International trade, foreign direct investment and global value chains

OECD

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LUXEMBOURG

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.

Luxembourg is an open and internationally engaged economy, reflected in high volumes of both gross and value added trade and investment. Almost three-quarters (74% in 2014) of economic activity (GDP) in Luxembourg depends on foreign markets, the highest in the OECD. Luxembourg's inward investment (equivalent to 391% of GDP in 2015) was higher than outward investment (355%). Under a broader notion of international orientation that captures the impact on national income of exports and sales through foreign affiliates, Luxembourg's international orientation was equivalent to 70% of GDP in 2014.

Considering both trade and investment through this broader perspective can also shed new light on Luxembourg's most important partner countries. For example, while most partner countries supply Luxembourgish consumers through a combination of trade and sales by foreign affiliates, Spanish, Italian, and Chinese firms do so almost solely through trade. Furthermore, considering both trade and investment the United Kingdom is a more important partner than Belgium, which is not evident when looking at trade data alone, and Switzerland moves ahead of China and Sweden.

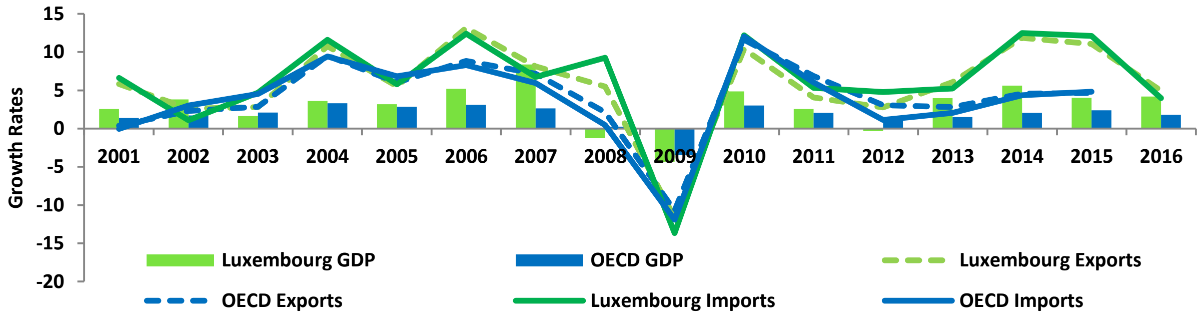
The top manufacturing exporting industries in Luxembourg are basic metals (MET), rubber and plastic products (RBP) and food and beverages (FOD). In each of these industries, there is high export orientation and evidence of GVC integration as measured through the import content of exports. Luxembourg has the highest services content in its exports at 86%, over half represents foreign value added content.

Trade and Investment in Luxembourg

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

Like many European economies, Luxembourgish trade contracted significantly at the height of the global crisis and again during the euro crisis. Luxembourgish trade growth was mainly above the OECD average in the pre-crisis years and this continued after the crises. However, in 2016, export growth fell to 5%, from 11% in 2015.

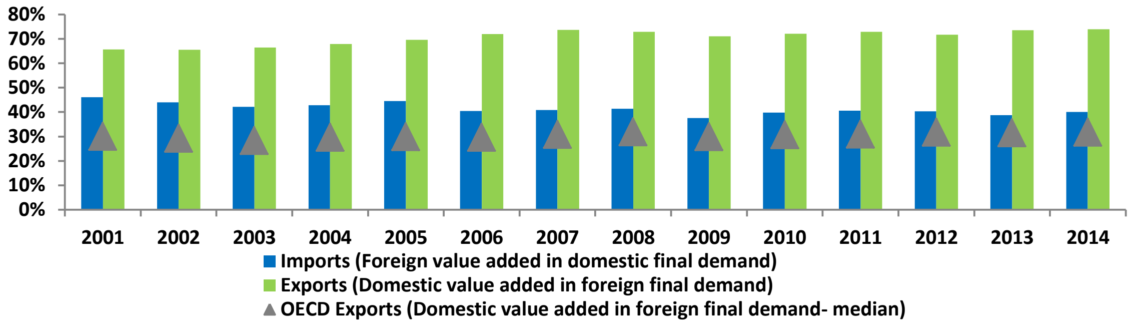
Figure 1. Growth rates of Trade and GDP for the OECD and Luxembourg, 2001-2016



Source: OECD SNA

Gross exports amounted to USD 136 billion in 2016 (251% of GDP) and gross imports to USD 115 billion (211% of GDP). Gross trade figures, however, overstate the 'real' contribution of trade to the economy. In value-added terms, exports contributed 74% of total GDP in 2014, the highest value recorded and significantly above the OECD median (grey diamond). The contribution of direct and indirect imports to domestic final demand measured 40% in 2014.

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

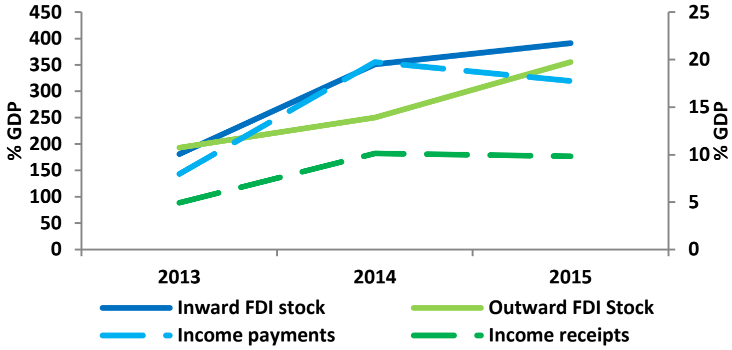


Source: OECD-WTO Trade in Value Added Data

Investment is more inward than outward orientated

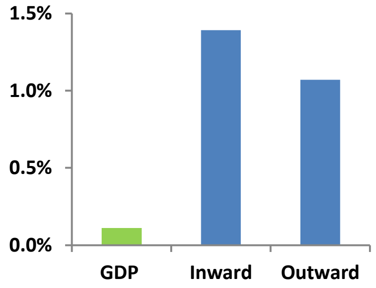
Luxembourg is an extremely open economy from an investment perspective with FDI stocks equivalent to multiples of GDP. In 2015, FDI was more inward (equivalent to 391% of GDP) than outward (355%) orientated (Figure 3). In 2015, Luxembourg's share of the OECD total inward FDI stock (1.4%) dwarfed the share of GDP (0.1%), and its share in outward stock was 1.1% of the OECD total, also much larger 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

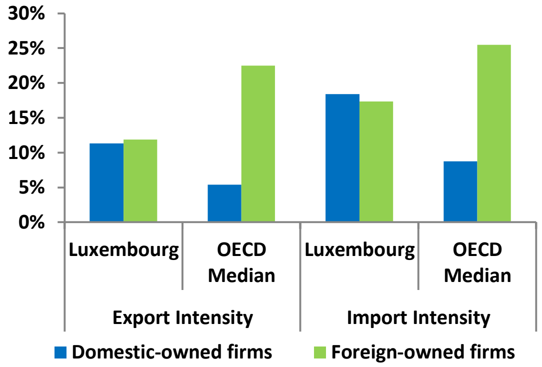


Source: OECD FDI Statistics (BMD4)

Foreign-owned firms directly sustained 39% of jobs in the private sector in 2013…

Reflecting the large inward investment compared to other OECD economies, foreign-owned enterprises accounted for 39% of jobs in the private sector in 2013 and 45% of private sector value added produced in Luxembourg (excluding the agriculture and finance sectors), among the highest values in the OECD.

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



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

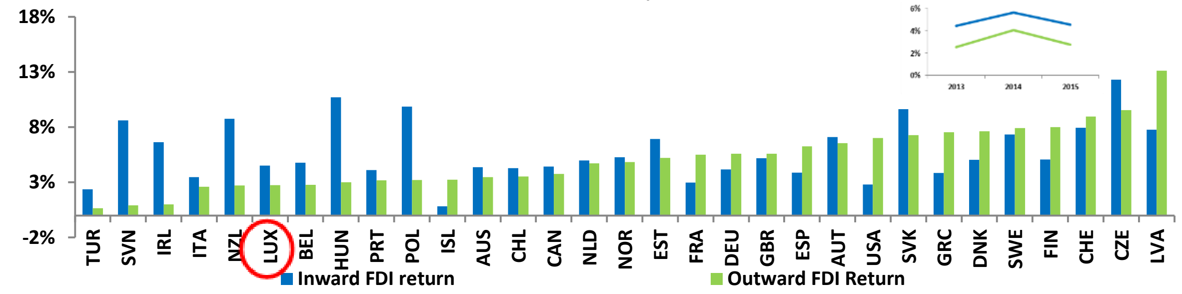
…and are more export intensive than domestically owned firms

On average, foreign-owned firms in Luxembourg are slightly more export intensive (share of exports in turnover) than domestically owned firms, and their export intensity is below the OECD median. The import intensity of foreign-owned firms (share of imports in purchases) is slightly lower for foreign-owned than domestic firms. (These trade intensities are for goods trade only.)

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

In 2015, Luxembourg received USD 5 billion in income from its outward investment, equivalent to approximately 17% of GDP. Luxembourg's rate of return at 2.8% (green bar) on its outward FDI is below the OECD median, and below the rate in 2014 (see chart insert). On the other side, the return to foreign investors in Luxembourg was 4.5% in 2015, at the median of OECD countries.

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

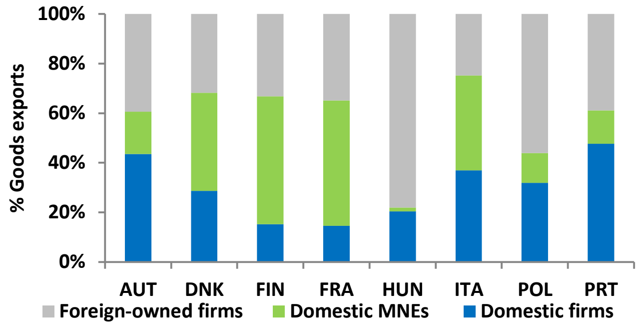


Source: OECD FDI Statistics (BMD4)

…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

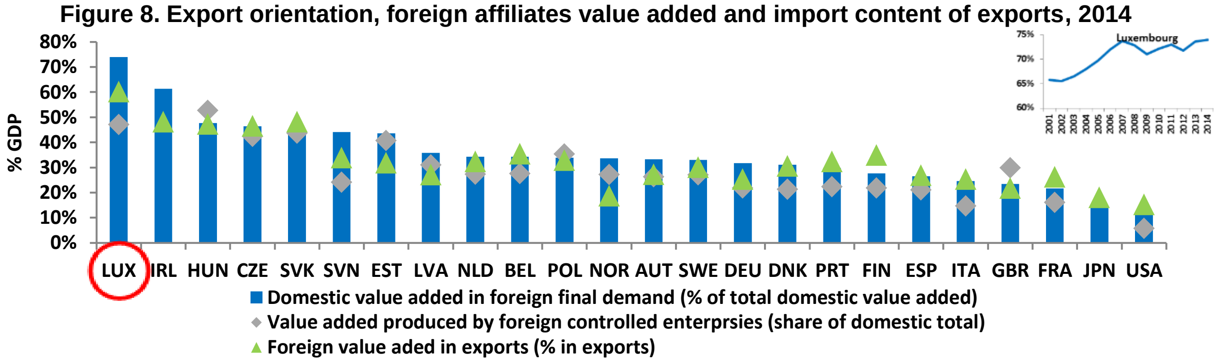


Source: OECD TEC statistics (2011)

Luxembourg's export orientation is the highest in the OECD

Exports (in value added terms) contribute around 74% of Luxembourgish GDP, this is the highest of OECD countries, but comparable with Ireland and Hungary. This may in part reflect high levels of inward investment contributing to their high GVC integration as measured by the import content of exports (green triangle). Export orientation has recovered since the crisis (see insert chart).

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



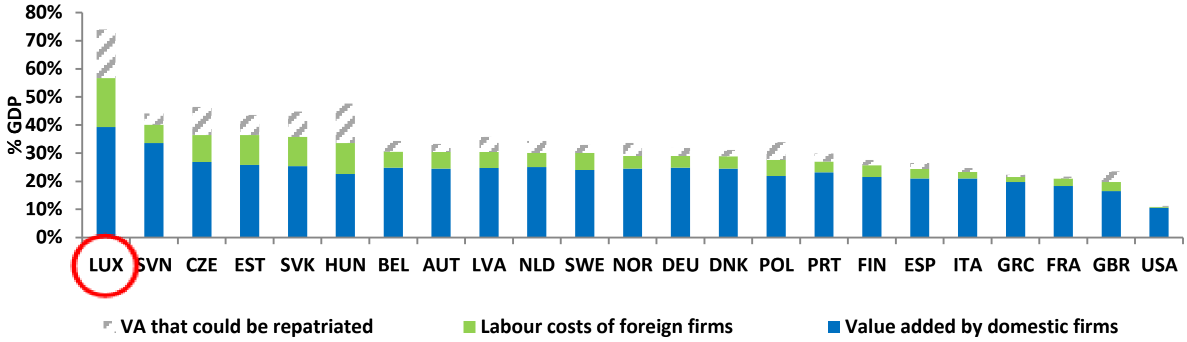
Source: OECD-WTO Trade in Value Added Data and OECD AMNE statistics

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 Luxembourg exports contain 57% of value-added that remains in the economy. So, 23% of Luxembourg's exported domestic value added represents profits, and 24% represents wages paid by foreign-owned firms, among the highest in the OECD and reflecting high levels of inward investment.

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

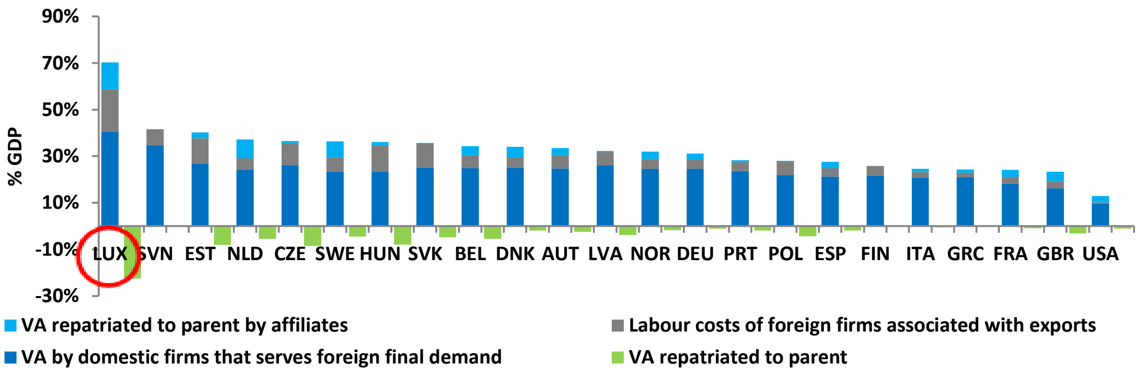


Source: OECD-WTO Trade in Value Added Data and OECD AMNE statistics.

Taking a broader view by including the income of foreign affiliates can provide a more complete picture of the international orientation of the Luxembourgish 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 Luxembourg this broader measure (70%) is lower than the export orientation measure from TiVA (74%) because Luxembourg was a net recipient of inward FDI in 2014. However, Luxembourg remains at the top end of OECD countries using this measure.

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



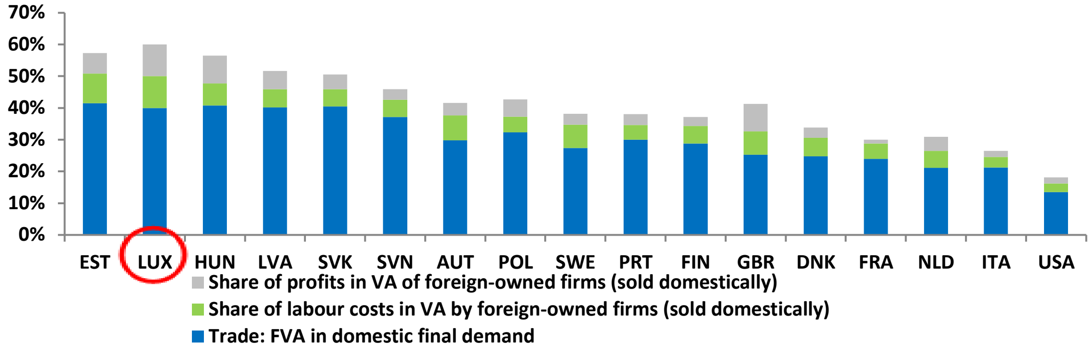
Source: OECD-WTO Trade in Value Added Data, OECD AMNE and OECD FDI (BMD4) statistics

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

Foreign producers supplied products and services for Luxembourgish final consumption equivalent to 60% of GDP in 2014; the majority is through trade (foreign value added in Luxembourgish final demand equals approximately 40% of GDP), but value added generated by foreign affiliates in Luxembourg for domestic (non-export) sales (Figure 11) accounts for almost one-fifth (20%) of GDP.

Some of this value added can be repatriated to parents; this share is similar in Luxembourg to other countries with substantial inward investment (grey bar).

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



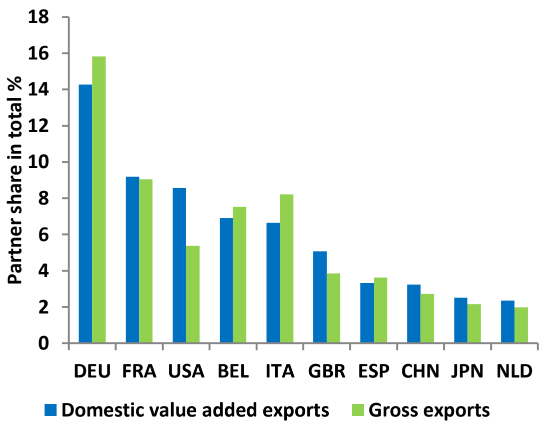
Source: OECD-WTO Trade in Value Added Data, OECD AMNE and OECD TEC statistics

Trade and investment by partner country

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

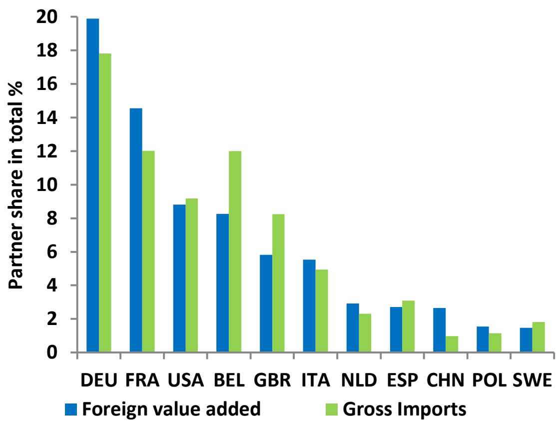
Gross bilateral trade figures can disguise the true nature of trade interdependencies, particularly between final consumers in one country and producers at upstream parts of the value chain. This is especially evident for the bilateral export relationship with the United States; using trade measured on a value added basis, the United States jumps ahead of Italy and Belgium. While on the import side, value added data illustrate that Belgium and the United Kingdom are relatively less important than gross trade figures suggest.

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



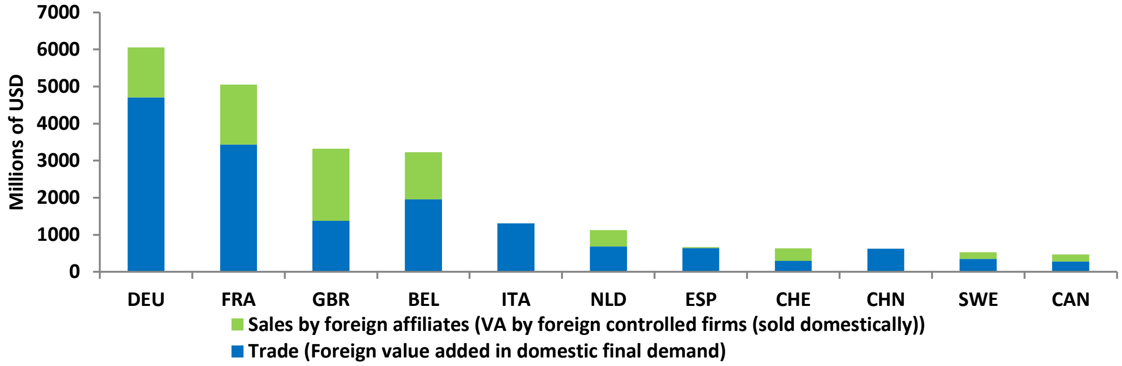
Source: OECD-WTO TiVA Data

…and interdependencies are further revealed when looking at the broader notion of 'trade'.

Foreign firms can serve an economy though trade or sales by foreign affiliates; bringing the trade and investment perspectives together can shed a different light on who a country's most important partners are (Figure 14). Substantial variation exists across countries in how they supply the Luxembourgish market.

For example, while most partner countries supply Luxembourgish consumers through a combination of trade and sales by foreign affiliates, Spanish firms do so almost solely through trade. Furthermore, considering both trade and investment the United Kingdom is a more important partner than Belgium, this is not evident when looking at trade alone, and Switzerland jumps ahead of China and Sweden.

Figure 14. Supplying the Luxembourgish market via trade and investment: Top 10 partner countries, 2014

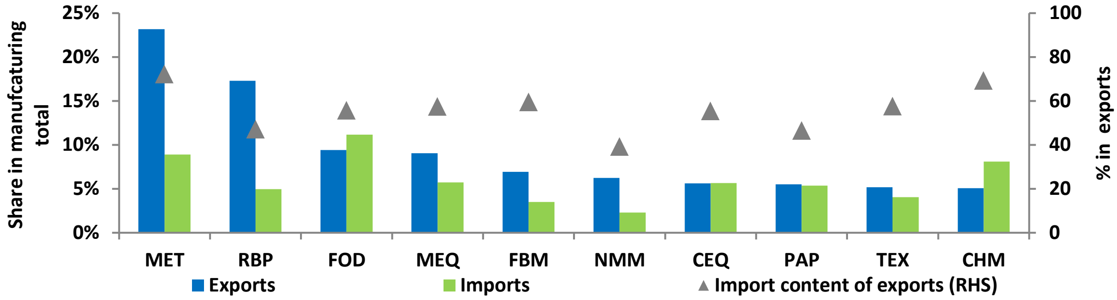


Source: OECD-WTO TiVA data and OECD AMNE statistics
Note: Data on foreign affiliate presence is not available for Italy or China.

Trade and investment by industry

The top manufacturing exporting industries in Luxembourg are basic metals (RBP), rubber and plastic products (RBP) and food and beverages (FOD). The import content of exports is relatively high across these industries–illustrating the role that importing plays in supporting exports and indicating a high degree of GVC integration in these industries.

Figure 15. Top exporting manufacturing industries in Luxembourg, 2014

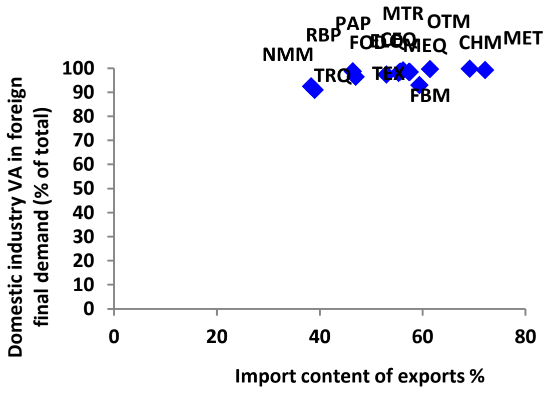


Source: OECD-WTO Trade in Value Added Data and OECD AMNE statistics. See page 10 for a description of industry codes

Exports and imports go hand in hand…

Across most industries, there is a strong 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). For Luxembourg, this is less obvious graphically given the high export orientation of most industries.

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



Source: OECD-WTO TiVA data and OECD AMNE statistics

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

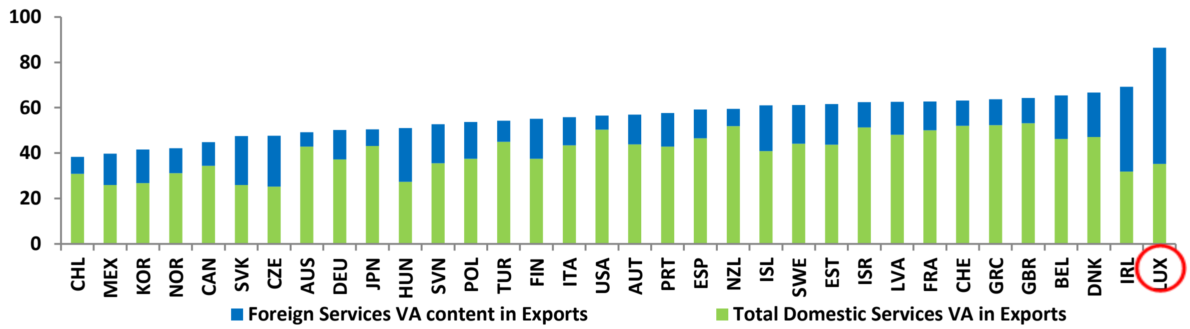
At the same time, strong complementarities can exist between inward investment and import content of exports (Figure 17). Due to data confidentiality issues, this graph cannot be produced for Luxembourg, but given the high inward investment and export orientation of Luxembourgish industry it is likely a positive relationship would be observed.

Figure 18, gross trade in goods by enterprise ownership, and industry cannot be calculated for Luxembourg due to data availability.

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 Luxembourg’s total exports of goods and services was 86% in 2014 (Figure 19), the highest in the OECD. Considering the services content of manufactured goods alone, 43% of manufacturing exports reflects services value added, above the OECD average of 36%. Of the total services value added embodied in Luxembourg's exports, 57% reflected foreign content, more than twice the OECD average of 22%.

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

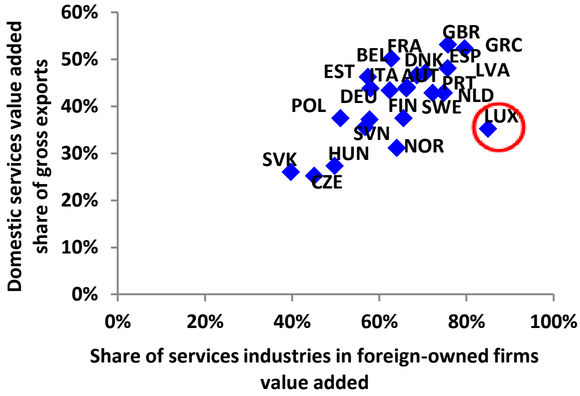


Source: OECD-WTO TiVA Data

…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 Luxembourg, the share of domestic services content in exports was relatively low among OECD economies despite investment in services being at the higher end for OECD economies.

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 countries, more detailed data about Luxembourgish trade and investment are needed.

Data at the industry level on value added by foreign-owned firms is available for only a few industries which limits the analysis for Figures 15 and 17.

Secondly more detailed data on trade by enterprise characteristics are not available at the industry level or the aggregate level for the split between domestic MNEs and domestic non-MNEs; this limits analysis for Figures 7 and 18.

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