

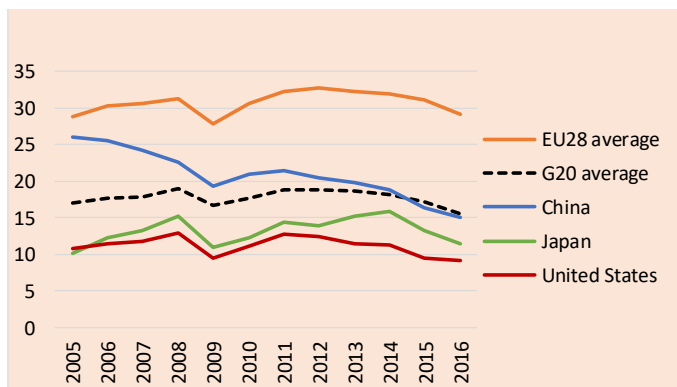
## The changing nature of international production: Insights from Trade in Value Added and related indicators

Since the mid-1990s, the inter-connectedness of the global economy has accelerated, through ever more complex trade relations and global supply chains that create value throughout the production and distribution process.

The 2018 update of OECD's *Trade in Value Added* (TiVA) database provides a new suite of indicators to better understand these relationships. The update covers 64 economies, including all OECD, European Union (EU) and G20 countries and a significant number of East and Southeast Asian economies, for the years 2005-15, with preliminary projections for 2016. It covers 36 economic activities and related aggregates and is based on the latest System of National Accounts (SNA08) statistics and industrial classification (ISIC Rev. 4), allowing for easier comparison with other databases. The new structure of the underlying *Inter-Country Input-Output* (ICIO) database has the potential to address a wide set of policy-relevant questions and to shed light on the changing nature of global value chains (GVCs).

### There are hints of a slowdown in the “global fragmentation of production” ...

Figure 1. Foreign value-added share of gross exports



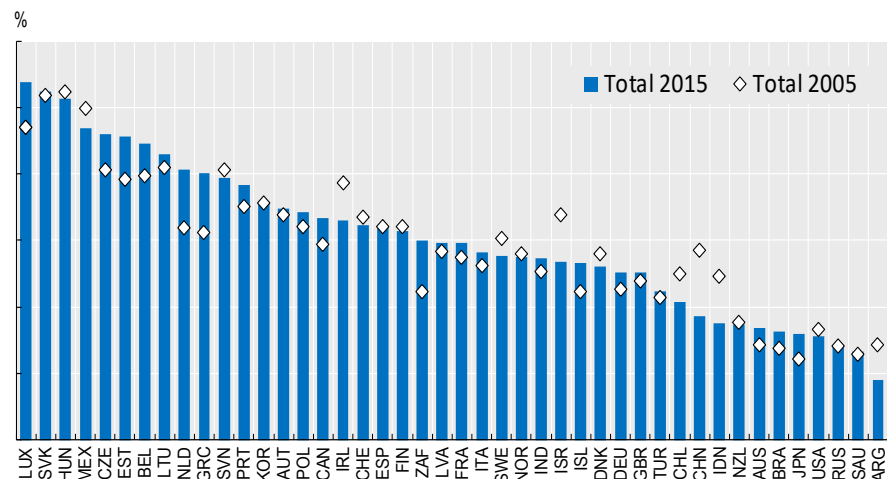
While the globalisation of production increased unabated in many OECD countries and emerging economies from the end of the 20th century, there are signs that this trend has slowed in recent years. For example, since around 2011, the foreign value-added content of exports (“backward linkages”) has gradually fallen for many major economies. This decline has been most pronounced in China, and to a lesser extent the United States (Figure 1).

Increased domestic sourcing of intermediate inputs plays a role although it is important to note that fluctuations in commodity prices (e.g. crude oil) can also have an effect on these trends.

### ... although trends vary across countries, regions and sectors

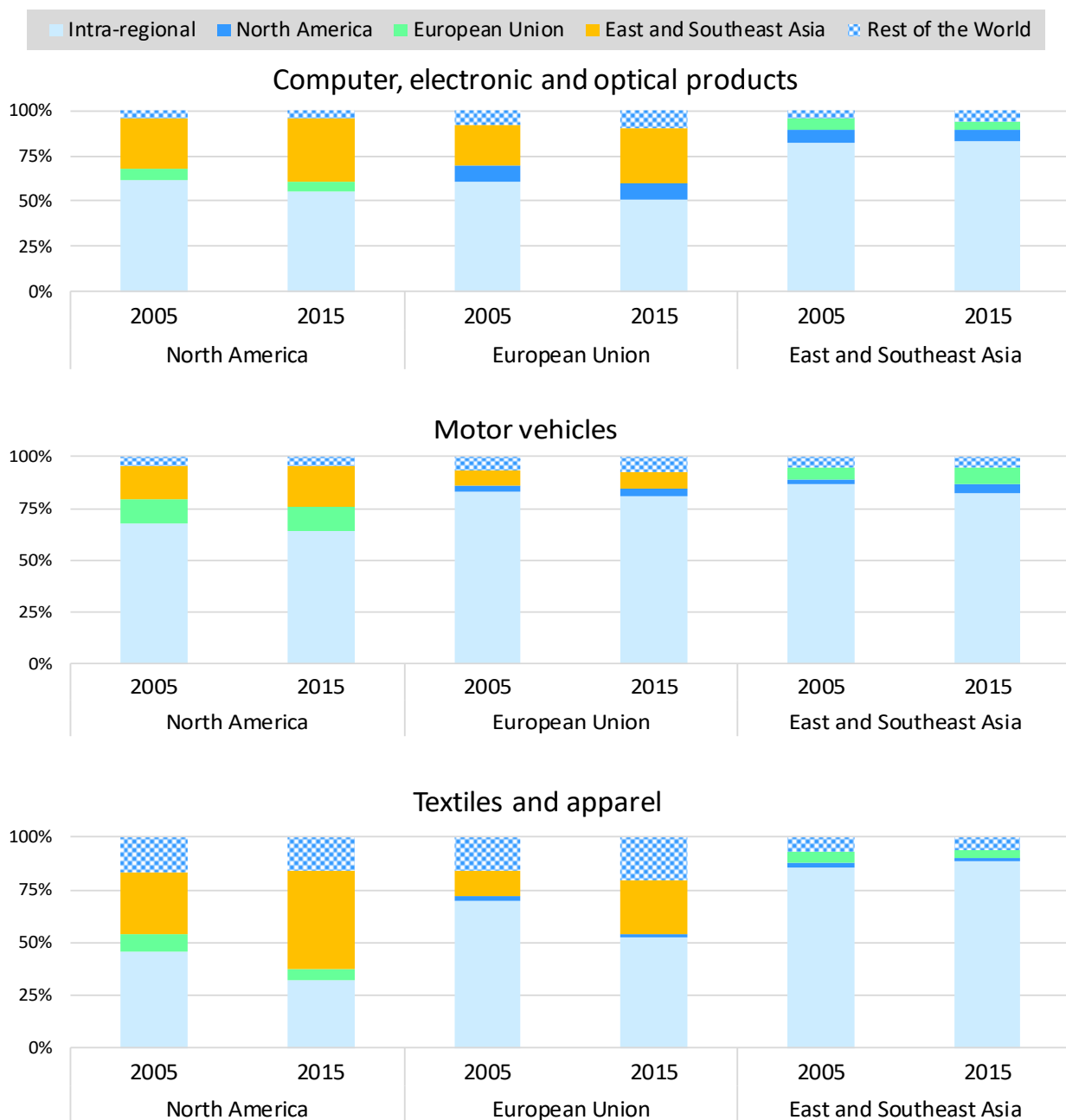
Figure 2. Foreign value-added share of manufactured exports

Some OECD and G20 countries, notably Argentina, China, Indonesia and Israel, experienced a significant fall in the foreign value-added content of manufactured exports between 2005 and 2015 (Figure 2). However, many others experienced an increase notably Greece, Japan, the Netherlands and South Africa.



Looking at three of the most “globally integrated” sectors (manufacture of *Computers, electronics and optical products*; *Motor vehicles*; and *Textiles and apparel*) reveals that there is significant variation in the extent to which a slowdown in fragmentation is seen at the regional level (Figure 3). For instance, East and Southeast Asia has seen a small increase in intra-regional sourcing of value added, with manufacture of both *Computers, electronics and optical products* and *Textiles and apparel* maintaining high intra-regional value added content in final demand (in excess of 90%). Conversely, in North America and the European Union there has been a marked decrease in intra-regional sourcing, particularly for *Textiles and apparel*. The *Motor vehicles* sector in the European Union has retained the same level of domestic sourcing from 2005. Other sectors which are highly integrated, such as chemicals, have shown little change over the 2005-15 period.

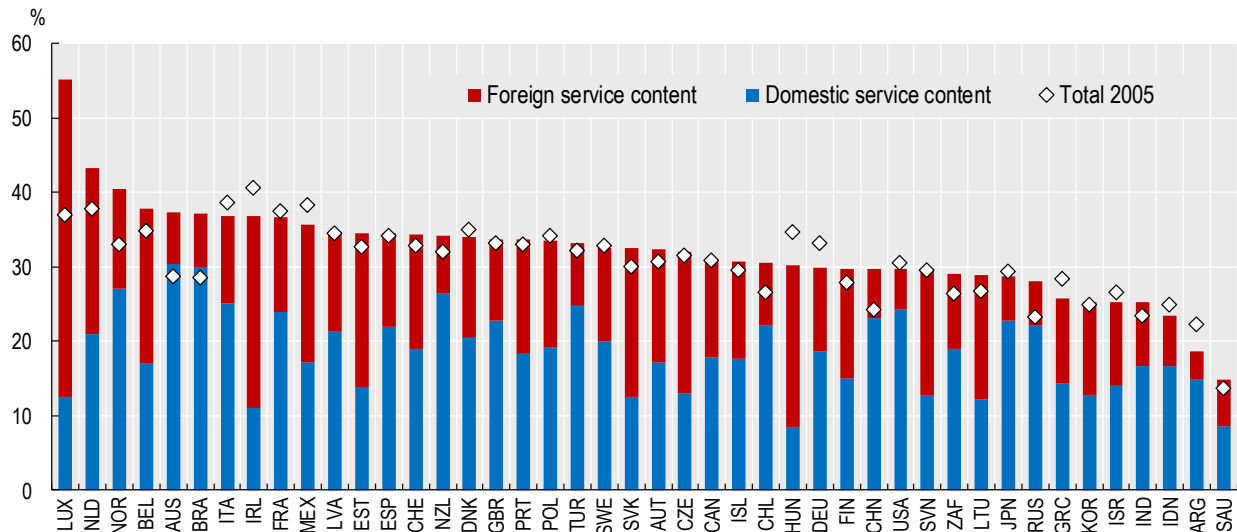
**Figure 3.** Regional demand for selected manufactured goods, 2005 and 2015  
By region of value-added origin



## Services play an important role as a complement to manufacturing exports...

The role of services as an integral element of GVCs has become increasingly evident. As early as the 1980s, analysts noted that part of the decline in the share of manufacturing value added, employment, or output in the economy could be attributed to the outsourcing of service activities that were once considered part of the manufacturing sector itself. Figure 4 shows that services value added accounts for between 25% and 40% of the content of manufacturing exports in most OECD and G20 countries. For a number of countries the foreign share of services value added is greater than the domestic share – an indicator of the role that services play in the integration of the manufacturing sector in GVCs.

**Figure 4. Services value-added embodied in manufacturing exports, 2015**

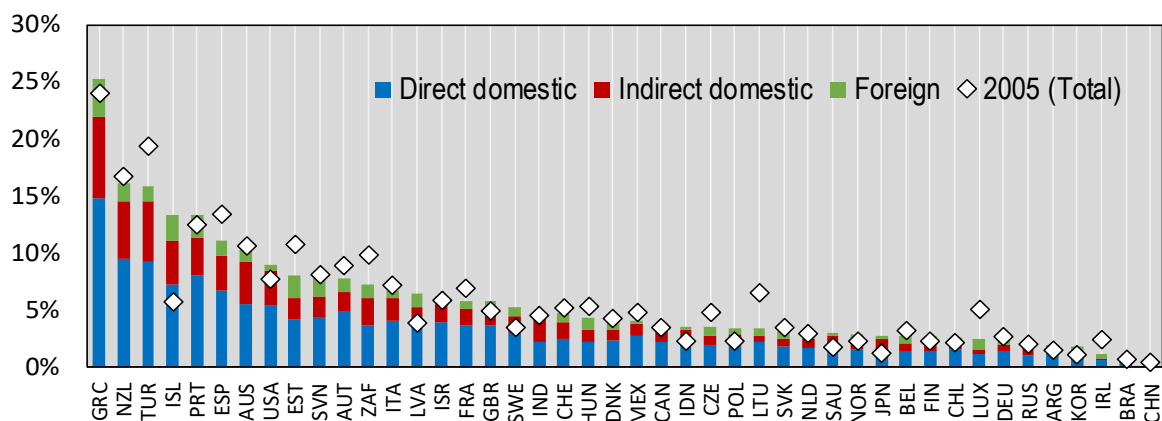


## ... and non-resident expenditures make up a significant share of exports

A significant gap in previous studies on GVCs has been the role of spending by non-resident households on the domestic territory, of which tourism is the most obvious and important example. Small open economies with significant tourism activities (e.g. Greece, Iceland, Portugal and New Zealand) are among those with the highest contributions of non-resident expenditures to exports (Figure 5). Australia, Spain, Turkey and the United States also have high contributions of non-resident expenditures. Between 2005 and 2015 there was a significant increase in the non-resident household expenditure share of exports in a number of Asian (Indonesia, Japan, Korea) and northern European (Sweden, Poland, Iceland, Latvia) economies. Spending on final goods and services by non-residents has a notable indirect impact on the activities of some upstream domestic suppliers (e.g. the food and agricultural sectors supplying restaurants).

**Figure 5. Non-residents' expenditure by origin of value added, 2015**

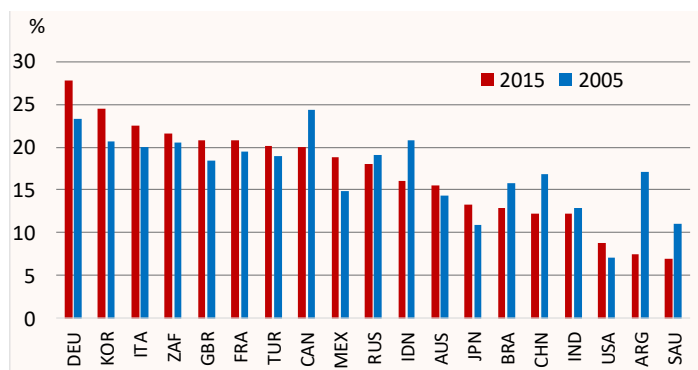
As a percentage of total gross exports



## The changing shape of GVCs has implications for employment ...

**Figure 6. Employment sustained by foreign final demand**

As a percentage of total employment

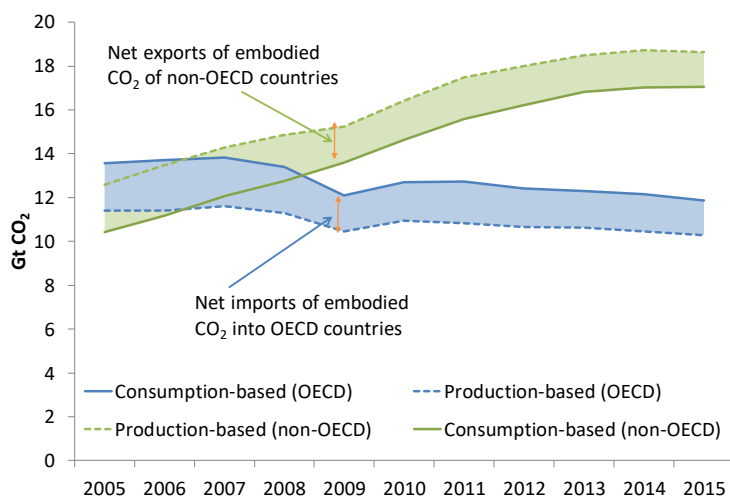


Brazil, China, India, Indonesia and Russia) it declined. Reliance on foreign final demand can be very high for many smaller economies – especially those highly integrated in regional production chains.

The nature and extent of GVC integration has important implications for a number of economic outcomes, first and foremost employment. Figure 6 shows the share of domestic employment in different G20 economies used in production to meet foreign final demand – i.e. how much domestic employment is dependent upon overseas markets. It highlights that no “country is an island”, with even the largest economies (e.g. United States, Japan and China) dependent upon foreign final demand for around 10% of their employment. In the majority of OECD countries, employment driven by foreign final demand increased between 2005 and 2015, while in major emerging economies (such as

## ... and also affects social and environmental outcomes

**Figure 7. Production- and consumption-based CO<sub>2</sub> emissions**



The integration of global economic systems goes hand-in-hand with the integration of global social and environmental impacts. This can have implications for the extent to which economies “import” negative impacts from overseas, often for the very same impacts that they are trying to mitigate through domestic policy settings. For example, Figure 7 presents consumption- and production-based measures of carbon emissions. The reduced fragmentation of production may have contributed to the finding that “carbon leakage” is less pronounced – with OECD countries “importing” less embodied carbon from the rest of the world than was the case a decade ago. From 2005 to 2015, net imports of embodied carbon (CO<sub>2</sub>) into the OECD fell from just under 2.2 to 1.6 Gigatonnes (Gt).

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