



TRACING THE VALUE ADDED IN GLOBAL VALUE CHAINS: PRODUCT-LEVEL CASE STUDIES IN CHINA





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ABBREVIATIONS AND ACRONYMS

BOM	bill of materials
COEMA	China Optic Electronics Manufacturers Association
DVA	domestic value added
GDP	gross domestic product
GVC	globe value chain
HS	Harmonization System
HP	Hewlett-Packard
ICT	information and communications technology
IIO	international input–output table
LED	light-emitting diode
LPI	Logistics Performance Index
MBE	molecular beam epitaxy
MOCVD	metalorganic chemical vapour deposition
NTMs	non-tariff measures
OEM	original equipment manufacturer
OECD	Organization for Economic Cooperation and Development
SDRC	State Development and Reform Commission
SKU	stock keeping unit
UNCTAD	United Nations Conference on Trade and Development
WTO	World Trade Organization

EXECUTIVE SUMMARY

The rise of the global value chains (GVCs) is reshaping the whole structure of worldwide trade flows. It is no longer true that all, or even the bulk of the value of a country's exports can be assumed to be domestically produced. Even less realistic, of course, would be to assume further that most of the different forms of incomes generated by such production activities are captured by domestic agents. Balance of payments and traditional statistics based on gross levels of trade are still indispensable tools to measure a country's financial position vis-à-vis the rest of the world, which is in turn a key factor in determining its overall macroeconomic equilibria, but they are increasingly inadequate as indicators of the true position of each country in the international division of labour, and thus of its true present and perspective comparative advantages. Therefore, policymakers need new and more detailed information in order to properly formulate adequate development strategies.

An important innovative effort to fill this major gap in statistical knowledge has been based on linking national input-output tables into larger, international input-output tables (IIOs). IIOs can shed light on both supply-side (that is, value added location and capture, and employment) and demand-side (consumer prices, wages) variables. However, the compilation of IIOs inevitably requires a certain degree of approximation in carrying out complex estimation and cross-border harmonization attempts on the basis of very partial trade data (IIO tables do not even exist for many countries). Moreover, data on trade in services – which are an increasingly relevant component of goods-producing GVCs as well – are inadequate.

Other innovative methodologies – such as forming groupings of products that better reflect GVC characteristics, and jointly utilizing data from disparate sources, such as surveys and business registers – can help, but, eventually, the generation of internationally standardized new data bases will be necessary.

In the meantime, a promising path towards enhancing our imperfect knowledge of GVCs is based on a combination of a “bottom-up” approach (such as that of business surveys) with the “top-down” one using IIO tables.

The most direct and effective way to estimate the geographical distribution of value added is to conduct product-level GVC studies. These studies are often based on the foreign component specifications designed in the production plans drafted by lead firms, the headquarters of which are usually concentrated within the Organization for Economic Cooperation and Development (OECD).

The first product-level GVC studies were conducted in the 1990s, and subsequently proliferated. Classical examples are those of the Barbie Doll model, of the Apple iPhone and other Apple products, and of the Hewlett-Packard (HP) Notebook Computer. All these products are assembled in China, and therefore they are formally recorded as China's exports. The studies showed that in fact the percentage share of the total value added constituted by the domestic value added (DVA) was quite small (of the order of 3.5–4 per cent). Correspondingly, the foreign value added share was well over 95 per cent. Most of China's DVA is constituted by unskilled wages and some of the intermediate inputs are produced in various Asian countries. The lion's share is captured by the lead firm in forms of skilled wages, managers' salaries and profits. This striking result, however, can be easily understood when taking into account the extremely high technology and design intensity of these kinds of branded, high-end consumer products.

Developing countries usually participate in GVCs as providers of relatively unskilled labour and services, and do not hold the strategic control on the whole GVC machine. Thus, the “true” value of their manufacturing exports is grossly overstated by traditional trade statistics. Their technological catch-up attainments are also overstated. In most cases, developing countries' benefits are limited to employment creation (as few of them really manage to enforce meaningful technology transfers). A cursory reading of trade statistics, moreover, might unduly lead to overstating the competitive threat posed by developing countries to their established, industrialized rivals, thereby incorrectly biasing multilateral, regional and bilateral trade negotiations.

Following the methodology of utilizing industry-level sales income as an adaptation to the commonly used data aggregation formula based on the identification of the bill of materials (BOM) and other cost categories, three product-level case studies were conducted to identify where China is placed within the GVCs and to find out what and to what extent value is added in China. A few assumptions are made, some of which might imply overstatement of the DVA (for example, the assumption that a particular factor is purchased from a domestic supplier in case of unavailability of relevant information on its origin).

The three case studies relate to rubber tyres, light-emitting diodes (LEDs) and fasteners. They reveal that the selected industries are based mostly on mid-level technologies, and that China is generally in the midstream of the GVC with its comparative advantage in labour cost vis-à-vis its developed trading partners.

As the case studies on rubber tyres, LEDs and fasteners have revealed, the activities a country can take up in a GVC are primarily determined by the comparative advantage of that country. This is because GVCs have essentially been a product of cost-reduction strategies of multinational companies to relocate production processes to different countries, with a view to increasing their productivity at minimum costs, thereby maintaining their competitiveness in the relevant industry.

Developed countries and a few advanced developing countries are better equipped with product development, design, marketing, logistics and other service areas, which represent the upstream and downstream activities. For most developing countries, with their abundant natural resources and labour supply, they can be raw material suppliers or manufacturers, including assemblers in the midstream of the GVCs. At this stage they tend to use more domestic content. Such comparative advantage is not static. It evolves with the development of the country. Government policies matter in both bringing the country's existing comparative advantage into its full play and forming future comparative advantage of the country.

Empirical experiences show that a country's industrial policies influence the development of an industry. Industrial policies are not necessarily required in all sectors. China has used specific industrial policies in the tyre and LED sectors, but no such policies exist in the fastener sector where market forces have been playing a role since China adopted its opening and reform policy in the late 1970s. This suggests that measures taken by the Government should address problems in the functioning of the markets. If the market functions well, there is no need for an industrial policy. Rather than to simply protect an ailing industry or allocating resources into the industry, Governments could adopt industrial policies with broader objectives through competition-neutral measures. Such measures aimed at broader objectives will be positive to the long-term development of the industry and, eventually, to the economy as a whole.

GVCs are sensitive to trade measures since costs incurred at each production stage add up along the value chains. Therefore, extensive trade liberalization including tariff reduction and services market opening undertaken by countries unilaterally or under bilateral, regional and multilateral agreements facilitated the surge of GVCs. Generally speaking, integration into GVCs needs framework conditions and enabling business environments that facilitate the international flow of goods, capital, knowledge, and so on. Today, countries no longer depend only on domestic resources to produce and export goods and services. As countries' exports are increasingly made up by imports of intermediate inputs from abroad, imports are as important as exports. Protectionist trade policies may therefore directly hurt the competitiveness of domestic industries.

China has low tariffs, and its average applied tariff rates on industrial goods were reduced to 8.68 per cent in 2011 down from 15.66 per cent in 2000. Its applied tariff burden was lower than in Australia and close to that in Japan and the United States of America in 2009. Thus, China is notable for having the lowest trade costs on imports in the Asian region.

Low tariffs facilitate the importation of intermediates since the foreign contents in the production of products, as shown in the case studies of tyres, LEDs and fasteners, concern mainly intermediate materials and the equipment for production. Tariffs on natural rubber may be an exception since China maintains higher tariffs on this product,

which is considered to be sensitive. The high tariffs (up to 20 per cent) pushed Chinese enterprises to turn to processing trade. For the policymakers it is worth reflecting that export of tyres under the processing trade mode has become the driving force behind China's expanding tyre trade. Although processing trade promoted China's tyre exports, Chinese firms do not make much profits from such trade. More importantly, such a trade mode is not conducive to undertake technological innovation by the domestic firms. China may face the same risk as many other developing countries specializing in labour-intensive, low-skill activities, that is, to be locked in low value added activities.

Apart from tariff reduction and elimination, increased attention should be given to the impact of non-tariff measures (NTMs), which are mostly administrative procedures, including customs procedures, and regulatory measures including product standards, conformity assessment, certifications, safety requirements, packaging and labelling requirements. For example, rubber exports to China from Thailand, which is the number one rubber supplier to China, would have been increased in the absence of these NTMs. UNCTAD analysis shows that, on average, the contribution of NTMs to market access restrictions is often more than twice the size that of tariffs. As regulatory measures are intended to address legitimate public policy goals (for example, environmental and consumer protection), they cannot be simply eliminated, but instead require regulatory harmonization and cooperation between the importing and exporting countries, such as mutual recognition and equivalence to minimize their negative and distortionary effects.

It is difficult to gather disaggregated information on services and the services component in the production of tyres, LEDs and fasteners in China seems to account for a small proportion of the product value. However, it is clear that improvement in the country's infrastructure services quality, which has been achieved by increasing investment in physical infrastructure and refining regulation, has had a positive impact on businesses. Enterprises are able to operate in places that have access to water, sanitation, electricity, communications and transport. The availability of such services facilitates Chinese producers' participation in the GVCs. In the context of GVCs, transport and communication are increasingly crucial components of the production cost, apart from production costs relating to materials and labour. Therefore, a country's ability and willingness to invest heavily in transport infrastructure and information and communications technologies (ICTs) become key determinants of international competitiveness in all sectors.

The case studies suggest that, in the production and trade within the GVCs, comparative advantages apply to tasks rather than to final products and that the skill composition of labour in GVCs reflects the division pattern of participating countries. Due to lack of talents in relevant sectors, China is mainly engaged in the production of low-end products. Thus, human resources play an important role in developing countries' participation within GVCs.

To address the human resources deficit, apart from general and basic education, which is necessary for the development of a country, developing countries could pursue advanced education and youth vocational education or training programmes simultaneously. The latter tends to be undervalued in developing countries

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