GLOBAL VALUE CHAINS (GVCs): CANADA

Participation in GVCs

Countries’ integration in the global economy is nowadays closely linked to their participation in GVCs. One indicator measuring the participation of countries in GVCs\(^1\) shows what percentage of a country’s exports are part of GVCs; either because of upstream links – that is looking back along the value chain and measuring foreign inputs/value added included in a country’s exports – or downstream links – i.e. measuring the domestic inputs/value added of the country contained in the exports of other countries by looking forward along the value chain.

**Figure 1. GVC participation across countries, 2009**

- Both upstream and downstream links explain the participation of Canada in GVCs through exports (Figure 1); the use of foreign inputs in Canada’s exports (i.e. backward participation) is a bit higher than the use of Canadian intermediates in other countries’ exports (i.e. forward participation).
- The mining sector shows the highest (forward) participation in GVCs through exports, reflecting the use of Canada’s natural resources in the exports of countries further down the value chain (Figure 2). Also in services Canada’s participation in GVCs is mainly driven by its downstream links (i.e. forward participation). Manufacturing industries significantly include foreign intermediates in their exports; the transport equipment for example shows strong upstream links due to its integration in North American GVCs.

**Figure 2. GVC participation by industry\(^2\), 2009**

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Note: 1) This indicator of GVC participation focuses on intermediates which are produced in one country and then included in another country’s exports; it has been introduced by Koopman et al. (2011) ‘Give Credit Where Credit Is Due: Tracing Value Added in Global Production Chains’; see also Miroudot and De Backer (2013) ‘Mapping of GVCs’. GVC participation is influenced by the size of the economy, stock of natural resources, distance to world markets, composition of exports (final versus intermediates), etc.

2) The indicator on the industry level is expressed relative to total country exports (instead of industry exports) in order to take into account the importance of the industry in the total export composition of a country.

This descriptive note complements the OECD publication “Interconnected Economies: Benefiting from Global Value Chains”. The country-specific indicators on GVCs are based on the OECD-WTO Trade in Value-Added database (TIVA – [http://oecd.tiva], both data and indicators are accessible on stats.oecd.org. For further information on the OECD work on GVCs, please contact us (sti.contact@oecd.org) or visit our website ([http://oe.cd/gvc]).

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Distribution of value added along the value chain (manufacturing and market services)

The ability to participate in GVCs is instrumental for economic integration, but benefiting from GVCs depends on how much value a country creates in GVCs. Similar to the stylised approach applied for individual products (e.g. Apple’s iPhone), the contribution of different industries and countries along the value chain can be calculated at the aggregate level\(^3\). Final demand in countries (i.e. sales within the domestic market) is made up of value added created by foreign and domestic industries; a further distinction between direct (i.e. within the industry) and indirect (i.e. in upstream industries) domestic value added can be made at the level of individual products.

**Figure 3. Domestic and foreign value added in final demand across countries\(^4\), 2009**

- About two thirds of the final demand for manufactured goods and market services in Canada represent value added that has been created domestically. The foreign value added share was 32% in 2009 (Figure 3).

- Market services show, as expected, the largest domestic value added, especially direct domestic value added. Foreign value added is more important in final demand for manufactured goods sold in Canada; textiles, machinery, transport equipment and electrical equipment products are mainly made up of inputs and value added that have been created abroad (Figure 4).

**Figure 4. Domestic and foreign value added in final demand by products\(^5\), 2009**

Note: 3) Timmer et al. (2012) ‘New Measures of European Competitiveness; A Global Value Chain Approach’ calb this measure GVC
income.
4) Only manufactured goods and market services are included given the prominence of GVCs in these industries.
5) Since trade and transport margins are grouped together in the wholesale/retail sector, distribution services for final goods are not included in the industry decompositions.
Export shares in GVCs

Countries create (and capture) value added in domestic markets as well as foreign markets (through exports). In an era of GVCs, gross export shares are however less meaningful in measuring the international performance of countries. National economies increasingly specialise in specific activities (assembly, logistics, R&D, etc.) instead of entire industries within GVCs. Because of the international dispersion of productive activities across countries and the uneven distribution of value along the value chain, export shares in value added terms are more accurate indicators of countries’ competitiveness in the global economy.

Figure 5. Export shares\(^6\) across countries, gross and value added terms, 2009

- Canada’s exports represented 2.8% of total world exports in value added terms in 2009, which was slightly above Canada’s share in gross exports (Figure 5).
- Important export industries like agriculture and mining show shares in value added and gross terms that are roughly the same; exports of natural resources require less intermediate goods in the production process (Figure 6). The wood and paper industry shows a higher share in value added exports reflecting its larger domestic value added of exports (compared to world exports in this industry). The opposite is true for transport equipment due to the sourcing of intermediates from abroad (especially North America).

Figure 6. Export shares by industry, gross and value added terms, 2009

Note: \(^6\) Exports include intermediate, capital as well as final products, hence this indicator provides additional insights into the export activities of countries within GVCs, complementary to the GVC participation index discussed above.
Competitiveness in manufacturing GVCs: the role of services

Manufacturing today involves much more than the pure production of goods and increasingly includes service-related activities both upstream and downstream in the value chain. Manufacturing exports include significant value added from service industries: firms increasingly use logistics, communication services, business services, etc. to facilitate the efficient functioning of GVCs. In addition, services (e.g. design, development, marketing, warranties and after-sales care) help to differentiate, customise and upgrade products, enabling firms to capture more value.

Figure 7. Services value added embodied in manufacturing exports, across countries, 2009

- Thirty percent of the value of Canadian manufacturing exports represents services value added: especially business services and distribution services and to a lesser extent transport and telecommunications and financial services. Services have become more important in manufacturing exports between 1995 and 2009 (Figure 7).

- Exports of different manufacturing industries show a similar distribution across service sectors; business and distribution services are the most prevalent categories in the exports of each manufacturing industry (Figure 8). The services value added content of exports has particularly increased in the food and transport equipment in Canada.

Figure 8. Services value added embodied in manufacturing exports, by industry, 2009

Note: 7) The results only account for traded services and thus represent a lower bound of the contribution of services to manufacturing exports. R&D services for example are often performed in-house.
8) Distribution services for final goods are not included.