

Why Assemble in Tamil Nadu?

Ideas from Global Trade Trends

C. Veeramani* and **P.G. Babu†**

In terms of attracting new industrial investments to Tamil Nadu, what should be our rationale? Given the general retreat away from free trade over the past few years, going by the old maxim, it might be good for Tamil Nadu to enter when all others are exiting. Given the current context, with everyone's focus inward, it is perhaps time for 'Assemble in Tamil Nadu for the World'. The opportunities are particularly high in the current context of changing global

Beata Javorcik. 2020. Global supply chains will not be the same in the post-COVID-19 world. In Richard Baldwin & Simon J. Evenett (Eds.), *COVID-19 and trade policy: Why turning inward won't work*. CEPR Press.

Mary Amiti, Stephen J. Redding, & David Weinstein. 2019. *The impact of the 2018 trade war on U.S. prices and welfare* (NBER Working Paper No. 25672). National Bureau of Economic Research.

¹ The data cited in the first four paragraphs of this section derive from Census 2011 and MIDS-DES-SRC *Tamil Nadu Household Panel Survey Pre-Baseline Summary, 2018-19*, Draft Report submitted to Government of Tamil Nadu.

geopolitics in which China, the factory of the world, is finding itself at the receiving end. There is a growing realisation among multinational enterprises (MNEs) that they need to diversify their supply chains in the future, instead of relying only on China (Javorcik, 2020). Even before the Covid-19 pandemic, the US-China trade war had created incentives for some of the MNEs to relocate supply chains to other parts of Asia (Amiti et al., 2019). Potential realignment of the global value chains (GVCs) provide an opportunity for India to replace China as the major assembly hub for manufactured exports, which can create millions of jobs for India's low-skilled labour. With appropriate policies, Tamil Nadu can try to grab these opportunities.

Why Tamil Nadu?

Tamil Nadu has all the necessary, social and economic factors in place. To begin with, the state has a huge demographic dividend with 70% of the population in the age group up to 45 years. The gender divide is almost equal with 51% males and 49% females. About 53% of the households live in the rural areas.¹

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Literacy rate is around 86%, and the female literacy rate is 80%. Fifteen per cent of the population have completed bachelor degree and above; four per cent have a diploma degree. Two-thirds of the population are either pursuing or have completed education up to high-school level.

The state's unemployment rate is around 3%; while 45% of the population are employed, 52% are not in the workforce. Of all employed, 63% of males and 27% of females are employed. Private sector salaried employment has emerged as the major work type with 21% of population involved in it, followed by casual labour (agriculture) at 19% and self-employment (non-agriculture) at 14%, respectively. In rural areas, almost one third of the population is involved in agricultural casual labour.

Thinking about aspirations, 50% households in the state expected their income to increase in the next 5 years. Urban households were more optimistic than rural households about the increase in their future income.

P.G. Babu, Vikas Kumar, & Poonam Singh.
2020. *Employment and Covid-19:
Trends and issues in Tamil Nadu*
(MIDS Occasional Policy Paper No. 11,
Covid-19 Series.). Madras Institute of
Development Studies.

However, the wrinkle that emerges from the analysis of Centre for Monitoring Indian Economy data by Babu, Kumar, and Singh (2020) is that there has been a secular decline in labour force participation since at least January 2016. Tamil Nadu's unemployment rate worsened sharply during the strict lockdown in April 2020. It registered a large turnaround in May 2020 when lockdown was eased to some extent. However, labour force participation rate continued to decline, even though at a lesser rate, in May 2020.

The increase in unemployment rate is faster in the case of urban areas, males, and those with higher education. Persons with intermediate levels of schooling were affected more than college graduates, and recovery in employment is also slower in their case, even as their labour force participation continues to drop. There is an underlying need to pay special attention to bring women and those without college education back into the labour force.

Hence, the bottom line is not unemployment rate per se as it is very low at 3%–4% based on standard measure. The real issue is lower labour force participation rate and the quality of employment. The majority of those employed are in casual jobs or are engaged in the informal sector, with low wages, low productivity, and low level of job security. Given the demographic profile of the state, aspirations of higher income of its population, and lower labour force participation rate, particularly that of women, it is important to create quality jobs in the formal sector where wage rates are higher.

Assembly of network products can potentially create, for the youth and women, better jobs compared to that they are presently engaged in. East Asian countries did

Marzia Fontana. 2009. The gender effects of trade liberalization in developing countries: A review of the literature. In Maurizio Bussolo and Rafael E. De Hoyos (Eds.), *Gender aspects of the trade and poverty nexus: A micro-macro approach*. Palgrave Macmillan.

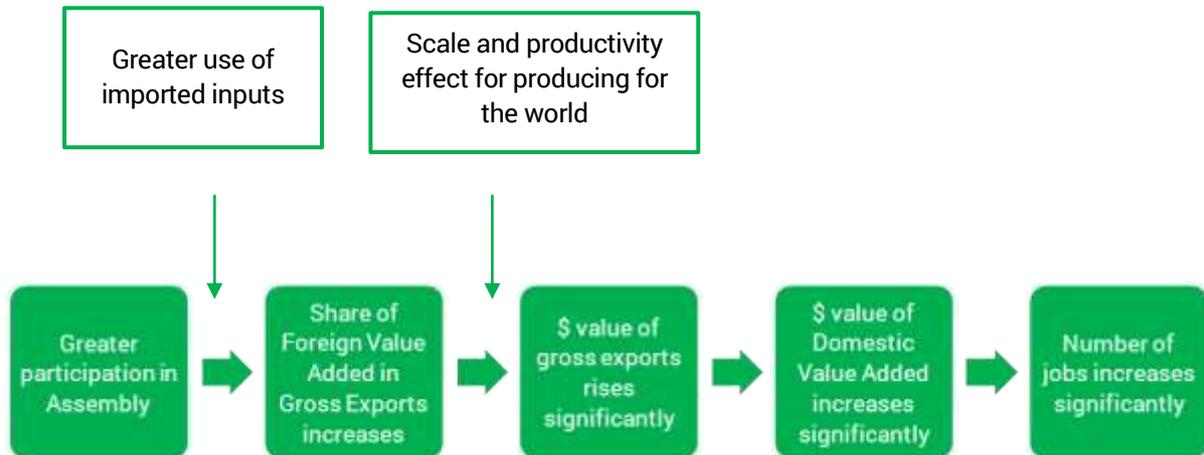
this in the early stages of their growth. The strategy helped them create a lot of jobs for relatively less-skilled people. Female labour force participation in East Asian countries is one of the highest (Fontana, 2009). The same is true in Bangladesh, where garments account for more than 80% of its exports. Within the value chain in garments, Bangladesh specialises in assembly; it gets raw materials from India and Pakistan. More than 80% of the workers in garment factories in Bangladesh are women.

Network goods

Network products are those for which production processes are globally fragmented and controlled by leading MNEs within their ‘producer-driven’ global production networks. It involves deliberate specialisation in labour-intensive ‘network products’, by importing components and assembling them in order to create jobs at a large scale. The basic idea can be understood from Figure 1 and Figure 2.

Figure 1

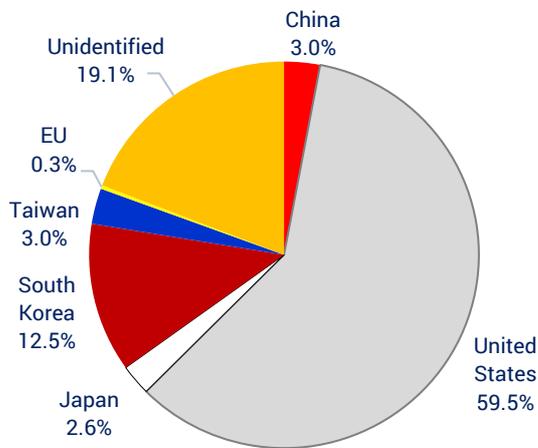
Conceptual Framework for Gains from ‘Assembling in India’ as part of ‘Make in India’



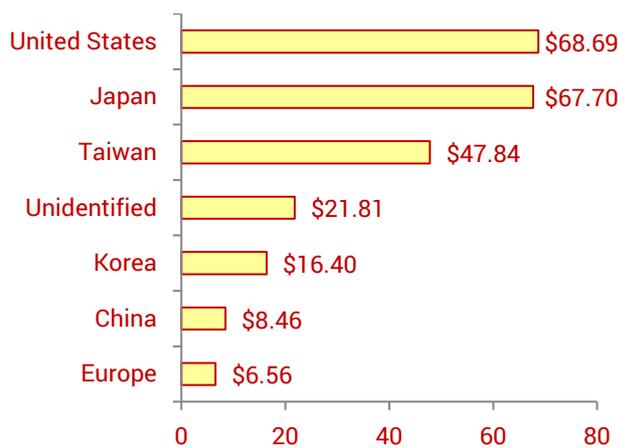
Source. C. Veeramani & Garima Dhir. 2019a. *Reaping gains from global production sharing: Domestic value addition and job creation by Indian exports* (IGIDR Working Paper No. WP-2019-024). Indira Gandhi Institute of Development Research; Ministry of Finance. 2020. *Creating jobs and growth by specializing to exports in network products* (Chapter 5). In *Economic survey 2019–20*. Government of India.

Figure 2

Example of Gain from Assembly: Apple iPod and iPhone 7 Assembly in China



Distribution of value added in Apple iPod



Distribution of value added in iPhone 7

Within the iPod value chain, China specialises in assembly while parts & components are imported. The factory-gate price of an assembled iPod was estimated to be \$144 in 2008, but only \$4 of this constituted Chinese value added (3% of factory-gate price). However, China assembled almost all of the 54.83 million iPods that Apple sold, which led to aggregate domestic value added of \$219 million.

China makes only US\$8.46 from the assembly of an iPhone 7. However, total Chinese value added is very high ($\$8.46 \times$ number of iPhones sold in the world). iPod and iPhone are just two examples. There are thousands of such products, where China has emerged as an assembly centre.

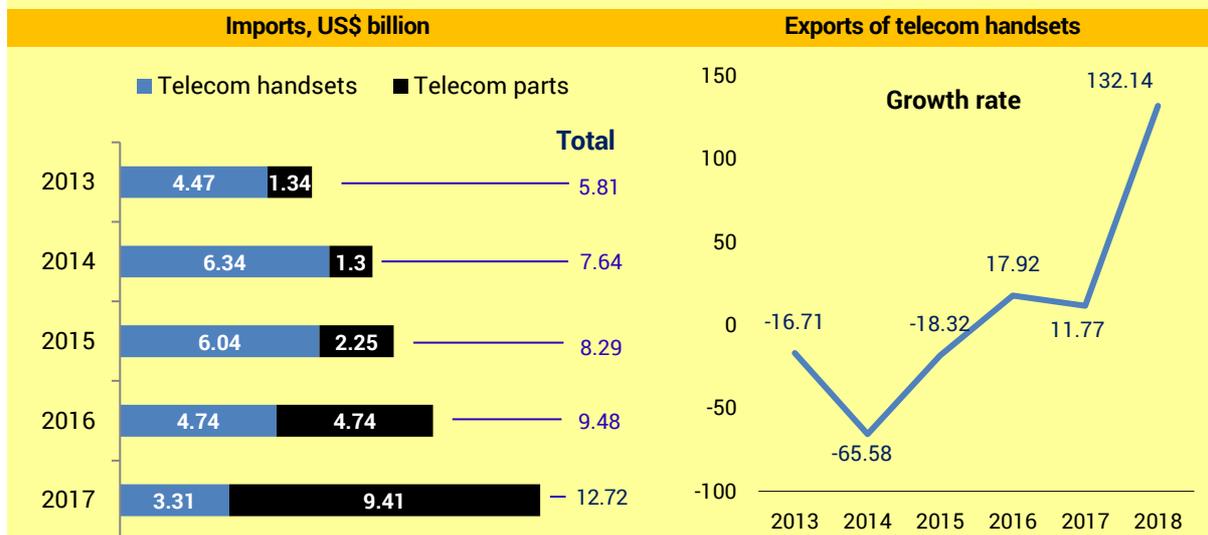
Source: C. Veeramani & Garima Dhir. 2019a. *Reaping gains from global production sharing: Domestic value addition and job creation by Indian exports* (IGIDR Working Paper No. WP-2019-024). Indira Gandhi Institute of Development Research; Ministry of Finance. 2020. *Creating jobs and growth by specializing to exports in network products* (Chapter 5). In *Economic survey 2019–20*. Government of India.

India already has two ‘assemble in India’ success stories, namely, automobiles and mobile handsets (Box 1 and Box 2). The country has a potential to expand its presence in electronics and electrical machinery. In the case of mobile handsets, there might be lessons for Tamil Nadu from the Nokia plant episode.

Box 1

Success Story 1: Assembly of Mobile Phones in India

India toppled Vietnam to become the second largest manufacturer of mobile phones globally following China in 2018 with a world share of 11%. India could manufacture around 1.25 billion handsets across various segments by 2025, firing up an industry worth around \$230 billion (India Cellular & Electronics Association and McKinsey, 2018). Between 2013 and 2017, while India’s import of telecom handsets declined from US\$4.47 billion to US\$3.31 billion that of telecom parts increased steadily from US\$1.34 billion to US\$9.41 billion. At the same time exports of telecom handset increased significantly during the last three years. This pattern is consistent with the emergence of India as an assembly centre for telecom handsets.



Source. Ministry of Finance. 2020. *Creating jobs and growth by specializing to exports in network products* (Chapter 5). In *Economic survey 2019–20*. Government of India.

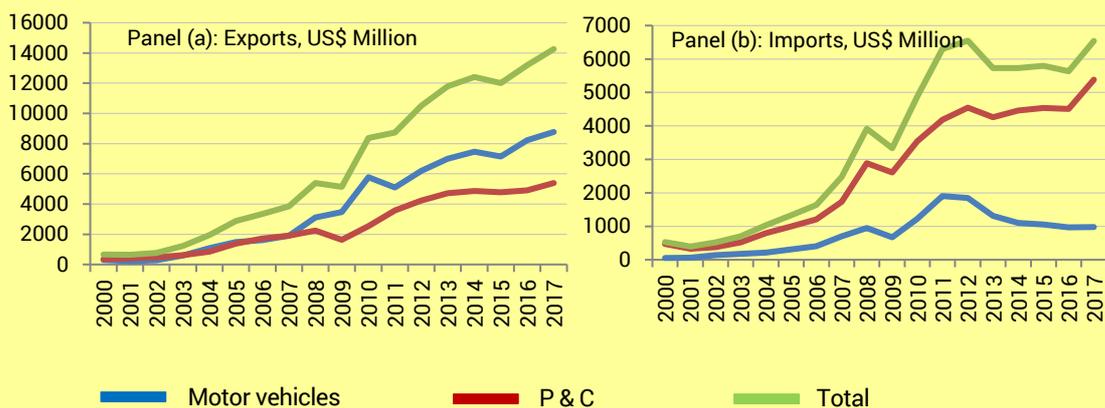
Note. India Cellular & Electronics Association and McKinsey. 2018, November. *Making India the global manufacturing powerhouse for mobile handsets and components* (Report).

Box 2

Success Story 2: Learnings from Integration into GVCs by Indian Automobile Industry

From about the early 2000s, the Indian automobile industry has undergone a remarkable transformation from production for the domestic market, which remained its modus operandi for over a half century, to global integration. The country has emerged as a major assembly centre for compact cars (Athukorala & Veeramani, 2019). India's exports of completely built units (CBUs) increased from about US\$225 million in 2001 to US\$8.8 billion in 2017, while exports of parts and components increased from US\$408 million to US\$5.5 billion between these two years (see panel (a) in Figure). The pattern is quite different on the import side with parts and accessories growing significantly faster than assembled vehicles during the same period (see panel (b) in Figure). In 2017, the import value of assembled vehicles stood below US\$1 billion compared to about US\$5.4 billion worth of imports of parts and accessories. While assembled motor vehicles constitute the bulk of India's automobile exports, parts and accessories account for the lion's share of total automobile imports. This pattern is consistent with the emergence of India as an assembly centre for automobiles.

Exports and imports of motor vehicles versus and parts & components (P&C)



Source: Prema-Chandra Athukorala & C. Veeramani. 2019. From import substitution to integration into global production networks: The case of Indian automobile industry. *Asian Development Review*, 36(2): 72–99;
Ministry of Finance. 2020. Creating jobs and growth by specializing to exports in network products (Chapter 5). In *Economic survey 2019–20*. Government of India.

Tariff inversion

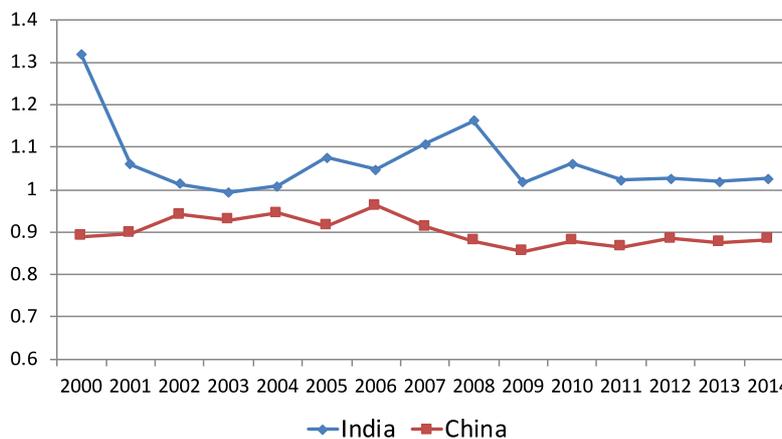
However, the mere existence of these opportunities do not mean that they can be realised. To exploit the opportunities, it is important to undertake a comprehensive set of reforms pertaining to factor market, trade policies, and ease of doing business. In particular, the issue of inverted tariff and protectionism has to be addressed immediately. Inverted tariff exists when the import duty rate for the overall finished good is lower than the duty rate of the component parts. Such a structure could render the relevant manufacturing process uncompetitive in the importing country. The presence of inverted tariff in India's network product industries is calculated as:

$$\text{Tariff inversion in industry } i = \frac{\text{Weighted average of input tariff for industry } i}{\text{Weighted average of output tariff for industry } i}$$

Tariff structure is inverted when this ratio is greater than 1. Figure 3 and Table 1, constructed using input-output tables, convey the idea. Figure 3 positions India in comparison with China, with regard to tariff inversion, to underline the issue.

Figure 3

Inverted Tariff: Comparison with China



Source: Data from UN Comtrade and World Input Output Database.

C. Veeramani & Anwesa Basu (forthcoming). *Protectionism, tariff inversion and assemble in India: Contradictions of trade policy* (IGDR Working Paper). Indira Gandhi Institute of Development Research.

Table 1**Inverted Tariff in Network Products**

| Product description | Year | Output tariff | Input tariff | Tariff inversion |
|--|-----------|---------------|--------------|------------------|
| Manufacture of communication equipment | 2011 | 2.2 | 6.1 | 2.7 |
| | 2012 | 2.2 | 6.7 | 3.0 |
| | 2013 | 2.2 | 6.0 | 2.7 |
| | 2014 | 1.8 | 3.7 | 2.0 |
| | 2015 | 1.8 | 7.9 | 4.3 |
| | 2018 | 3.0 | 8.0 | 2.6 |
| | 2019–2020 | 9.0 | 11.3 | 1.3 |
| Manufacture of electrical equipment | 2011 | 8.0 | 8.1 | 1.0 |
| | 2012 | 8.0 | 8.4 | 1.1 |
| | 2013 | 8.0 | 8.1 | 1.0 |
| | 2014 | 8.0 | 8.1 | 1.0 |
| | 2015 | 8.0 | 8.4 | 1.0 |
| | 2018 | 8.6 | 8.4 | 1.0 |
| | 2019–2020 | 11.9 | 12.0 | 1.0 |
| Manufacture of machinery and equipment n.e.c | 2011 | 6.8 | 7.2 | 1.1 |
| | 2012 | 6.8 | 7.2 | 1.0 |
| | 2013 | 6.7 | 6.6 | 1.0 |
| | 2014 | 6.6 | 7.3 | 1.1 |
| | 2015 | 6.1 | 7.3 | 1.2 |
| | 2018 | 5.8 | 7.7 | 1.3 |
| | 2019–2020 | 10.7 | 12.2 | 1.1 |
| Manufacture of transport equipment | 2011 | 8.8 | 7.3 | 0.8 |
| | 2012 | 9.2 | 7.4 | 0.8 |
| | 2013 | 9.3 | 6.4 | 0.7 |
| | 2014 | 8.6 | 7.7 | 0.9 |
| | 2015 | 9.0 | 8.1 | 0.9 |
| | 2018 | 10.4 | 8.4 | 0.8 |
| | 2019–2020 | 9.8 | 12.2 | 1.2 |
| Manufacture of electronic component, consumer electronics, magnetic and optical media, computer and peripheral equipment, optical and electronics products n.e.c | 2011 | 5.2 | 7.9 | 1.5 |
| | 2012 | 5.3 | 7.7 | 1.4 |
| | 2013 | 5.3 | 8.0 | 1.5 |
| | 2014 | 5.6 | 6.4 | 1.1 |
| | 2015 | 4.9 | 7.2 | 1.5 |
| | 2018 | 4.0 | 7.3 | 1.8 |
| | 2019–2020 | 6.6 | 10.6 | 1.6 |

Source. C. Veeramani & Anwesha Basu (forthcoming). *Protectionism, tariff inversion and assemble in India: Contradictions of trade policy* (IGIDR Working Paper). Indira Gandhi Institute of Development Research.

Note. n.e.c. = not elsewhere classified.

The way forward for Tamil Nadu

Which industries should Tamil Nadu focus on? Given our comparative advantage in labour-intensive activities and the imperative of creating employment for a growing labour force, there are two groups of industries that hold the greatest potential for export growth and job creation (Ministry of Finance, 2020; Veeramani & Dhir, 2016).

Ministry of Finance. 2020. *Economic survey 2019–20*. Government of India.

C. Veeramani & Garima Dhir. 2016. *India's export of unskilled labour-intensive products: A comparative analysis*. In C. Veeramani & R. Nagaraj (Eds.), *International trade and industrial development in India: Emerging trends, patterns and issues*. Orient Blackswan.

First, there exists significant unexploited export potential in Tamil Nadu's traditional unskilled labour-intensive industries, such as textiles, clothing, toys, and leather products (including footwear). The GVCs in these industries are controlled by 'buyer driven' networks wherein the lead firms that are based in developed countries concentrate in higher value-added activities, such as design, branding, and marketing. Physical production is carried out, through subcontracting arrangements, by firms in developing countries. Examples include the production networks of Walmart, Nike, and Karstadt.

Second, Tamil Nadu has huge potential to emerge as a major hub for final assembly in network products. The GVCs in these industries are controlled by leading MNEs, such as Apple, Samsung, and Sony, within 'producer-driven' networks. In general, these products are not produced from start to finish within a given country; instead, countries specialise in particular tasks or stages of the good's production sequence. Within the production network, each country specialises in a particular fragment of the production process; this specialisation is based on the country's comparative advantage. Labour-abundant countries, like China, specialise in low-skilled, labour-intensive stages of production, such as assembly, while the richer countries specialise in capital and skill-intensive stages, such as R & D. Thus, the lead firms retain skill and knowledge-intensive stages of production in high-income headquarters (e.g., the United States, European Union, and Japan) but locate assembly-related activities in low-wage countries (e.g., China and Vietnam). Researchers identified six groups of network products, based on Standard International Trade Classification (SITC) nomenclature, where global production sharing is most prevalent (Table 2).

Together, network products accounted for nearly 30% of world exports in 2018, with the share of Electrical Machinery (SITC 77) being the highest at 10.4%. It is possible to disentangle total trade in these network products into its two main subcategories—parts & components (P & C), and assembled end products (AEP).

The world exports of network products increased steadily from US\$ 2.01 trillion in 2000 to US\$ 5.41 trillion in 2018. The increase was mainly driven by AEP, whose

Table 2**World Exports of Network Products, 2018**

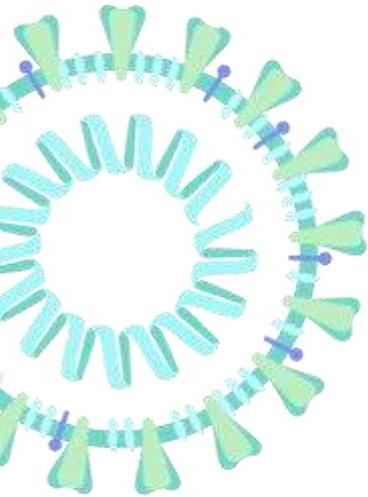
| SITC code | SITC description | World exports, 2018 (trillion US\$) | Share in total world exports, 2018 |
|-------------------------------|--|-------------------------------------|------------------------------------|
| 75 | Office machines and automatic data processing machines | 0.83 | 4.37% |
| 76 | Telecommunication and sound recording equipment | 0.65 | 3.42% |
| 77 | Electrical Machinery | 1.97 | 10.44% |
| 78 | Road Vehicles | 1.55 | 8.23% |
| 87 | Professional and scientific equipment | 0.48 | 2.53% |
| 88 | Photographic Apparatus | 0.12 | 0.66% |
| Total Network Products | | 5.59 | 29.6% |

Source: C. Veeramani & Garima Dhir. 2019b. *Dynamics and determinants of fragmentation trade: Asian countries in comparative and long-term perspective* (IGDR Working Paper No. WP-2019-040); Ministry of Finance. 2020. *Creating jobs and growth by specializing to exports in network products* (Chapter 5). In *Economic survey 2019–20*. Government of India.

value rose from US\$ 1.11 trillion to US\$ 3.93 trillion. On an average, network products account for about 42% of the world's manufactured exports. The average share of AEP exports in total network product exports increased from about 59% during 2000 to 2016, to about 72% during the last two years (2017–2018). Asia's share in world exports of network products increased phenomenally from about 37% in 2000 to 51% in 2018, while the shares of both Europe and America declined. East Asia accounted for the bulk of the total Asian exports and was followed by Southeast Asia. Rest of Asia (including South, Central, and West Asia) accounted for just 3% of the total Asian exports.

The bottom line, given the young population profile, people looking for better-paying jobs, and global trade trends, one can explore the strategy of 'Assemble in Tamil Nadu for the World'. Indeed, trade policy being the domain of the central government, state governments are not in a position to change tariff rates to address the issue of inverted tariff. However, state governments can set up export processing zones (EPZs) with zero customs duties for imported intermediate goods for export purposes. The EPZs should also provide flexible labour laws.

With a huge coastline, Tamil Nadu is strategically located to integrate itself well with the production networks in East Asia and the ASEAN group of countries. Apart from creating well-functioning EPZs with the required facilities, Tamil Nadu should invest heavily to improve the connectivity of these zones with the rest of the state and the country. The state should also invest in reducing the service link cost—the cost of linking the production stage in Tamil Nadu (mostly assembly) with the stages (mostly P & C production) in other countries, particularly in East and Southeast Asia. 🌐



COVID-19 SERIES

We are in the midst of a pandemic shock as well as a deep economic recession. It necessitates extraordinary policy action. However, we do not have the luxury of time to carry out a new research plan. The situation calls for immediate reflection and action, based on available data. In the Covid-19 Series of Occasional Policy Papers, MIDS faculty contemplate on diverse issues of importance, contextualise their work to the contemporary challenge, draw attention to linkages with interrelated sectors and issues, and suggest short-to-medium-term policy measures. This series would be a useful input in the design of the state's post-pandemic socio-economic policy.

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Image credit: Desiree Ho for the [Innovative Genomics Institute](#).

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