International trade, foreign direct investment and global value chains

2017

GERMANY

TRADE AND INVESTMENT STATISTICAL NOTE

International trade and foreign direct investment (FDI) are the main defining features and key drivers of global value chains (GVCs). However, despite their strong complementarities, the two flows are typically presented and treated separately in the statistical information system. Drawing on new and improved measures of trade and investment, this country note provides relevant statistical information from OECD databases on trade, investment, the activities of multinational enterprises (MNEs) and global value chains (TiVA). It sheds new light on the trade-investment nexus by highlighting the interrelationships between trade and FDI, their economic impact in the context of GVCs, and the role of MNEs as the main directors of these flows. The data are as of 1 May 2017. More information and country notes are available at www.oecd.org/investment/trade-investment-gvc.htm.

Almost one-third (32% in 2014) of economic activity (GDP) in Germany depends on foreign markets, the highest of the larger OECD members. Germany's outward investment (equivalent to 40% of GDP in 2015) was much larger than its inward investment (23% of GDP in 2015). Under a broader notion of international orientation that captures the impact on national income of exports and sales through foreign affiliates, shows that Germany's international orientation was equivalent to 32% of GDP in 2014, or the same as trade data alone suggest.

Looking at trade in value added as opposed to gross trade illustrates that the United States is a more important export destinations than China. On the import side, Russia is a more important source of imports than gross data alone would suggest, moving ahead of Spain and Austria, while the Netherlands slips behind the United Kingdom and Italy.

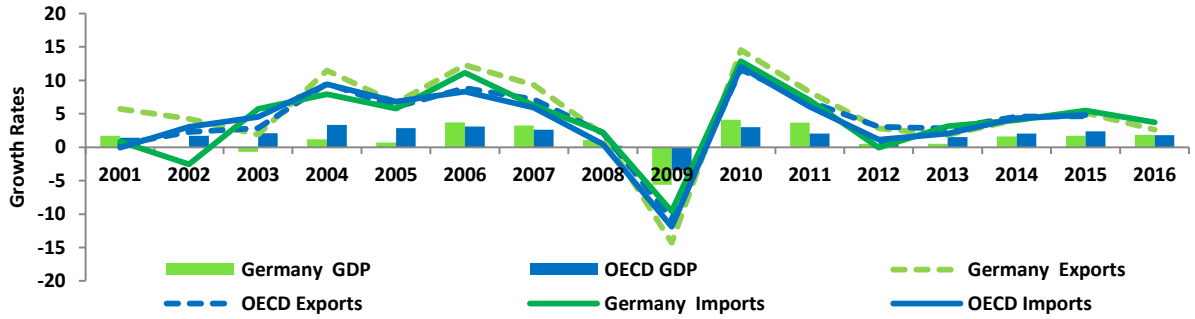
The top manufacturing exporting industries in Germany are motor vehicles (MTR), machinery and equipment (MEQ) and chemicals and chemical products (CHM). Reflecting the strength of the German motor industry and its location at the start of GVCs, 70% of value added is exported, but there is low value added by foreign-owned firms (10%) and a low import content of exports (30%). However for the chemicals industry, 80% of value added is exported and 40% of value added is by foreign-owned firms, illustrating the role foreign investment can play. Germany has a relatively low service content in its exports at 51%, correlated with a relatively low share of its inward investment going to the services sector.

Trade and investment in Germany

Growth in trade has recovered since the global and euro crises but slowed in 2016

Like many European economies, German trade contracted significantly at the height of the global crisis and again during the euro crisis. German trade growth was just above the OECD average in the pre-crisis years and was in broadly sync with OECD rates post crisis. In 2016, export growth fell to 3.6%.

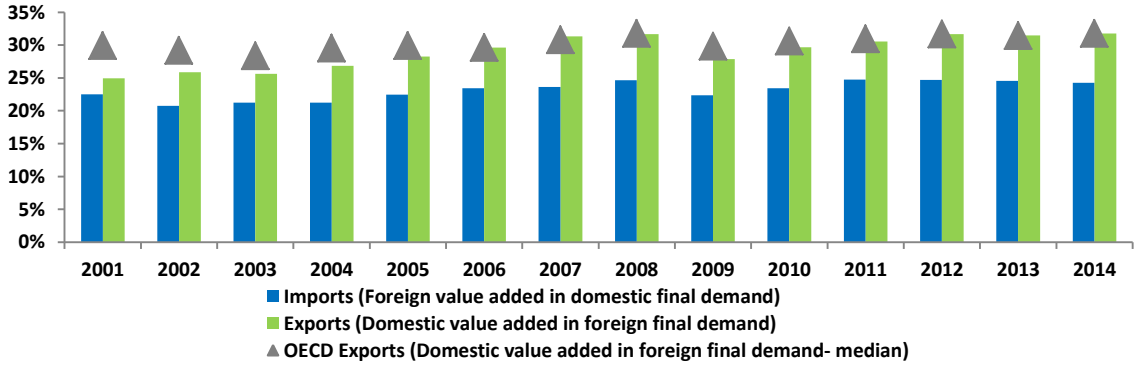
Figure 1. Growth rates of trade and GDP for the OECD and Germany, 2001-2016



Source: OECD SNA

Gross exports amounted to USD 1.6 trillion in 2016 (51% of GDP), and gross imports to USD 1.3 trillion (43% of GDP). Gross trade figures, however, overstate the 'real' contribution of trade to the economy. In value-added terms, exports contributed 32% of total GDP in 2014, the highest value recorded to date, and at the OECD median value (grey diamond). The contribution of direct and indirect imports to domestic final demand accounted for 24% in 2014 similar to the pre-crisis level.

Figure 2. Trade in value added terms, imports and exports, 2001-2014

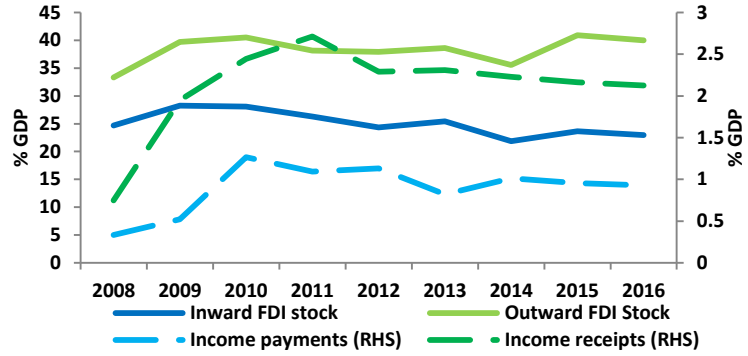


Source: OECD-WTO Trade in Value Added data

Investment is more outward than inward

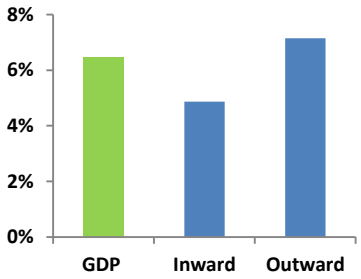
Relative to GDP, FDI stocks (equivalent to 40% of GDP in 2015) have become increasingly outward orientated since 2008 (Figure 3). In 2016, Germany's share of the OECD total inward FDI stock (4.9%) was below its share of GDP (6.5%), but its share in outward stock was 7.1% of the OECD total, higher than its share of GDP (Figure 4).

Figure 3. FDI stocks and income as a share of GDP



Source: OECD FDI Statistics (BMD4)

Figure 4. FDI stocks and GDP as a share of OECD total, 2015



Source: OECD FDI Statistics (BMD4)

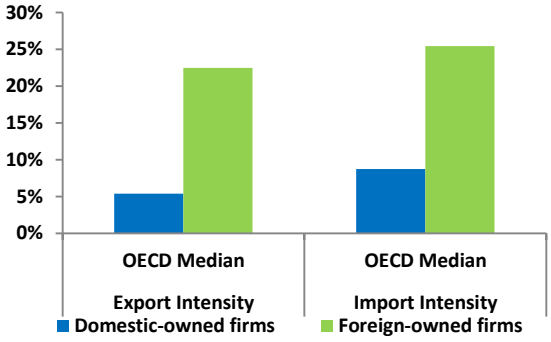
Foreign-owned firms directly sustained 12% of jobs in the private sector in 2013….

Foreign-owned enterprises employed 3.2 million in 2013, accounting for 12% of jobs in the private sector and a more substantial 24% of private sector value added produced in Germany, excluding the agriculture and finance sectors.

…and are typically more export intensive than domestically owned firms

On average, foreign-owned firms in the OECD are more export intensive (share of exports in turnover) than domestically-owned firms. The import intensity of foreign-owned firms (share of imports in purchases) is also significantly higher than domestic firms. Although data are not available for Germany, it is likely that similar firm behaviour would be observed, albeit to a lesser extent as it is likely that foreign firms pursue market seeking activities in the relatively large German market.

Figure 5. Export and import intensity of domestic and foreign-owned enterprises

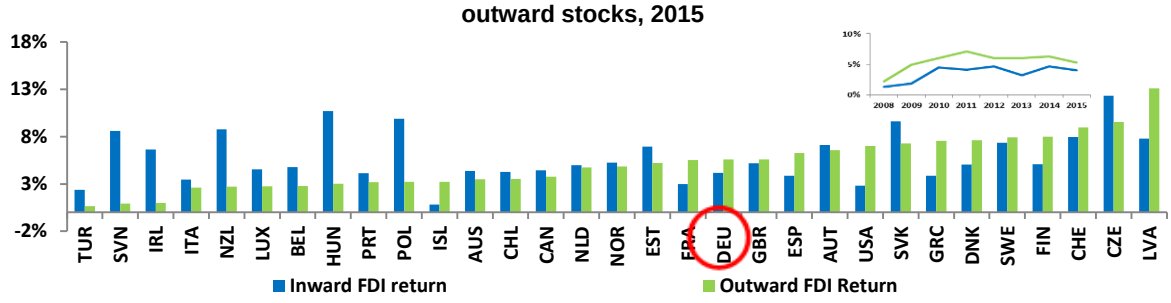


Source: OECD AMNE and Trade by Enterprise Characteristics (TEC) statistics (2011)

Domestic MNEs provide important channels to penetrate foreign markets via affiliates…

In 2015, Germany received USD 73 billion in income from its outward investment, equivalent to approximately 2% of GDP. Germany's rate of return at 5.6% (green bar) on its outward FDI is above the OECD median, but lower than its 2011 rate (see chart insert). On the other hand, the return to foreign investors in Germany was 4,2% in 2015, at the OECD median.

Figure 6. Return on investment, income receipts and payments as a share of inward and outward stocks, 2015

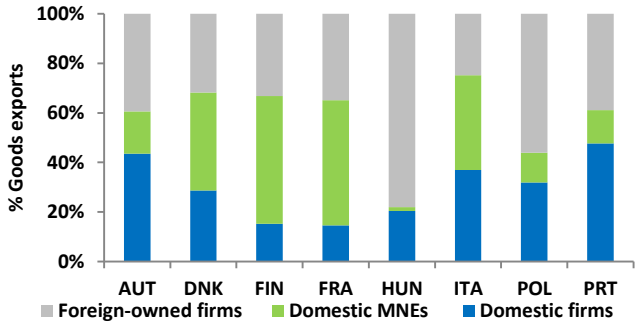


Source: OECD FDI Statistics (BMD4)

…and via exports

Looking across a selection of European economies, MNEs play a significant role in GVC integration. In some countries it is through the activity of MNE parents, while for other it is foreign-owned firms. In each country with available data, at least half of all goods exports are conducted by MNEs.

Figure 7. Goods Exports by firm type, the role of MNEs

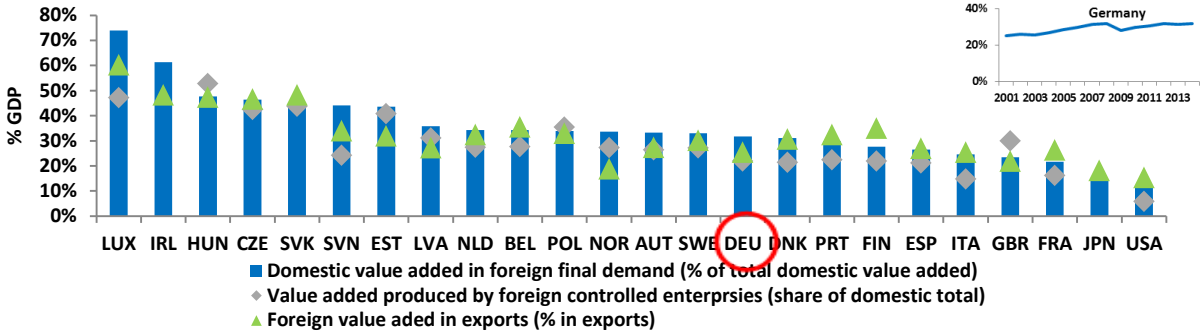


Source: OECD TEC statistics (2011)

Germany's export orientation is high relative to many similar sized economies

Exports (in value added terms) contribute around 32% of German GDP, this is relatively low compared to other OECD economies, but high relative to large countries such as Italy, France and the United States, which may in part reflect relatively higher levels of inward investment contributing to Germany's relatively high GVC integration as measured by the import content of exports. German export orientation has increased since the crisis (see chart insert).

Figure 8. Export orientation, foreign affiliates value added and import content of exports, 2014

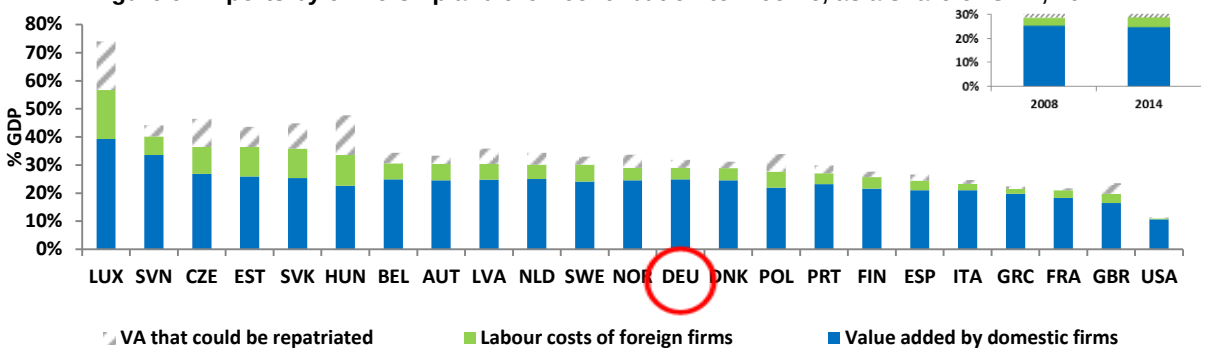


Source: OECD-WTO Trade in Value Added Data and OECD AMNE statistics

Not all of the domestic value added content of exports sticks in the economy…

Gross export figures overstate the real economic impacts of trade to the exporting economy, but TiVA estimates can also overstate these impacts as the profits earned by foreign-owned firms through exports are repatriated if they are not reinvested. Figure 9 illustrates the importance of these flows across countries by showing the value added in exports of domestically-owned firms (blue bar), wages paid by foreign-owned firms (green bar), and profits of foreign-owned firms (grey bar), which in practice can be repatriated. Excluding these profits German exports contain 29% of value-added that remains in the economy. So, 9% of Germany's exported domestic value added represents profits by foreign-owned firms while another 13% represents the wages paid by these firms. The share of value added that remains in the economy has remained stable since 2008 (insert chart).

Figure 9. Exports by ownership and their contribution to income, as a share of GDP, 2014

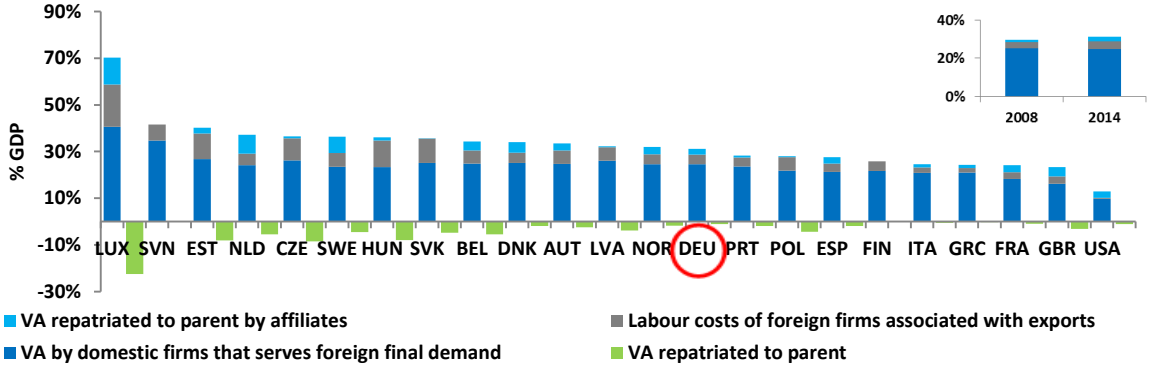


Source: OECD-WTO Trade in Value Added Data and OECD AMNE statistics

Taking a broader view by including the income of foreign affiliates can provide a more complete picture of the international orientation of the German economy

Firms serve foreign markets by exporting or by selling through their foreign affiliates. Figure 10 takes a broader view of an economy's international orientation by taking account of both trade and investment. The chart begins with the domestic value added in exports that remains in the economy – exports of value added by domestic firms (blue bar) and wages paid by foreign-owned firms associated with exporting (grey bar) – and adds to it the profits that domestic MNEs receive from the activities of their foreign affiliates as measured by FDI income receipts (light blue bar). The income payments made to foreign parents are presented for information purposes (green bar). For Germany, this broader measure (32%) is approximately the same as the export orientation measure from TiVA (32%) because Germany is both a substantial investor and recipient of FDI. Germany remains just below the OECD median using this measure, but above other large countries. This measure has increased since 2008, due to increases in both exports of value added and FDI income receipts (see chart insert).

Figure 10. Supplying markets through trade and investment: a broader perspective, 2014

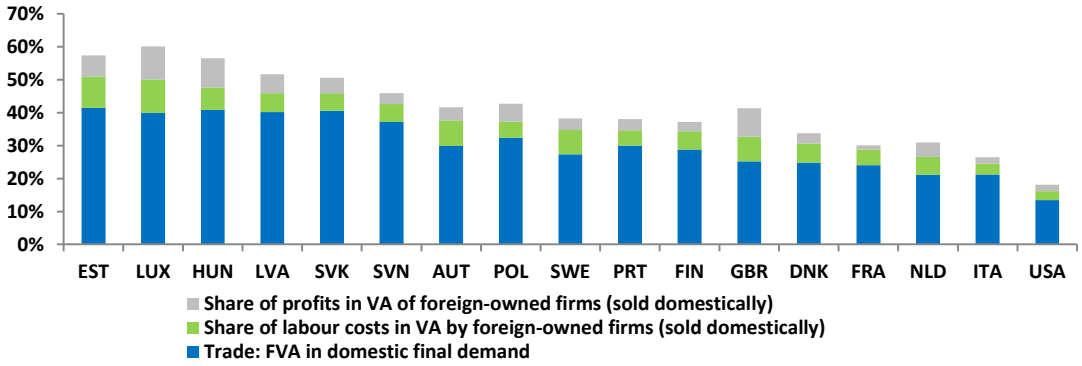


Source: OECD-WTO Trade in Value Added Data, OECD AMNE and OECD FDI (BMD4) statistics

This broader perspective can also shed light on how foreign firms serve the domestic market

Foreign producers supply products and services for final consumption through trade (foreign value added in final demand), and sales by foreign affiliates (non-export). The value added by foreign affiliates can either stay in the economy in the form of wages, or some of this value added can be repatriated to parents, these shares vary across OECD countries. Due to data availability, this cannot be calculated for Germany.

Figure 11. How foreign firms serve your market: a value added perspective, 2014



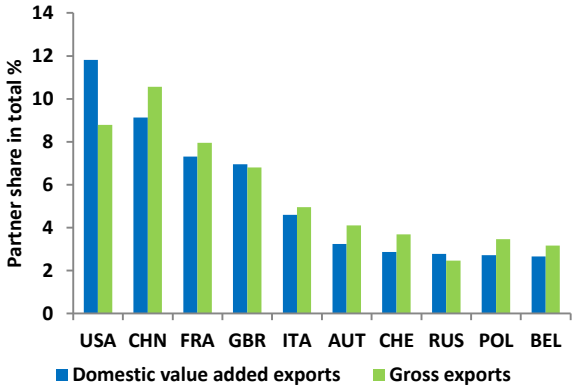
Source: OECD-WTO Trade in Value Added Data, OECD AMNE and OECD TEC statistics

Trade and investment by partner country

Trade measured from a value added perspective better reflects the bilateral relationships

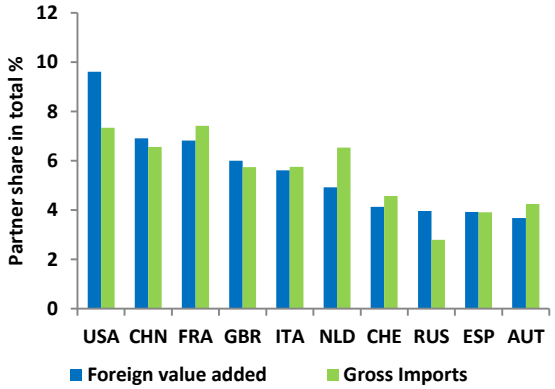
Gross bilateral trade figures can disguise the true nature of trade interdependencies, particularly between final consumers in one country and producers at upstream parts of the value chain. This is evident for the bilateral relationship with China, which is passed by the United States once trade in value added data are used. On the import side, Russia is a more important source of imports than gross data alone would suggest, moving ahead of Spain and Austria, while the Netherlands slips behind the United Kingdom and Italy.

Figure 12. Exports: gross and value added terms, by partner country, 2014



Source: OECD-WTO TiVA Data

Figure 13. Imports: gross and value added terms, by partner country, 2014



Source: OECD-WTO TiVA Data

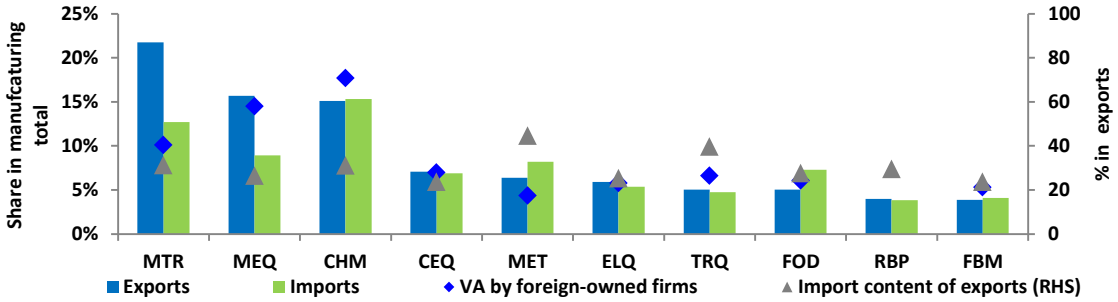
Figure 14, supplying the domestic market via trade and investment, cannot be calculated for Germany due to data availability on trade by enterprise characteristics.

Trade and investment by industry

Outward investment helps shape Germany's GVC integration

The top manufacturing exporting industries in Germany are motor vehicles (MTR), machinery and equipment (MEQ) and chemicals and chemical products (CHM). The import content of exports is relatively similar across these industries–illustrating the role that importing plays in supporting exports and indicating the degree of GVC integration in these industries. The role of foreign-owned firms varies across German industry, in part reflecting Germany's own comparative advantages and specialisation of its MNEs.

Figure 15. Top exporting manufacturing industries in Germany, 2014

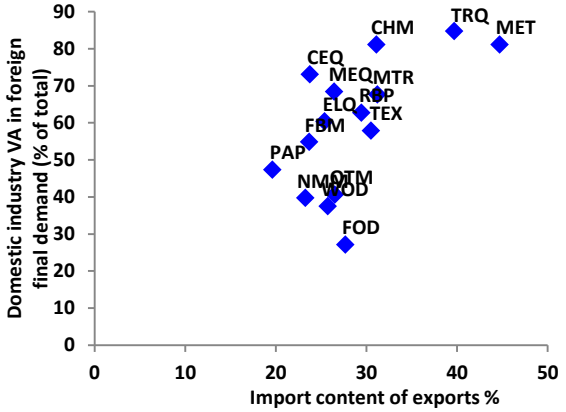


Source: OECD-WTO Trade in Value Added Data and OECD AMNE statistics. See page 10 for a description of industry codes.

Exports and imports go hand in hand…

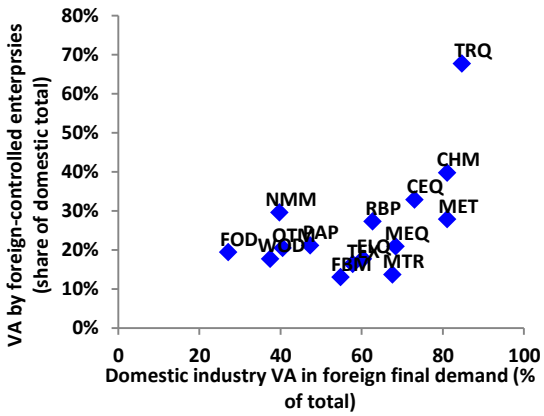
Across most industries there is a correlation between higher import content of exports and a higher share of their domestic value-added being exported (export orientation) illustrating the strong complementarity of exports and imports (Figure 16).

Figure 16. Import content of exports and export orientation, 2014



Source: OECD-WTO TiVA Data and OECD AMNE statistics

Figure 17. Foreign-owned firms and export orientation, 2014



Source: OECD-WTO TiVA Data and OECD AMNE statistics

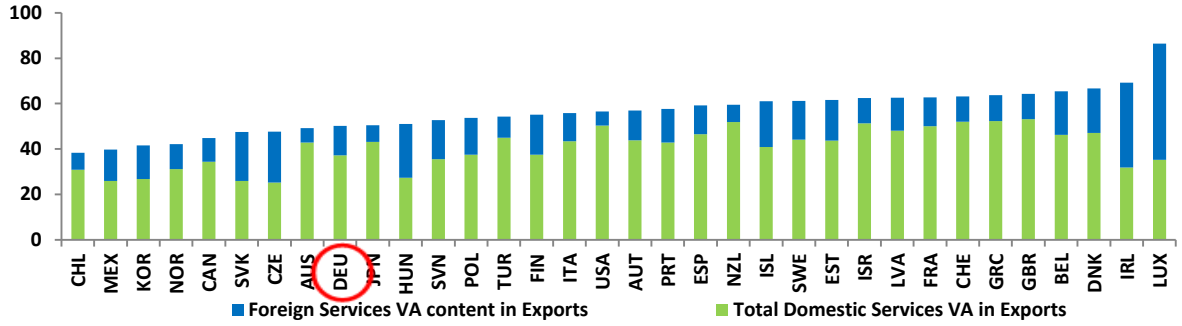
...and investment and export orientation can also go hand in hand

At the same time, strong complementarities can exist between inward investment and export orientation (Figure 17). The relationship between inward investment and export orientation is particularly strong for the transport equipment industry (TRQ), whereas for the basic metals industry (MET) there is high export orientation but low value added by foreign-owned firms, illustrating the strength of domestic industry. Overall, the relationship is less strong in Germany as evident in other economies, reflecting the strength of domestic industry. Figure 18, goods trade by enterprise ownership and industry, cannot be produced for Germany due to data availability (Trade by enterprise characteristics data).

Service industries play an important role in the export orientation of an economy…

Typically, services account for a large share of the value added in the economy but conventional gross trade statistics understate this as they cannot reveal the contribution that the upstream services industry plays in the production of goods exports. Accounting for this contribution, the services content of Germany's total exports of goods and services was 51% in 2014 (Figure 19), below the OECD median of 57%. Considering the services content of manufactured goods alone, over one third of German manufacturing exports reflects services value added, slightly above the OECD median value of 36%.

Figure 19. Services content of gross exports for OECD countries, 2014

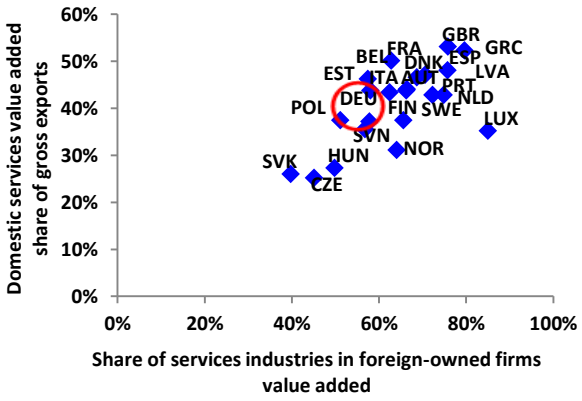


Source: OECD-WTO TiVA Data

…and so inward FDI in the services sector can be an important channel for export success

Greater foreign investment in the services sector is associated with higher services content in exports. For Germany, the share of investment in services is at the lower end for OECD economies, correlated with the lower services content of exports.

Figure 20. Share of services industries in foreign-owned firms' value added and domestic services value added share of gross exports, OECD countries, 2014



Source: OECD-WTO TiVA Data and OECD AMNE statistics

Links and data sources

Guide to the trade and investment statistical notes
www.oecd.org/investment/Guide-trade-investment-statistical-country-notes.pdf

Activity of Multinational Enterprises - AMNE www.oecd.org/sti/ind/amne.htm

OECD Benchmark Definition of Foreign Direct Investment - 4th Edition (BMD4)
(see Chapter 8 for information on the intersection of AMNE and FDI data)
www.oecd.org/investment/fdibenchmarkdefinition.htm

Foreign Direct Investment (FDI) Statistics www.oecd.org/investment/statistics.htm

Trade by Enterprise Characteristics - TEC
www.oecd.org/std/its/trade-by-enterprise-characteristics.htm

Trade in Value Added - TiVA
www.oecd.org/sti/ind/measuringtradeinvalue-addedanoecd-wtojointinitiative.htm

Annex: Further data requirements

To make this note as informative as those of other OECD members, more detailed information about German trade and investment are needed.

Primarily, data on trade by enterprise characteristics would benefit the analysis. Although some TEC data is reported, it represents only a portion of trade in goods (approximately 50% of the trade value but only 10% of the enterprises) to calculate export intensity using this small likely unrepresentative sample could led to misleading conclusions. Trade by ownership data are used in Figures 5 and 11 to create the export intensity of foreign-owned firms. With the export intensity of foreign-owned firms, an additional Figure (14) on bilateral partners combining trade and investment (sales by foreign affiliates) can be generated which provides a more complete picture of a countries main partners.

Secondly, TEC information on trade by foreign-owned firms, domestic non-MNEs and domestic MNEs is particularly important for Germany, given the scale of domestic industry and that Germany can often be located at the start of GVCs. With this information Figure 18 could be produced which looks at trade by firm ownership and industry.

Table of industry codes

Industry Type	Ind Code	Industry Description
Primary Industries	**AGR**	Agriculture, hunting, forestry and fishing
	MIN	Mining and quarrying
Manufacturing	**FOD**	Food products, beverages and tobacco
	TEX	Textiles, textile products, leather and footwear
	WOD	Wood and products of wood and cork
	PAP	Pulp, paper, paper products, printing and publishing
	PET	Coke, refined petroleum products and nuclear fuel
	CHM	Chemicals and chemical products
	RBP	Rubber and plastics products
	NMM	Other non-metallic mineral products
	MET	Basic metals
	FBM	Fabricated metal products except machinery and equipment
	MEQ	Machinery and equipment n.e.c
	CEQ	Computer, electronic and optical products
	ELQ	Electrical machinery and apparatus n.e.c
	MTR	Motor vehicles, trailers and semi-trailers
	TRQ	Other transport equipment
	OTM	Manufacturing n.e.c; recycling
Services	**EGW**	Electricity, gas and water supply
	CON	Construction
	WRT	Wholesale and retail trade; repairs
	HTR	Hotels and restaurants
	TRN	Transport and storage
	PTL	Post and telecommunications
	FIN	Finance and insurance
	REA	Real estate activities
	RMQ	Renting of machinery and equipment
	ITS	Computer and related activities
	BZS	Research and development & Other Business Activities
	GOV	Public admin. and defence; compulsory social security
	EDU	Education
	HTH	Health and social work
	OTS	Other community, social and personal services
	PVH	Private households with employed persons