

## **International Trade in Value Added: trade statistics and trade policy implications The WTO perspective**

Andreas Maurer  
World Trade Organization  
Economic Research and Statistics Division  
Switzerland  
[andreas.maurer@wto.org](mailto:andreas.maurer@wto.org)<sup>1</sup>

Christophe Degain  
World Trade Organization  
Economic Research and Statistics Division  
Switzerland  
[christophe.degain@wto.org](mailto:christophe.degain@wto.org)

The last three decades saw the creation and intensification of global value chains due to changed business models. Today, the production of final goods often requires performing several tasks across countries. This paper describes the factors that have led to "trade in tasks" and explains the bias of traditional trade statistics in depicting this new trade reality. Approaches to correct this bias by estimating trade in value added are described with their respective statistical challenges. Changing the perspective from a "gross" reporting to a "trade in value added" angle has implications on trade indicators. Some common considerations are revisited such as the importance of services, the interpretation of trade balances, export competitiveness, the trade/GDP ratio and risks associated with increased interdependencies between economies. The paper concludes with trade policy incentives that help fostering participation in global value chains.

Key words: Global value chains, trade in tasks, trade rules and trade policy.

### **I. Introduction**

The change in business models by enterprises resulted in the development of global value chains (GVCs) which impacted on international trade patterns. The paper briefly describes the emergence of trade in tasks and the need for complementing conventional merchandise trade statistics with trade flows estimated in value added terms. First results are presented of a joint OECD-WTO Trade in Value Added (TiVA) database released in January 2013.<sup>2</sup>

The development of GVCs results from improved market access, reduced import tariffs, services liberalization, better logistics services, increased foreign direct investment (FDI) and outsourcing. The improvement of customs procedures and behind-the-border measures to establish a business-friendly environment also helped. Baldwin refers to this as the trade-investment-services-intellectual property nexus (Baldwin 2012).

### **II. The emergence of trade in tasks**

Trade in intermediate goods represented 55 % of world non-fuel merchandise exports in 2011. The vertical integration of multinational enterprises (MNEs) has increased

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<sup>1</sup> The opinions expressed are personal and do not represent an official position of the WTO or its Secretariat.

<sup>2</sup> See <http://stats.oecd.org/Index.aspx?DataSetCode=TIVA> OECD WTO, as retrieved 16 January 2013

over the last 30 years from around 18 to 33% (import content of exports, 1970-2005, (IMF 2011)). Anecdotal knowledge says that the share of intra-firm transactions in world trade could be up to a third.

Conventional trade statistics do not show the real picture of international trade in a globalized economy. For example, the "country of origin" recorded for imports is often the last country in the production chain, which does not reflect the geographical fragmentation of the manufacturing process. The transaction value assigned to this last country of origin is overstated since the other contributors (origins) to the product are ignored. Another bias is the multiple counting of the gross value of intermediate goods rather than the value added when these cross borders a number of times.

However, estimating the trade in value added terms is a challenge. MIWI, launched in June 2011, acts as a hub in the area of trade in value added (see <http://www.wto.org/miwi>). The core ideas behind MIWI are to constitute a forum for discussion and exchange of experiences, to provide links to relevant information and statistics that show trade relations as they exist today, and to foster the development of statistical methodologies for compiling trade in valued added terms as well as to promote a better integration of statistical data "silos" (e.g., business, trade, finance and employment statistics).

### III. Measuring trade in a globalized world: trade in value added

There exist two distinct approaches (see Escaith, H. (2012) or Jara, A., Escaith, H. 2012): (i) the direct approach: Case studies and micro-economic data look at a specific products or firms and trace the sources of its components from the design, production and distribution of a manufactured good (teardown reports) -- see for example Apple's emblematic devices (iPod, iPhone 3G and the iPad /iPhone 4. Earlier examples of such studies are the global process for producing Texas Instrument high speed chips Mattel's Barbie Dolls. However, these studies are not a representative sample of national trade flows. To circumvent, statistical offices started programmes to link trade and usiness registers to follow more closely the imports, domestic production and consumption, and exports. (ii) the indirect approach: This method relies on the use of international input-output (II-O) tables which gather national I-O tables and bilateral trade data on goods and services into a consistent statistical framework.

II-O tables inform on the sectoral use/destination of imported intermediates, that is, they focus on the process by combining production and trade. The use of II-O tables has several advantages. They are based on publicly available statistical information (trade, national accounts, national I-O tables). Moreover, as they are linked to the system of national accounts, it allows to relate the value added trade within GVCs to other macroeconomic variables (sectoral effective protection, labor content of trade, environmental impact, etc...). The compilation of II-O data requires assumptions such as the homogeneity of firms and balancing of data which need to be kept in mind when interpreting the results obtained.

International or global I-O tables cover a set of reporting countries along with an estimate of the "rest of the world". These tables rely either on national supply-use tables or directly released national I-O tables. While major economies produce I-O tables on a regular basis, smaller economies especially from Africa and Middle East provide scarce information or even no I-O tables at all. Improving the country coverage of II-O tables is important to better assess the role played by small economies in GVCs and to address development-related questions. From a systemic perspective, the trade in value added programme inserts itself naturally into the international statistical system, by using and reinforcing synergies between the macro-perspective (System of

National Accounts, Balance of Payments) and the economic statistics (trade, production, labour, etc.). It is therefore a vehicle for closer inter-agency cooperation. In this context, the WTO is cooperating closely with the OECD and others stakeholders like IDE-JETRO, the US ITC and the former WIOD project group.

#### IV. Global value chains and trade policy: a need for change?

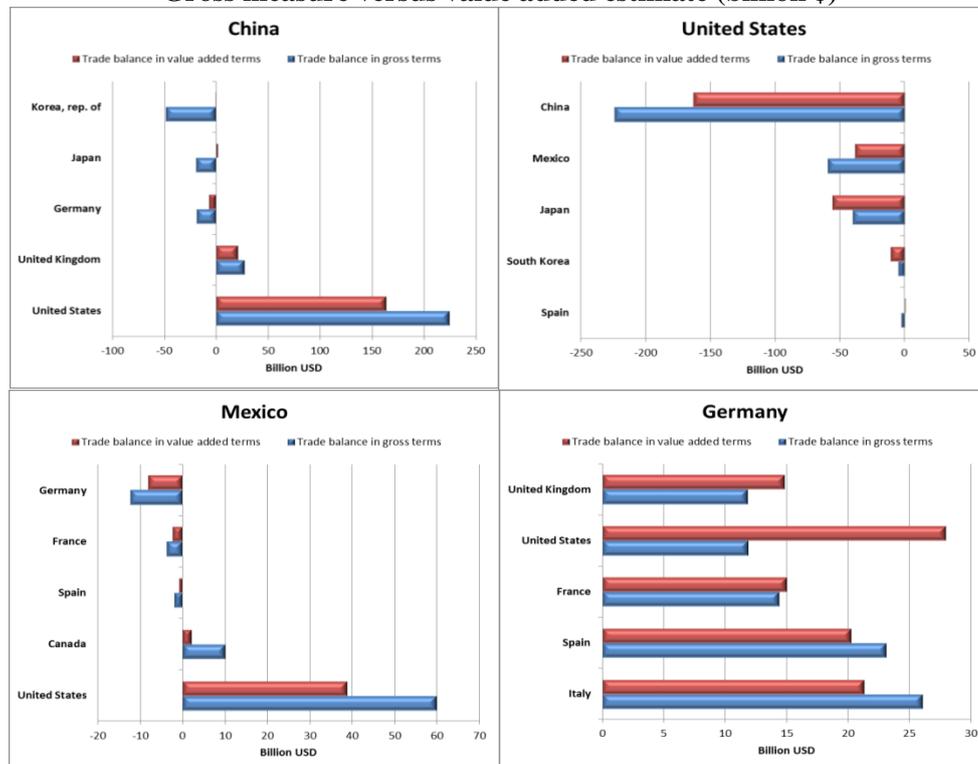
##### Relative importance of services

Global or regional production networks are made up of a web of supply chains, with services being the glue that holds these webs together. Goods are produced with services, for example, communication, financing or logistics. Services are used as inputs within the production phase itself to establish the links between the successive operations taking place in various factories and countries. When measured in value added terms, the share of services in world trade is twice as high. This has important implications for industrial and trade policies, especially those related to competitiveness, the integration of small and medium-sized enterprises (SMEs) in global value chains as well as the relationship between trade and employment .

##### Bilateral trade balances revisited

Bilateral trade balances draw the politicians' attention. However, conventional trade statistics skew such trade balances. Re-distributing an economy's total gross trade by partner country according to the value added criteria is demonstrated in Figure 1. The balances are shown with respect to five selected partners. China's trade surplus with the US is reduced by around 27% when measured in value added terms. The reverse situation might also be observed: the surplus of Germany with the US, for example, increases if considered in value added.

**Figure 1. Selected bilateral trade balances, 2008 - Gross measure versus value added estimate (billion \$)**

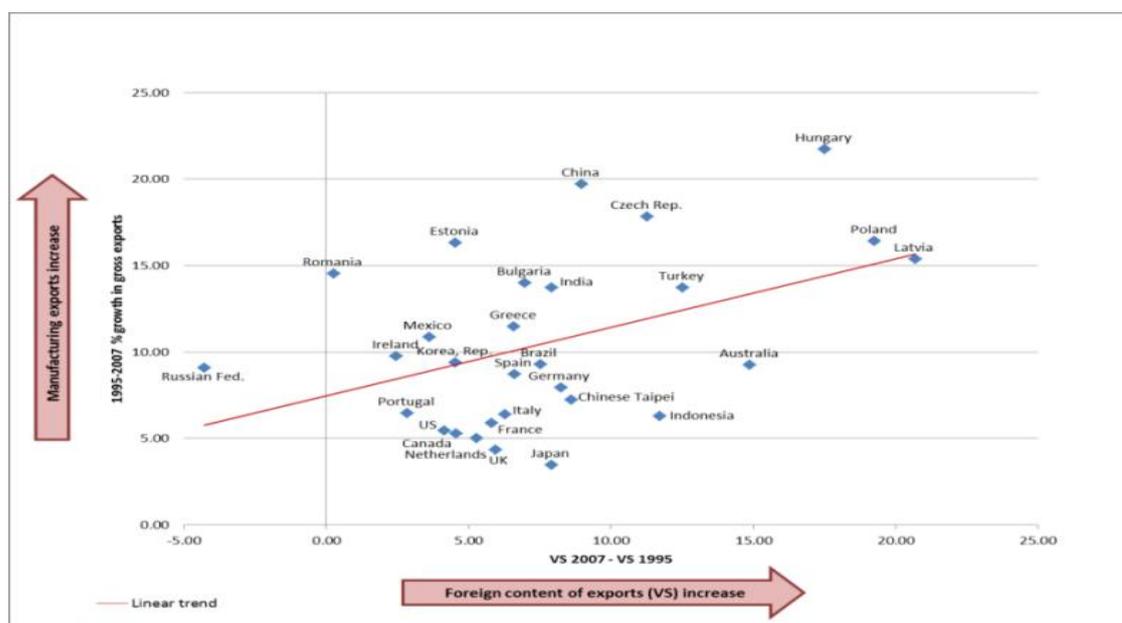


Source: WTO estimates based on OECD ICIO data.

### Export competitiveness: Import to export

Figure 2 plots the change of the share of the foreign content in exports (vertical specialization index, VS) from 1995 to 2007 against the export performance of an economy in the manufacturing sector. Generally speaking, a historical increase of VS rates outlines a closer integration of an economy in GVCs, while, at the same time, it also indicates a dependency vis-à-vis its partners from the production chain. The graph shows a positive correlation between VS and an increase in gross exports, meaning that a higher integration of an economy in the global supply chain is related to an increased export performance.

**Figure 2. Evolution of the vertical specialization index (VS) against export performance, manufacturing sector (1995-2007)**



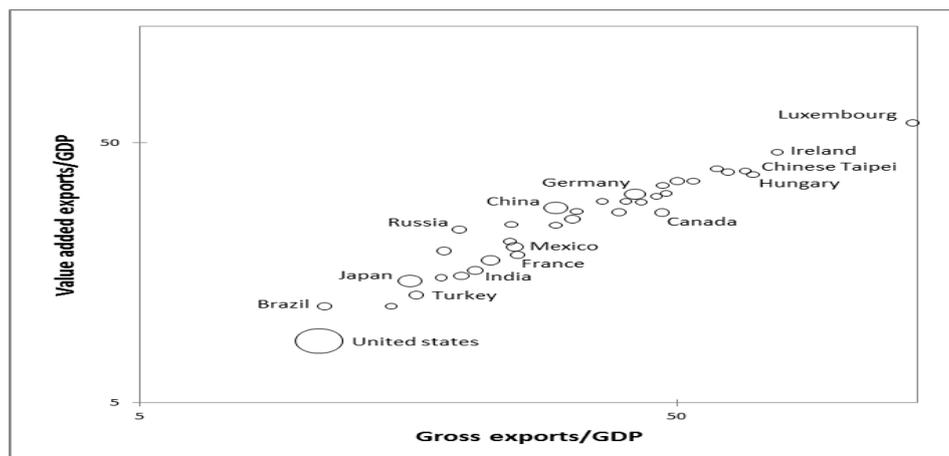
Source: WTO estimates based on WIOD data

### The ratio of exports to GDP in value added: an idea of the actual impact of international trade on an economy

An often used indicator to evaluate the importance of international trade in an economy is the share of gross exports in GDP. However this could be misleading as gross exports do not make the distinction between national or imported inputs used to produce the exported goods, thus inflate the "trade openness" ratio. The value added approach allows to compile ratios of exports on GDP for both indicators in the same terms.

Broadly speaking, the share of value added exports in GDP is smaller than with the gross valuation because value added exports exclude the foreign value added (or imported inputs) comprised in gross export figures. On average, the exports/GDP ratio decreases by 29% with the value added approach.

**Figure 3. Relationship between gross export ratio to GDP (horizontal axis, log) and value added ratio to GDP (vertical axis, log), 2007**



Source: WTO

### The consequences and risks associated to the interdependency of economies

GVCs rely on efficient transmission mechanisms between enterprises across countries. The increased interdependency in production between economies may have counter-productive effects when trade policies decide to increase tariffs, introduce countervailing and anti-dumping measures<sup>3</sup> or recommend “Buy national” as previously exported goods may need to be re-imported for the production of final goods. Another risk linked to the interconnection of companies is the rapid propagation of macro-economic shocks or consequences of natural disasters among countries involved in global production.

### V. Trade policy incentives to promote GVCs

Cost effective infrastructure services, such as logistics could be promoted. Performing infrastructure attracts investment and fosters the development of supply chains.

Uncertainty about delivery costs (including non-monetary components such as delays in transportation or in custom clearance) is also harmful. This can become an obstacle especially when moving up the value chain and producing critical high value-added components. The role of trade facilitation is all the more important when production is fragmented between countries. Cost and time to trade at the border is a classical feature of trade facilitation. The efficiency and simplification of border procedures are decisive for economies to integrate supply chains. Therefore, relevant trade policies should focus on the automation and modernization of customs administrative operations which have a huge impact on firms’ competitiveness.

Setting up business-friendly trade policies is of high importance for the expansion of supply chains and for developing countries to join the global production. Such a proactive policy enables to attract FDI and comply with off-shoring strategies from international companies, it offers the opportunity for national companies, incl. SMEs,

<sup>3</sup> Anti-dumping duties apply to products sold at or below the price in the home/exporting country while countervailing duties are used to offset the benefits of subsidies granted to the exporting industries. The rules of origin are a determining factor in judging and levying such duties or offsets.

to join international supply chains. Efficient aid for trade policy becomes important for developing the respective trade capacity.

GVCs also are instrumental in diffusing technology. Examples include the automotive sector or the development of electronic products where expertise is transferred within the supply chain.

## VI. Conclusion

Changed business models of enterprises and the resulting trade in tasks require conventional merchandise trade statistics to be complemented with trade flows measured in value added terms for an adequate economic analysis. These complementary measures show the importance of services in GVS, and require a re-interpretation of certain trade indicators.

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