



RESHAPING THE INTERNATIONAL TRADE STATISTICS: FACTORS AND IMPLICATIONS

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Abstract: The geographical fragmentation of production has created a new trade reality and has many implications for how we understand trade policy. The growing international flows in intermediate goods reflect the evolution of intra-industry trade, the impact of offshoring and the prominent role of networks of multinational enterprises in world trade. While Europe is still the biggest trader in intermediate goods, Asia has been rapidly closing the gap, and is now a close second. Beside the factors that contributed to the appearance of new types of business and new trade patterns, we should be also aware of some implications of such shifts. We have to mention the need of reshaping of the methodology of foreign trade statistics, the need of re-evaluation of some technical issues of trade policies or the need of re-evaluation of the political speech of some western countries towards certain emerging countries with which they encounter increasing trade deficits.

Keywords: global value chains, intermediate goods, globally integrated businesses, foreign trade statistics.

1. Introduction

The geographical fragmentation of production has created a new trade reality. Often referred to as global value chains or vertical specialization, this fragmentation deepens the interdependency of trade relations and has many implications for how we understand trade policy. "Global manufacturing", is boosting the volume and diversity of products being exchanged. But it is also changing the very nature of international trade. Global manufacturing is characterized by the geographical fragmentation of productive processes and the offshoring of industrial tasks.

"Trade patterns and global value chains in East Asia: From trade in goods to trade in tasks" is the title of a recent book which represent the result of a cooperative effort between the WTO and IDE-JETRO and illustrates how the conjunction of technical, institutional and political changes in East Asia in the past 30 years has led to the emergence of new production and trade networks. We will use some findings of this study to make the picture of the historical evolution of production networks in the region and then to conclude and make some remarks regarding the factors and

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implications of the new types of business on trade patterns, trade statistics and trade policy.

An examination of the historical evolution of production networks in Asia shows us how Asian economies have become interconnected with each other and with the US market.

In 1985, there were only four key players in the region: Indonesia, Japan, Malaysia and Singapore. The basic structure of the production network was that Japan built up supply chains from resource-rich countries like Indonesia and Malaysia. In this initial phase of regional development, Japan drew on a substantial amount of productive resources (natural resources) from neighboring countries to feed to its domestic industries.

By 1990 the number of key players had increased. In addition to the four countries already mentioned, Japan had extended its supply chains for intermediate products to the Republic of Korea, Chinese Taipei and Thailand. While still relying on the productive resources of Indonesia and Malaysia, Japan started to supply products to other East Asian countries, especially to the newly industrialized economies (NIEs). This is the phase when the relocation of Japanese production bases to neighboring countries, triggered by the Plaza Agreement in 1985, was accelerating. It saw the building of strong linkages between core parts' suppliers in Japan and their foreign subsidiaries.

In the 1990s, the Republic of Korea, Chinese Taipei and Thailand also emerged as important links in the production network.

Japan was extending its supply chains, while outsourcing from the United States was also strongly entering the picture.

Then in 1995, the United States came into the picture. It drew on two key supply chains originating in Japan, one via Malaysia and the other via Singapore. These two countries came to bridge the supply chains between East Asia and the United States.

In 2000, on the eve of its accession to the WTO, China began to emerge as the third economic giant. The country entered the arena with strong production linkages to the Republic of Korea and Chinese Taipei. It then gained access to Japanese supply chains through the latter.

The United States also brought a new supply chain from the Philippines, and thus the basic structure of the tri-polar production network in the Asia-US region was completed.

The regional production networks thereafter showed dramatic development.

By 2005, the center of the network had completely shifted to China, pushing the United States and Japan to the periphery. China became the core market for intermediate products, from which final consumption goods were produced for export to the United States and to European countries. Also of note is the nature of the supply chains that China develops with others.

The intermediate goods imported by China come through relatively long and complex supply chains, characterized by a high degree of fragmentation and sophistication. The competitiveness of Chinese exports is not only attributable to its



low production costs, but also to the complex intermediate goods imported from other countries, be they from Asia or the rest of the world.

The evolution of regional production networks, as illustrated above, has created a distinctive structure for the Asian-US production system, understood as the "tri-polar trade through China" model. In this structure:

1. East Asian countries, except China, produce sophisticated parts and components and export them to China,
2. China assembles them into final products,
3. These are further exported to the US market for consumption.

Trade in intermediate goods now dominates world trade in non-fuel merchandise. While Europe is still the biggest trader in intermediate goods, Asia has been rapidly closing the gap, and is now a close second.

While intermediate goods constitute more than 60 per cent of Asia's total imports, Asia tends to export more final goods composed of the imported intermediate ones. This regional characteristic, inherent in the region's role as "Factory Asia", is not equally displayed by each country. Some economies, like China, India and Viet Nam, have distinctly higher shares of intermediate goods in their imports than in their exports, while the opposite is true for the Republic of Korea, Japan and Chinese Taipei. Not only has trade in intermediate goods increased, but these goods are also increasingly complex.

The growing international flows in intermediate goods reflect the evolution of intra-industry trade, the impact of offshoring and the prominent role of networks of multinational enterprises (MNEs) in world trade.

The definition and measurement of trade in "intermediate services" is much more complex and subject to limited data availability. Currently no official trade classification enables precise differentiation between final and intermediate services. One way of assessing internationally-outsourced intermediate services is to consider trade in "other commercial services", which is a very broad aggregate including a number of business services that can be subject to offshoring.

In 2009, world exports of intermediate goods exceeded the cumulated amounts recorded for consumption and capital goods and represented 51 per cent of non-fuel merchandise exports. World exports of intermediate goods nearly doubled between 1995 and 2009, from around US\$ 2,774 to US\$ 5,373 billion, an annual average growth rate of 4.8 per cent.

A feature of world trade in intermediate goods is that its share of total trade has remained quite stable over the past 15 years. As a matter of fact, world exports in the three categories of goods – capital, consumption and intermediates – evolved at similar speeds between 1995 and 2009, in line with the overall growth of total merchandise trade.

The apparent contradiction with the growth of international supply chains is explained mainly by statistical effects of reporting intra-firm trade and trade in goods sent/received for processing, and the difficulty of distinguishing intermediate from final goods in some categories.



The volume of trade in intermediate goods gives an indication of the level of integration of a region in production sharing. Although the overall value is still very low compared with Western economies, developing economies tend to join global supply chains at a sustained pace since it is a clear opportunity for them to enter international trade through production sharing.

The shares of North American and European exports of intermediate goods in world trade declined notably between 1995 and 2009, whereas Asia's increased by almost 10 percentage points, reaching 35 per cent of world exports of intermediate inputs in 2009.

While North American and European economies tend to further diversify their trade in intermediates towards services, new international production capacity and related trade in manufacturing intermediates are increasingly originating in Asia as a result of industrial fragmentation in this region.

At US\$ 2,050 billion, Europe had the highest value of intra-regional imports in 2008. Intraregional trade represented nearly half of its total imports of intermediate goods. Europe was followed by Asia, with US\$ 1,479 billion.

Asia has not only developed its own industrial networks, it has also contributed to production chains linked to Western economies. Accordingly, the major interregional flows in intermediate goods involved Asia either as the origin (exporter) or as the destination (importer) of trade flows, essentially with its core partners North America and Europe. For instance, the highest interregional import flows of intermediate goods were observed between Europe and Asia (US\$ 384 billion) and between North America and Asia (US\$ 330 billion). Asia has been a major supplier of intermediate goods to North America.

In 2009, Asia imported more intermediate goods than it exported, showing its high level of engagement in world production chains. Asia's developing economies were the principal contributors to this outcome as advanced economies like Japan and the Republic of Korea exported more intermediate goods than they imported. China plays the role of assembler within the Asian region, its imports in intermediate goods accounting for more than 33 per cent of Asian imports of intermediates in 2009.

Economies like India and Viet Nam also had markedly higher shares of intermediates in their imports than in their exports. The opposite was the case for Japan and Chinese Taipei.

Chinese Taipei had the highest share of intermediate goods in its exports among the major Asian traders.

China, India and Viet Nam have been the most dynamic importers of intermediate goods within the last 15 years, with average growth rates of between 12 and 16 per cent, far beyond the regional average of 7 per cent.

2. Factors and implications of the new types of business on trade patterns, trade statistics and trade policy.

Regarding the factors that contributed to the appearance of new types of business and new trade patterns, we should point to the following:



The Western factor – the implementation by western companies of new strategies and business models.

We are referring to the "globally integrated businesses" which are stimulated by:

- the competitive advantages offered by the concentration of resources on a specific field of expertise or functions that enhances positioning on the market
- the technical opportunities and economic efficiency enhancement resulting from the relocation of activities, and first of all of manufacturing, through offshoring and international outsourcing.

"The globally integrated companies" reflect the integration in a certain formula of the components of the "product" value chain and the distribution of their fulfillment in at least two countries. Integration also implies, on an ever larger scale, the functional inter-dependence of at least 2 independent companies which realize in conjunction the "product" global value chain, and through this symbiosis generate a "globally integrated business".

Under the category of "globally integrated companies" we have to define two types of companies:

a) "the functions outsourcers", which can be:

- big companies (national companies, multinational companies-MNC, transnational companies-TNC), which undergo a process of vertical disintegration, by retaining the basic function(s) (in which their competencies are maximal) and the distribution of other functions to third parties (outsourcing to functions integrators selected through the arbitrage of their competencies and advantages)
- new companies that design and structure from scratch a "globally integrated business" by assigning functions to "integrated" participants.

b. "the functions integrators", which can be:

- companies that directly perform the contractually undertaken function(s) (design, R&D, manufacturing, assembly, distribution, marketing, post-sales analyses or a combination of these)
- companies that build and use (orchestrate) supplier networks. This kind of integrator becomes in its turn a functions outsourcer, while the network itself becomes a "globally integrated business".

The emergent factor – the governmental policies and private initiatives of some emerging countries. These have facilitated:

- the foreign direct investments
- the set up and growth of a number of national companies meant to become partners to western TNC's within the frame of certain "globally integrated businesses"
- building of national, regional or even international chains or networks



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- the extension of functions within the global value chains, ready to be undertaken by emerging companies, from manufacturing to logistics, R&D and other business services.

The conjunction and evolution of the above mentioned factors – which created a new economic reality.

This new reality can be characterized by:

- the re-shaping of international interdependences between companies, countries and regions
- the re-shaping of trade and investments flows
- the reconsideration of the meaning of a country specialization, which is no longer based on the overall balance of comparative advantage of countries in producing a final good, but on the comparative advantage of producing components of final goods (the intra-product specialization) or of tasks/functions that these countries complete at a specific step along the global value chain (the functional specialization).

Regarding the implications of the appearance of new types of business and new trade patterns, we should point to the following:

The reshaping of the methodology of foreign trade statistics in a way that, based on the trade flows of intermediate goods, it could reveal:

- the domestic content embedded in exports and the import content of exports
- the country specialization
- the effects on the foreign balances of payments

The decomposition of exports value into its foreign and domestic content can be done through measuring the value added of exported goods (or in other words, measuring the international trade flows of parts of the entire value added embedded in that specific final good exported). This methodological approach has been recently initiated by WTO and implies the use of the following tools:

- the international trade statistics and
- international input-output (II-O) tables (such as those developed by IDE-JETRO).

As the WTO and IDE-JETRO study points out, the global production chains have blurred the relevance of some conventional trade indicators, like bilateral trade balances, when products are "made in the world" rather than in a single country. The final product and the value added that goes into it come from different places. The speed and depth of such changes have led to the need to revise statistical concepts and methods (national accounts, balance of payments, customs based trade statistics) for measuring trade flows. At the same time, new approaches have been explored and developed to adapt traditional statistics and to better evaluate how economies fit into the new global economy.



Vertical trade is one of the new elements of international exchanges that require the application of innovative metrics.

Attributing the entire commercial value of an exported good to the last link of the chain – the economy exporting the final good – can lead to a statistical bias and to misunderstandings, which may alter trade analysis and have potential implications for trade policy and multilateral trade negotiations.

This does not reflect the geographical fragmentation of the production chain. A more recent methodological development, the "trade in value added" approach, can help circumvent the difficulty of assigning the country of origin faced by traditional trade statistics. This additional measure of international trade flows enables the domestic content embedded in exports to be assigned to each country that participated in the supply chain that led up to production of the final good.

The domestic content of a country's exports is often referred to as the value-added content of exports. In such cases, the value added of an exported good comprises the good's total value minus direct and indirect imported inputs, and includes all the domestic intermediate goods and services used for the production of the good. From a methodological point of view, this is not so different from the notion of sectorial value added derived from the system of national accounts, which corresponds to the final value of the output of an industry, net of the goods and services it purchased from other industries or imported for its production.

The domestic content of any export will include the direct value added from the exporting industrial sector, plus the value added from other domestic sectors indirectly embedded during the production process. In addition, some correction can be done to measure the domestic content of imported inputs (re-imports).

It would require an enormous amount of work to measure directly the different sources of added value for each product traded in the world. An indirect way of estimating vertical trade and trade in value added relies on input-output (I-O) tables or – preferably – their international counterparts, international input-output (II-O) tables. These combine national accounts and bilateral trade data on goods and services into a consistent framework.

II-Os allow the value added contained in exports to be evaluated and decomposed into its foreign and domestic content.

The domestic content of exports corresponds to the accumulation of the value added incorporated in each of the various domestic sectors that contributed to the supply chain. The foreign content of exports, or import content of exports, serves as an estimate of the trade between countries involved in international production chains. It can be measured through the application of the vertical specialization formula, developed by Hummels et al. (2001), based on the use of II-Os. Thus, the impact of the fragmentation of production chains on international trade can be assessed by computing the vertical specialization phenomenon.

Measuring trade in value added uses both trade statistics and international input-output tables, such as those developed by IDE-JETRO, to separate the domestic content of an export from the cost of the imported components.



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The re-evaluation of some technical issues of trade policies at the level of countries or customs unions, as:

- the reevaluation of the concept of "country of origin"
- the reevaluation of the importance of certain emerging economies as "countries of origin".

The new methodology developed by WTO-JETRO offers a new perspective for trade analysts, as it dramatically re-evaluates the importance of some economies as "countries of origin". The result is that the absolute value of some bilateral trade imbalances is reduced, notably that of China and the United States, while overall global balances remain untouched.

This can be illustrated with the common example of the US trade deficit vis-à-vis China.

The deficit, as currently measured between the two countries, is clearly overstated, as it does not originate only in China, but also in economic partners belonging to the same production chains. By subtracting the estimated import content from conventional trade values, the value added approach enables bilateral transactions to be adjusted in line with the actual values created in the two countries.

The 2005 US-China trade shortfall would have even been cut by more than half, from US\$ 218 to US\$ 101 billion, if it had been estimated in value added and adjusted for processing trade (see Figure 9). Similarly, in 2008, the US\$ 285 billion bilateral deficit would have been reduced by more than 40 per cent. The difference must be attributed to the value added from other economies, such as Japan, the Republic of Korea, Malaysia, etc., embedded in Chinese exports to the United States.

The re-evaluation of the political speech of some western countries towards certain emerging countries with whom they encounter increasing trade deficits.

In this respect, the negative impact on the foreign balance of payments of the western country should be reevaluated, as the specialists from JETRO suggest, with the foreign value added embedded in the exports of the respective emerging country, or with the value of intermediate goods imported and embedded in the final goods exported.

More than that, in our opinion, the negative impact on the foreign deficit should be re-evaluated also with the value of exports resulted from the participation of companies from emerging countries to the "globally integrated businesses" with western partners who outsourced them functions like manufacturing, logistics or mixes of functions.

In this case, regardless of whether the entire value added comes from a single country or is a sum of value added in several countries, the export originated within a "globally integrated businesses" should be perceived like an even more "positive" component than other bilateral trade flows because it is even stronger linked to the competitiveness and market position of an increasing number of important western companies.



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The WTO-JETRO methodology does not separate the trade flows induced by the “globally integrated businesses”, so that an emphasis on the “sine qua non” feature of these trade flows cannot be statistically backed-up.

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