



## Estimating Domestic Value Added and Foreign Content in India's Exports



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# **Estimating Domestic Value Added and Foreign Content in India's Exports**

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## Executive Summary

The global production process today is highly fragmented with different stages of production happening in the developed as well as developing world and this has implications for value addition attained in any economy. Further, this also questions our understanding of cross-border trade in the context of fragmented production network. From a policy perspective, it is important to understand value added in International trade, especially as changes in bilateral exchange rates can affect a country's trade balance. Therefore, we need to understand the import context in the country's exports and the source of those imports.

Today, in East Asia, we can no longer observe trade based on comparative advantage in a traditional north-south context. In the last few years, foreign direct investment has led to the emergence of the cross-border production process. The "ASSEMBLED in CHINA" label is a glaring example of how there is an increasingly fragmented production structure prevalent in the global economy, with components from various countries being assembled into a final product before being exported. Against this background, it is important to understand the contribution made to a product within the confines of the geographic boundaries of a particular economy.

India's merchandise trade has been growing in importance in recent years with its share in world exports and imports increasing (Economic Survey, 2013-14). However, in the last five years, India's export growth has seen ups and downs. Further, given India's rapid integration with the world economy after the 1991-92 trade liberalisation, it is imperative that global financial crisis and subsequent slowdown in the world economy has its impacts on the trade balance of the Indian economy. Therefore, from a policy perspective, it is important to assess the value addition in exports from domestic and foreign sources. This would allow an assessment of the impact of currency appreciation on the country's exports. In addition, given that significant import liberalisation has already taken place in India, it would also help to assess the import intensity of India's exports.

Against this background, the present study estimated and analysed the import content in Indian exports at a disaggregated industry level. This study follows the Koopman, Wang and Wei (2008) approach which is a more sophisticated version of Hummel *et al.* (2001).

### The following analyses are undertaken:

- First, the trends in value added trade in India's aggregate exports are examined over time.<sup>1</sup>

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<sup>1</sup> The period of study is 1995 to 2011. Estimates of value added trade are reported for two overlapping periods: 1995 to 2011 based on input-output transactions tables taken from the World Input-Output

- Second, a similar industry-level analysis is undertaken using detailed input-output transactions tables for India. The purpose is to estimate domestic and foreign value added content in India's exports at a disaggregated level. Then, using the WIOD (World Input-Output Database), a comparison of foreign content of India's exports is made with the global average and with the foreign content of exports of some important emerging economies.
- Third, a regression analysis along with a decomposition exercise is carried out to study the effect of an increase in the foreign value added share in Indian exports on the country's export performance.
- Fourth, using the WIOD, an analysis is carried out of inter-temporal changes in value added in Indian exports relative to three other important emerging nations – China, Indonesia and Brazil.
- Fifth, by applying labour coefficients at sector level to technical input-output coefficients for domestic inputs, the study estimates the labour and non-labour components of domestic value added in Indian exports. A further division of the labour component into three classes of workers according to skill level is done. This aspect is analysed further by considering inter-temporal changes and making inter-country comparisons.
- Sixth, an analysis is done on trends in domestic production and trade for selected network products that play an important role in global value chains (GVC) in Asian economies.
- Seventh, to study the patterns of import content in exports for industries classified in terms of skill level, an analysis of trends in foreign value added share is done in manufacturing and service sectors distributed into three groups in terms of skill intensity.

#### **The following are the findings of the study**

- For India's exports, the import content in exports increased steadily from about 11 per cent to about 22 per cent in the time period 1995 to 2011. The rise in import content was relatively greater for merchandise exports from about 11 per cent in 1995 to about 26 per cent in 2011. In services exports, by contrast, the foreign value added content is relatively low and the increase has been rather modest. In the same period, the foreign value added content in services exports increased from about 6.4 per cent to about 8.5 per cent.
- At an individual commodity level, the decline in domestic value added content is associated with a simultaneous increase in foreign value added share for a majority of the commodities, indicating the pervasiveness of international fragmentation. Between 1998 and 2007, the largest increase in import content in exports

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Database (WIOD), and 1998 to 2007 based on Indian input-output transactions tables published by the Central Statistical Office, Ministry of Statistics and Programme Implementation, Government of India.



observed in ships and boat building ( sixty five percentage point increase) followed by petroleum products and fertiliser (25 percentage points increase). By contrast, commodities like trade and insurance, milk and milk products, pulses, metallic minerals like iron ore, magnesium ore , copper ore, etc., there has been only a small increase in the import content in exports (below five per cent).

- A positive impact of increase in FVA on export performance is established through a regression analysis. This is followed by a decomposition analysis, which indicated that the positive effect of an increase in FVA on export expansion was much stronger than the effect on import increase, leading to substantial net gains for the economy.
- The share of domestic labour income in domestic value added in merchandise exports was estimated at 36 per cent for 2007 whereas that in the case of total exports was estimated at 46 per cent for the same year. For services exports, the corresponding figure is about 54 per cent, which indicates that the domestic labour component is relatively high in services exports than that in merchandise exports. The domestic value added has been decomposed into four components: unskilled, semi-skilled, skilled labour and non-labour component. The distribution of factor inputs among the top 20 merchandise exporting sectors shows that the combined share of skilled labour and non-labour component is significantly high in most of the sectors, suggesting a pervasive process of technological change that is biased towards the use of skilled labour and capital.
- When industries are grouped according to their skill intensity, it is observed that there is a rise in foreign content in exports for both medium and high skill manufacturing and service sectors over the period 1998-99 to 2007-08 (attributed to a high rise in the FVA for aircraft and spacecraft, ships and boats, and network manufacturing products groups).<sup>2</sup> However, for low skill intensive manufacturing, there has been a fall in foreign content in exports over the same period (the fall is due to marginal or declining FVA shares for tobacco products, structural clay products, leather footwear, and leather and leather products).
- A comparison of foreign value added share in aggregate exports with other emerging economies for the year 2008 shows that in terms of degree of integration in global value chains, India lags behind most important emerging economies – Taiwan, Korea, Philippines ,Vietnam, Malaysia, Thailand , China – although there are countries which are performing worse – South Africa, Indonesia, and Brazil.
- A decomposition analysis of the foreign value added components of India's exports reveals that a major part is traceable to developing countries, of which the China's contribution is significant.
- An analysis of trends in exports, imports and domestic production of network products (which includes electrical machinery, communication equipment and

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<sup>2</sup> Network product group includes communication equipment, electrical industrial machinery, electronic equipment,, and motor vehicles and others.

motor vehicles) shows that the ratio of imports to domestic production has increased substantially while the increase in the ratio of exports to domestic production has been modest. In network products, the scope to become part of global value chains is relatively much greater. The observed divergence in the trend in the import-production ratio and export-production ratio probably means that imports are primarily being used to meet domestic demand for final network products in India rather than for export.

**Based on the analysis undertaken and the available literature on globalisation and fragmentation of production process across different countries, particularly the studies dealing with India, the following suggestions may be made for increasing Indian involvement in global value chains.**

1. The supply-side problems that come in the way of manufacturing sector growth in India also hinder India's involvement in global value chains. For value added trade, assured supply is critical. Given the serious problems of infrastructure available, being faced by Indian manufacturing, massive efforts, through public-private partnership or otherwise, are required for infrastructure development in the country – power, transports, port facilities, etc – to create a situation conducive to India's increasing involvement in global value chains.
2. The global value added trade is getting increasingly oriented towards capital and skilled labour. Indeed, in many emerging economies, the share of these two factors in value added in exports is increasing rapidly. The implication is that for promoting India's involvement in global value chains, adequate credit availability has to be ensured to manufacturing industries. In addition, the requirement of skilled labour may pose a serious problem. It is known that shortages of skilled labour are already affecting the performance of certain sections of Indian manufacturing. A considerable efforts are needed to ensure adequate supply of skilled labour to manufacturing enterprises, especially those that get involved in global value chains. It is obviously easier said than done. There are issues of creating sufficient facilities for technical training and of creating relevant course content. These aspects need to receive the attention of the government and some efforts are being made towards skill development. There are attempts made to involve private sector enterprises in the arena of technical training. Yet, the key question is whether the efforts taken (currently underway or likely to materialise in near future) will be able to create a sufficiently large pool of skilled industrial workers in the country so as to facilitate India's increasing involvement in global value chains.
3. Enterprises involved in global value added trade need to be of a minimum threshold size. A study undertaken by Wigneraja (2014) reveals that firm size is an important factor determining the probability of small and medium-scale firms joining global value chains. He argues that economies of scale and fixed costs are significant factors



in joining production networks in the early stages, but become less important later. He also points out the advantage of SME clusters in facilitating the units in the cluster joining the production network. Considering the size of Indian manufacturing firms, it needs to be realised that most firms are too small to enjoy economies of scale or to have sufficient resources to bear the initial fixed costs associated with joining production networks. There are several reasons for the preponderance of very small size manufacturing units in India (which is known as the problem of the missing middle), of which a very important one has to do with regulations including those related to labour. It appears that easing regulations governing small and medium scale enterprises would encourage them to expand and help them achieve the threshold size needed to join global production networks. The formation of SME clusters is another major policy initiative that can help Indian manufacturing growth and help Indian firms get increasingly involved in global value chains.

4. Finally, it is necessary to improve the business environment to attract foreign direct investment. As noted above, India's low integration into global value chains is attributable, at least in part, to the low FDI stock in India's manufacturing as compared to FDI in other south-east Asian economies. Thus, there is urgent need to undertake policy reforms that will reduce trade barriers, improve logistics and infrastructure and promote investment that in turn will contribute to improving India's participation in global production networks.