovers are used on a sectoral basis.

The methodology and the control variables used have been selected based on a review of the existing empirical literature on spillover effects (e.g. Copenhagen Economics 2018).

¹ For a more in-depth methodology description, see Copenhagen Economics (2018).

Impact of foreign-owned firms on employment and GDP in the EU

In 2017, 22 million EU workers were employed in foreign-owned firms. This is 9 per cent of the total employment in the EU. Some Eastern European member states, however, had a much larger share of their employment working in foreign-owned firms. In Romania and the Czech Republic 27 per cent of total employment in the business economy² were employed in foreign-owned firms (one and 0.9 million people, respectively) in 2017 and the number was 26 percent or 0.7 million people in Hungary.

The United Kingdom also had a higher share in employment in foreign-owned firms than the EU average, with almost 20 per cent of the employment in the business economy (more than 3 million individuals). In contrast, Greece's share of employment in foreign-owned firms in the EU was 5 percent (0.1 million).

Through indirect impacts 23 additional million jobs were supported in the foreign-owned firms' EU supply chains in 2017. These jobs are supported in the supply chain in the host countries and in any supplying firms in the other EU Member States.

Furthermore, 38 million jobs were supported via consumption by those directly and indirectly employed in 2017 (induced impact). Altogether, foreign-owned firms were responsible for 82 million jobs in the EU in 2017. This is equivalent to 35 per cent of the total employment in the EU. Again, these impacts are supported in the host countries and in the other EU Member States, where wages are consumed.

The econometric analysis did not show any spillover effects on employment. This suggests that any positive and negative effects that foreign-owned firms have on employment among local

firms, via e.g. productivity enhancements, increased demand for local produced goods and services, or via competition effects, is averaged out. The reason for this is that foreign-owned firms are assumed to have no impact on jobs in the long run, i.e. 30 years. If there were no foreign-owned firms at all, jobs would still be created by domestic investors. But it could take longer time and produce higher unemployment in the short run.

The jobs supported by foreign-owned firms also support GDP in the EU from the wages earned, company surplus and through spillover impacts on domestic firms. The direct, indirect and induced impacts accounted for EUR 5.8 trillion (38 percent of EU GDP). The slightly higher share of EU GDP to employment (38 vs. 35 percent) 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. Moreover, foreign-owned firms themselves are more concentrated in high-productivity sectors.

The spillover impacts from foreign-owned firms in the EU supported EUR 3.2 trillion in GDP in 2017. Spillover impacts are therefore important for the overall GDP impact. These impacts arise from the share of employment in foreign-owned firms that 'spill over' productivity, in such a way that local domestic firms become more productive. The spillover impacts have been found econometrically 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 spillover impact on domestic firms.

Altogether the impact of foreign-owned firms on GDP in the EU amounted to EUR 9 trillion or 59 percent of EU GDP in 2017.

² The business economy covers typically private sectors with NACE Rev.2 codes 05-82 and 95.

Impact of foreign-owned firms on employment and GDP in Germany

According to the forecast of Copenhagen Economics, there were about 33,000 foreign-owned firms in Germany in 2017 with an employment of 3.4 million people (8 percent of total employment). About 40 percent of these jobs were in manufacturing.

The share rises to 33 percent or 15 million jobs, when including the indirect and induced impacts. Almost half of the jobs were induced jobs from private consumption (figure 2).

The econometric analysis did not show any spillover effects on employment. The explanation is the same as for the impacts on EU level.

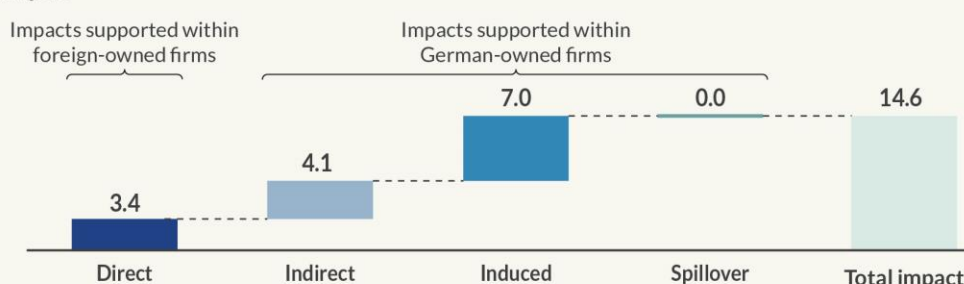
The GDP directly supported by foreign-owned firms in Germany was EUR 300 billion in 2017, equivalent to 9 percent of German GDP in 2017. When including indirect and induced impacts, foreign-owned firms supported almost EUR 1,100 billion or 33 percent of German GDP in 2017 (figure 3). This is the same percentage as the share of employment, suggesting that the supported jobs yielded the same productivity as the average.

The supported GDP via the spillover impact from foreign firms in Germany constituted EUR 450 billion in 2017.

The total impact of foreign-owned firms on German GDP in 2017 amounted to 1,540 billion Euro or 47 percent of German GDP.

Figure 2: Jobs supported by foreign-owned firms in Germany, 2017

Million jobs

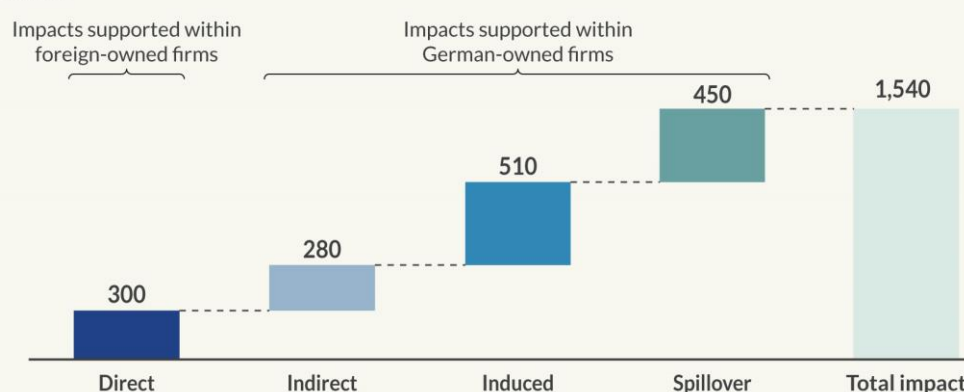


Note: The calculations are based on FATS data from Eurostat. The results have been projected in line with the evolution of employment in Germany from 2014 to 2017. The econometric analysis showed no spillover effects on employment. The impacts are rounded. The exact total impact amounts to 14.56 million jobs. Source: Copenhagen Economics, based on Eurostat and WIOD

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Figure 3: GDP supported by foreign-owned firms in Germany, 2017

EUR billion



Note: The calculations are based on FATS data from Eurostat. The results have been projected in line with the evolution of German GDP from 2014 to 2017.

Source: Copenhagen Economics, based on Eurostat and WIOD

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Conclusion and Outlook

Firstly, the calculations of Copenhagen Economics show that foreign-owned firms have a net positive direct impact on employment and GDP in the EU and Germany. In addition, they increase private consumption and demand for input products through indirect and induced impacts. Through spillover effects, foreign-owned firms may also enhance productivity and growth in local firms, i.e. by knowledge transfer and enhanced competition.

Secondly, economic activities of foreign-owned firms in the EU strengthen the interconnectedness of the European Single Market. While single member states compete with each other as host country in order to benefit from the direct impact, the importance of indirect, induced and spillover effects should not be overlooked: Foreign-owned firms in any EU member state may also positively impact other member states in terms of job and GDP contribution. Only when taking all four categories of impacts together is it possible to fully grasp the meaning of foreign-owned firms for their host economy.

Thirdly, improved interconnectedness between markets via foreign-owned firms is also an important opportunity to cope with prospect future developments, especially with regards to the two megatrends digitization and demographic change.

Assuming that additive production techniques will spread (3D printing), goods will be increasingly produced there where they are consumed. This requires the development of local production capacities, i.e. investment by foreign firms (Petersen 2018). In turn, this implies that traditional foreign trade is likely to decline in the future, while investment by foreign-owned firms is expected to increase.

If Germany is able to remain attractive for foreign-owned firms, they might also be one means to mitigate demographic change (Esche, Lizzarazo López and Petersen 2019): As domestic investment could potentially decline in the future, investment by foreign-owned firms might to some degree fill this gap and in the long term increase GDP and capital stock in an ageing society.

Implications for Economic Policy

From the perspective of Bertelsmann Stiftung, there are three suggestions for economic policymaking on the EU and the national level in Germany:

1. **Strengthening the communication** on the benefits of the economic activities of foreign-owned firms for their host economy. In times of increasing protectionism and populism, it is more important than ever to draw attention to the significance of interconnected markets and value chains.
2. **Continuing to improve framework conditions for investment** by foreign-owned firms on the EU and the member state level, while at the same time avoiding a race-to-the bottom (e.g. unhealthy tax competition or lowering labour standards). The EU could, for example, consider a one-stop agency for foreign investors, which should be well connected with national investment agencies. On the national level, Germany could think about strengthening the role of Germany Trade and Invest (GTAI), especially in potential home countries.
3. **Working towards a multilateral approach for cross-border investment.** International investment governance is fragmented into bilateral investment treaties or investment chapters in trade agreements. This makes it difficult to deal with investment-related issues on the international level. From a longterm perspective, it would make sense to take a multilateral approach – ambitious as it may currently appear. The WTO and the G20 already have investment on their agendas and thus offer themselves as a platform for the EU and Germany to continue to work on this issue.

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