A Comparative Study of Import Tariffs in Electronics

India • China • Vietnam •Thailand • Mexico

High Import Tariffs can Negate PLI and Adversely Impact Competitiveness & Scale

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Notes

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Introduction

The impact of Covid-19 has led to major loss of human life and economic disruption, with supply-chain disruption and manufacturing falling to the lowest levels in decades. Policy perspectives are evolving, with some important changes that have taken place in recent years. In this background, this report focuses on a major trade policy, viz. import tariffs in the electronics sector of India. The Indian Government has increased tariffs in the electronics sector to reduce risks from import competition and hopes to increase value addition by attracting FDI. However, competing economies which play or are emerging as major players in global markets have much lower tariffs. In comparing the tariff regimes of the competing countries with India, the report also finds that their trade performance has been much better than that of India. In addition, the report indicates that the cost effects of these tariffs are likely to make India less competitive in global markets.

India has experienced relatively rapid economic growth as shown by the fact that it improved its global GDP ranking from 13th largest economy in 1980 to become the 6th largest economy in 2020. However, India's rank in global exports is much lower and its global share of merchandise exports has been stuck at around 1.7% since 2011, a period when several economies emerged to outcompete India in global markets. To address the situation, Indian policy makers have encouraged FDI, and focused on investment, domestic production, exports, improving job opportunities and technological skills. Since 2014, its major programmes include Make in India and Atmanirbhar Bharat (AB)[1] initiatives. Among the priority areas identified for emphasis is the electronics sector, and within that a particular focus on mobile phones, parts and components[2].
AB has a wider scope of objectives, including making India more competitive with aspirations of developing India into a hub for GVCs in world trade[3]. Electronics is a major area of emphasis, as shown for instance by the first set of Production Linked Incentive (PLI) Schemes announced in March 2020; the initial list of sectors under PLI itself included a prominent focus on electronics, in particular mobile phones, parts and components[4]. Such a focus is not unusual because this sector has been a leading sector for many countries[5] that have emerged as significant competitors of India in global markets, based significantly on FDI and strong links with global value chains (GVCs) and exports.

The Union Budget for financial year 2018-19, made a calibrated departure from the underlying policy in the last two decades, wherein the trend largely was to reduce the customs duty. It was believed that there was substantial potential for domestic value addition in certain sectors, like food processing, electronics, auto components, footwear and furniture. To further incentivise the domestic value addition and Make in India in some such sectors, customs duty was increased on certain items namely mobile phones from 15% to 20%, some of their parts and accessories to 15% and certain parts of TVs to 15%. This measure was aimed at creation of more jobs in the country. [6]

In May 2020 the Hon'ble Prime Minister's strategy of Atmanirbhar Bharat, or AB was to focus on creating and sustaining strong competitive abilities within India. India's main policy instruments include attracting FDI in key areas of emphasis,

[1] *https://pib.gov.in/PressReleseDetail.aspx?PRID=1623391*
[2] *https://www.makeinindia.com/sectors*
[3] *https://www.hindustantimes.com/india-news/pm-modi-pitches-india-as-hub-for-global-supply-value-chains-in-post-covid-19-world/story-2hyIxNxZ7HJIdQzCYowaFI.html .*
[4] *See https://www.youtube.com/watch?v=k1nfvg3LFcY . The decisions are at: https://www.pib.gov.in/PressReleseDetail.aspx?PRID=1607487, https://www.pib.gov.in/PressReleseDetail.aspx?PRID=1607491 and https://www.pib.gov.in/PressReleseDetail.aspx?PRID=1607489*
[5] *This can be seen by the much larger growth registered by electronics sector's exports compared to manufacturing products' exports in the past three to four decades. See the data provided at https://data.wto.org/ and ITC Trade Map*
[6] *Paragraph 160 of https://www.indiabudget.gov.in/budget2018-2019/bspeecha.asp*

facilitating the operating conditions for investment and trade (main components of ease of doing business), financial assistance schemes such as PLI for reducing cost disabilities, and increasing tariffs with an aim of attracting FDI and generating domestic production.

The National Policy on Electronics – 2019 ("NPE 2019"), envisioned the creation and enablement of an environment for the Electronics Systems Design and Manufacturing (ESDM) sector to compete globally. One of the key missions of the National Policy in 2019 was to incentivise a large ESDM eco-system to achieve net positive Balance of Payments in the sector.

Extract from the NPE, '2019:
3.2. Strengthen India's linkages with global trade, integrate with global value chains and build facilitative programmes and incentive framework to boost Indian ESDM exports.

3.2.1. Transform India into a destination for manufacturing and exports in pre-identified, high growth electronics sector by encouraging and incentivizing large ESDM eco-system to achieve net positive Balance of Payments.

The emphasis on higher tariffs was evident even earlier with a Phased Manufacturing Programme (PMP) that relied on raising tariffs to create a protected market for FDI and domestic production. However the limitations of the PMP came to light in 2018 when graduating to producing components such as Camera modules, mechanics or other sophisticated parts was not easily possible in India. Hence increasing tariffs was found to be counterproductive and only led to an increase in the cost of production of the final product, namely mobile phones. Significantly, one of the strategies of the NPE 2019 provided was to promote a stable tax regime with advance notification of a Phased Manufacturing Plan together with a sunset clause. However, introducing new tariffs in the year 2021 and some more in the year 2020 were neither envisaged in the PMP for the mobile phone sector, and was not intimated in advance to the industry. These changes are contrary to the creation of a much needed large eco-system to support large production of mobile phone handsets and components during the tenure of the PLI scheme.

Extract from the NPE, 2019
5.1.8. Promote a forward looking and stable tax regime, including advance intimation to the industry to plan their investments in the form of Phased Manufacturing Programme (PMP) in various segments of electronics, with a sunset clause.

Similar to India, its competing economies have also relied on a combination of trade and investment policies for their economic progress, with an emphasis on improving domestic capabilities to participate in global value chains and attracting and facilitating investment through subsidies, facilitation of trade and improving operational conditions for investors and domestic producers. However, **among the policies followed by India and its competing economies, there is one major difference[8]. India has higher tariffs and it relies much more on increasing tariffs compared to its competing economies**. India's policies are thus driven by domestic market rather than opportunities in global markets. This situation

[7] *The PMP is part of a change in policy Paragraph 160 of https://www.indiabudget.gov.in/budget2018-2019/bspeecha.asp*
[8] *An important objective of the PLI scheme was to address the disabilities faced by Indian producers/exporters compared to the policies used by the economies that have emerged as strong competitors of India in global markets.*

needs to be better understood in terms of the actual tariff levels applied by India and its competing economies, and the implications of this different approach. This difference is especially important for the priority sectors emphasised by India. A major priority sector identified for support is large electronics, in particular mobile phones, parts and components, as shown by the initial PLI schemes announced on 21st March 2020.[9] The PLI scheme for this sector embodies all the major objectives of Atmanirbhar Bharat, such as higher FDI with an emphasis on global large firms with technology and access to major markets, development of domestic technical capacities and ecosystems, linking up with global value chains, increasing exports, and reducing imports and trade deficit.

The potential of electronics sector, especially mobile phones, was recognized even earlier in the National Policy on Electronics (NPE) 2019. While NPE 2019,[10] emphasized the objective of tax stability, it also referred to phased manufacturing programes (PMP) which incrementally increased tariffs on a number of parts, components, sub-assemblies and final products in the electronics sector, in particular during 2020 and 2021. In this background, this report examines the trend of trade and tariffs for India and its main competing economies, as well as the impact of India's increase in tariffs on parts, components, sub-assemblies, creation of ESDM eco system, trade in the electronics sector as a whole. In this background, the performance of India and the competing economies is compared for their exports, imports and trade deficit for electronics because these are important policy objectives emphasized by the Indian government. This comparison also shows that the competing economies have in general performed better than India on several counts.

Section 1 examines the possible rationale for increasing tariffs in India in the electronics sector and its fallacies. Section 2 identifies some important competing economies for comparison with India in the electronics sector, and reiterates that approach on tariffs is the main difference in the policy orientation among India and the competing economies selected for the comparison. The competing economies selected for comparison are China, Mexico, Thailand and Vietnam. Section 3 explains the products selected for the study and the main tariff related features for the HS categories selected. This list of products includes 120 HS 8-digit tariff lines[11] as well as a smaller group identified by the industry as priority products within these 120 HS lines. The electronics products in this list account for 76% of Indian electronics imports in 2020-21. Section 4 notes some of the key issues that arise in a comparison of tariffs of India with its competing economies. Section 5 provides a detailed picture of the comparison of India's tariffs on electronics with those imposed by the competing economies, i.e. China, Vietnam, Mexico and Thailand. This comparison is conducted for tariffs in 2021, and also considers the tariffs on final products and inputs for the priority products selected by the industry. Section 6 extends this comparison by looking at the changes in tariffs during 2014 to 2020. In the context of this comparison, Section 6 also looks at exports, imports and trade surplus/deficit for electronics during 2014 to 2020 for India and the competing economies.

A significant implicit reasoning for raising India's tariffs is that the large market size of India combined with tariff increase would attract FDI. This presumption may not be true for the electronics sector as a whole. Section 6 shows that India's domestic market is not very large compared to the global market. Moreover, the comparison with competing economies suggests that the size of the domestic market does not necessarily result in higher exports or deeper links with GVCs. This implies a need to carefully consider the possible adverse impact of raising tariffs on exports and even investment. This is the focus of the analysis in sections 7 to 9.

Section 7, using very basic tools such as the share of the components used in producing a mobile phone, has examined the cost impact of recent tariff increases. The focus in this section is on Mobile phones which constitutes roughly 40% of the total electronics industry in India. Section 8 also estimates the extent to which these cost increases dilute the supportive role of PLI. Section 9 uses a more sophisticated general equilibrium analysis based on input output tables of India and projects the effects of this tariff increase of macroeconomic variables in the electronics sector, with these effects being estimated up to 2025. Finally the report concludes with the main findings of effects of tariff increase on the electronics sector in India for building export led competitiveness or positioning India as part of a GVC by attracting FDI.

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[9] See, https://pib.gov.in/PMContents/PMContents.aspx?menuid=6&Lang=1&RegionId=3 for the Cabinet decision on the first PLI schemes. The schemes on electronics were notified in April 2020. See, for example, https://www.meity.gov.in/writereaddata/files/production linked incentive scheme.pdf.

[10] See paragraph 5.1.8 of the NPE 2019 at https://www.meity.gov.in/writereaddata/files/Notification NPE2019 dated25.02.2019.pdf

[11] Two 8-digit tariff lines each have two different tariff rates, thus effectively creating two categories with it. For the purpose of comparison, each of these two tariff lines is considered as two separate lines. Each is considered as a single line for the assessment of import share because data on import share is at the level of the 8-digit HS category as a whole.

1 Possible Rationale for Increasing tariffs and its fallacies

There are three main arguments on which India's current Tariff policy for electronics has been developed. The first is the infant industry argument, where electronics is treated as a new industry with tremendous potential and hence needs to be protected. The second is the desire to encourage tariff jumping investment and link India to Global value chains and third but not the least is the revenue argument. Tariffs generate much needed revenue especially in these Covid-19 times. This section shows the fallacy of these arguments and how tariffs may actually militate against these objectives.

1.1 The Infant Industry Argument

One of the common reasons used by governments to impose tariffs is the classic infant industry argument. In complex sectors such as electronics this argument is mainly used to increase domestic value addition. The infant industry argument states that new industries require protection from international competitors until they become mature, stable, and are able to be competitive. The infant industry argument was advocated by Alexander Hamilton in 1791[12], and refined by Friedrich List in his book, National System of Political Economy, 1841. [13] In a schematic representation of Infant Industry Protection, the upper hand denotes punitive policies like tariffs and the lower hand supportive policies such as subsidies and those related to ease of doing business. Hence the infant industry argument was presaged as a combination of carrots and sticks. Tariffs alone were not supposed to make an infant grow up.

[12] *Works of Alexander Hamilton, ed. Henry Cabot Lodge, Federal Edition, New York, G.P. Putnam's Sons, 1904, at http://oll.libertyfund.org/Home3/Book.php?recordID=0249.01.*

[13] *https://oll.libertyfund.org/title/lloyd-the-national-system-of-political-economy*

Figure 1: Infant Industry Protection

Source:
https://corporatefinanceinstitute.com/resources/knowledge/economics/infant-industry-argument/

Infant industry argument militates against modern economies in sectors such as electronics where global value chains (GVCs) are the norm. The underlying assumption behind GVCs is that not every country can produce all components efficiently. Hence efficiency should guide how a country is integrated in GVCs. The most complex GVCs are to be found in the electronics sector. Protectionism in the form of tariffs prevents the integration of an economy in GVCs. No country, not even China with a more comprehensive and supportive approach has a domestic value added of more than 36 to 50 % for most electronics products. Hence to emphasize a rapid rise in domestic value added through the use of tariffs may be counterproductive.

1.2 GVCs and Tariffs

India is a minor player, almost a non-player in GVCs for electronics. China is the top exporter of electronics products, including personal computers (PCs), mobile phones, consumer electronics, electronics sub-assemblies, parts for PCs and mobile phones etc., accounting for at least half of global exports (excluding re-exports) for the first two categories. As such, China is an important import source of both final electronics products and intermediate components for the Asian countries and the US. In the case of the European Union (EU), China is a major supplier of mainly final products. Hard disk drives come from Thailand, the Philippines, South Korea and Taiwan, as well as audio/visual-related products from Vietnam, South Korea, Japan and the EU.

Taiwan is the largest global exporter of integrated circuits (ICs) and is the main supplier to China, Japan, Malaysia, Thailand and South Korea. South Korea ranks at par with China in terms of IC exports and is the largest source for Vietnam. The two firms dominating world high end IC design and manufacturing are Taiwan Semiconductor and the South Korean firm, Samsung. China is primarily operating in the Assembly, Testing, Marking and Packaging (ATMP)

With GVCs, the negative effects of tariff are magnified

Global value chains (GVCs) are a potential factor amplifying the impact of higher tariffs on economic activity. In the case of multistage production processes, goods move in a sequential manner from upstream to downstream with value added at each stage. GVC-related trade can be decomposed into the so-called backward and forward linkages. Forward linkages trade refers to a country's value-added exports that are not absorbed in the final demand of that country's direct trade partners, but (usually after some processing) are further exported to third markets. Backward linkages trade, on the other hand, comprises the foreign content used to produce a country's exports. Electronics, especially mobile phones tend to rely on backward linkages. The magnification effects of higher tariffs due to GVCs, depends, among other things, on the share of foreign value added in exports.

Empirical analysis suggests that tariff hikes can, over the medium term, significantly dampen the economic activity of industries which rely on foreign inputs as is the case for electronics in India. Global sourcing activities of firms mean that tariffs meant to protect specific sectors of the economy may at the same time hurt domestic producers in other industries by raising their input costs rendering them globally uncompetitive. While an increase in "upstream tariffs" does not significantly affect the real activity of industries with low backward linkages, significant negative effects are found for industries downstream in the value chain (i.e. with high backward linkages), which seems intuitive since their production process relies on foreign inputs. The mobile (and the electronics) sector is a downstream sector in global GVCs.

Hence the tariff effects in the case of mobile phones and other electronics in India is likely to be magnified. They will increase costs both for domestic and exports without necessarily developing local industries or developing economies of scale.

1.3 When tariff jumping investment does not occur

High barriers to imports can induce tariff-jumping FDI as an alternative to trade. There is evidence that firms tend to substitute domestic sales (by investing in the host country) instead of exporting when tariffs are high[14]. However, empirical studies show that while tariffs were positively correlated with FDI in the past, they are now negatively correlated especially in the electronics sector[15]. This change is in line with the new organisation of international production where multinational enterprises choose to locate their activities in different countries to take advantage of cost differences and scale economies. Tariffs and NTBs can negate the competitive advantages offered by a host economy and negatively affect investors' choice of location.

Restrictive trade policies, like tariffs also weaken the positive effects of investment on the host economy. Barriers to imports such as tariffs can encourage the exercise of market power by firms (foreign or domestic) in the domestic market, which in turn is generally associated with lower efficiency, higher consumer prices and sometimes the use of "second-generation" technology. Therefore FDI-induced backward linkages with domestic firms and technological spillovers will be less if there are high tariffs. Moreover, domestic markets such as India's in the case of mobile telephones (6.5% of global market) are relatively small, and its high tariffs hinder realisation of scale economies which limits the potential gains from

[14] *Head, K and John Ries, Exporting and FDI as Alternative Strategies, Oxford Review of Economic Policy Vol. 20, No. 3, FIRM-LEVEL ADJUSTMENT TO GLOBALIZATION (Autumn 2004), pp. 409-423 (15 pages) Published By: Oxford University Press https://www.jstor.org/stable/23607093*

[15] *Ibid.*

trade and its interaction with investment. Trade openness positively correlates with investment in most empirical studies. Sensitivity analyses of cross-country regressions indicate that trade openness is more likely to be positively correlated with FDI than any other explanatory variable.

India decided to escalate tariff rates for several tariff lines and applied tariff peaks to specific products of 20% or more with the aim of increasing domestic value addition. The intention was to encourage domestic production of these products and thereby support greater productivity and wages. However these disparate tariffs have penalised India's exports, have fostered inefficiencies and increased costs within the economy thereby reducing the country's overall competitiveness. Tariffs on imports would in essence be taxes on exports because of the inefficiencies and increased costs. A quantitative analysis in section 8 of this report shows that impact of tariffs will be the opposite of intended objective of policy-makers (for example battery chargers).

To soften the impact on tariffs on capital and intermediate goods while maintaining some protection, duty drawbacks or tariff exemptions has been offered to exporters in India. These mechanisms would have promoted export-oriented investments but only if the system is administered efficiently without additional costs for exporters. The industry has complained that this is not the case in India. Particularly advantageous backward and forward linkages between foreign and domestic firms in India would be probable when tariffs of intermediate goods were low. This would also promote the integration of local affiliates of global firms to integrate in a global chain of production which uses cutting-edge technology. This is because advanced technologies are regularly embodied in the intermediate product imports. Hence, imports would in turn reduce the cost of learning other applications of this new technology and lower the start-up costs for other new investments. These backward and forward linkages can channel technological spillovers throughout the Indian economy.

1.4 Raising Tariffs for Revenue Purposes

Countries may choose to raise tariffs for collecting revenue, commonly known as revenue tariffs. It may lead to unexpected results like fall in output and overall revenue if not thought through carefully. Revenue tariffs exist primarily to raise money on goods that are not produced domestically, allowing the government to invest in other resources. For example, import taxes on oil produced elsewhere, or products that are mainly produced in other countries. In India tariffs account for around 5% (excluding IGST) of total government revenue.[17] Compare this with the Chinese figure of 2.5% of total government revenue [18]. Of this less than 0.3% comes from the electronics sector. However by increasing tariffs of intermediate products and inputs for the electronics sector the sectoral output according to General Equilibrium Modelling is likely to fall by 9%. This would entail a GST revenue loss for India of 1.2% from this sector alone. Hence increasing tariffs without examining the revenue consequences through a fall in output may prove to be a short-sighted policy.

India's aim is to become a major global producer and emerge stronger similar to its competing economies in global markets. In specific terms, India aims to encourage domestic production and exports through increase in investment from global large firms, objectives that have also been emphasized by many of its competing economies. As has been explained above, Indian tariffs on intermediate products have to compare favourably with other competing countries for India to attract FDI and integrate with GVCs. Sections 3 and 4 focus on this aspect, following the selection of four competing economies to compare with India as discussed in section 2 of the report

[16] *Chakrabarti, A. (2001), "The Determinants of Foreign Direct Investment: Sensitivity Analyses of Cross-Country Regressions", Kyklos, Vol. 54, 1, pp. 89-114.*
[17] *Calculated from Budget 2021.*
[18] *US calculations in 2019. https://www.piie.com/research/piie-charts/mainly-poor-countries-use-tariffs-major-source-government-revenue*

2
Selection of competing economies to compare with India

India's aim is to become a major global producer and emerge with a stronger global presence similar to the competing economies that have emerged as major electronics exporters in world markets, in particular for the mobile phones sector and its related products. In this context, the relevant competing economies are those that have performed very well in the past few decades to emerge as leading exporters of electronics. For identifying these economies, WTO data on export performance is analysed for the top exporters of the product category "Office and Telecom Equipment", which comprises "electronic data processing and office equipment", "telecommunications equipment:, and "integrated circuits and electronic components". These are the key electronic products exported by India and its major competing economies of India.

Table 2.1 shows the top exporters of "Office and Telecom Equipment" (electronics) in 2019 and how their rankings have changed since 1980. Though India is not among the top 15 exporters of "Office and Telecom Equipment", Table 2.1 also provides the export ranking of India as a point of comparison with the leading exporters in the world.

Table 2.1. Top Exporters of Office and Telecom Equipment (Electronics Products), 2019 and Their Rankings 1980 to 2019

Rank as Exporter →	1980	1990	2000	2010	2019
1. China	**35**	**20**	**11**	**1**	**1**
2. Hong Kong, China	10	9	8	2	2
3. USA	2	2	1	3	3
4. Taiwan	9	8	5	8	4
5. Korea, Rep. of	14	7	4	5	5
6. Singapore	8	6	3	4	6
7. Netherlands	6	11	10	6	7
8. Viet Nam	**No Export**	**No Export**	**44**	**28**	**8**
9. Malaysia	15	12	6	10	9
10. Germany	3	3	9	9	10
11. Mexico	**37**	**16**	**12**	**11**	**11**
12. Japan	1	1	2	7	12
13. Philippines	36	22	15	13	13
14. Thailand	**45**	**18**	**17**	**12**	**14**
15. Czech Republic	25	36	35	17	15
India	40	38	47	34	28

Vietnam has surged ahead from not exporting to being the 8th largest exporter over 3 decades with a progressive Tariff Policy and FTAs to increase production and exports.

Source: WTO

Prominent among those with major improvements in rankings are China, Vietnam, Mexico and Thailand. China is now the top exporter and Vietnam has emerged from a situation of no exports to become the 8th largest exporter in the world. Among the top exporters, Mexico and Thailand are two economies which in 1980 had the lowest rankings amongst the group shown in Table 2.1.[19] Based on these features, China, Mexico, Thailand and Vietnam are selected here for a comparison with India. It is noteworthy that all these four competing economies are deeply integrated in GVCs as well as having larger electronics exports than India.

[19] *In 1980, Thailand's rank was lower than that of India.*

Tariff policy is the main policy difference among India and these competing economies

All these four competing economies and India have focused on attracting FDI, improving domestic capabilities/ competitiveness, increasing exports and their links with GVCs. They provide financial incentives, emphasise trade facilitation and other forms of ease of doing business that include providing better infrastructure and transport facilities, making timely decisions, implementing easier procedures and reducing the documents required for approval and business operations. They also give particular attention to large global firms (or lead firms in GVCs) that enable easier access to markets and global brands, a feature which is now emphasised by India in some of its PLI schemes. **The main difference in their policy approach is the tariff policy of India compared to others. India has relied heavily on higher tariffs whereas other countries have not done so. Higher tariffs orient the approach of investors and domestic producers away from global markets and towards the domestic market. Notably the exports for India compared with others have remained low as has been examined in this report.**

Historically, higher tariffs were part of the classic import substitution strategy employed earlier by India and its competing economies. This strategy was discarded in the 1990s because of the realization that tariffs increase the cost of domestic production, reduce global competitiveness, and erode the effective subsidy support provided to reduce cost disabilities by financial incentive schemes. Now, India has again relied upon an increase in tariffs for its strategy to promote many priority sectors. This policy thrust is not favoured by most other competing economies, including those which have performed better than India. This is particularly important as India is a relatively insignificant player in the export market of electronics products but has aspirations of becoming a major player. This paper examines the tariffs used by India in comparison to selected competing economies, and provides some insights in terms of policy implications.

3

Tariffs on Electronics in India: The Product Categories Selected For the Study

This study has considered a list of 120 HS 8-digit categories as the product coverage for electronics as identified by the industry, i.e. the tariff categories that relate to the mobile phone sector. In addition, a smaller list of products that are particularly emphasized by the industry (henceforth "priority products") is considered separately for some detailed examination. The overall list includes HS codes at 8-digit level that have been indicated by the industry with particular relevance to the mobile phone sector, and relate inter alia to the products covered in the industry's study for Remission of Duties and Taxes on Export Products (RoDTEP).[20] In 2019-20, India's imports under these 120 categories were US$45,094 million. A relatively small number of tariff lines accounted for a major portion of India's imports under electronics (see Table 3.1 below).

Table 3.1. Summary Profile of HS 8 Digit Tariff Lines Selected for the Study

Electronics Products Covered by the Study	Number of HS 8 Digit Tariff Lines	Import Share of the Covered HS 8 Digit Lines
Total Number of HS Categories at 8 Digit HS	120	100.00%
HS Categories With Individual Import Share of 1 % or more of total imports of the total	23	79.1%
HS Categories With Individual Import Share of 0.5 % or more of total imports of the total	37	89.2%

Source: Department of Commerce, Government of India

Note: (1) Import share data was not available for four tariff lines in 2019-20. They have been allocated based on their import share data for 2020-21. More detail on import shares is provided in Table 3.3.

[20] *See Table 2.2.5 of the study at https://icea.org.in/wp-content/uploads/2021/02/RoDTEP-Report-ICEA.pdf*

Among these 120 tariff lines, 31 or about a quarter of the lines have zero tariffs (Table 3.2). About 57% of these tariff lines have relatively high tariffs, i.e. 10% or more. The highest MFN tariff imposed by India on electronics is 22%, as shown in the table 3.2 below.

Table 3.2. India: MFN Tariff Profile of HS 8-Digit Tariff Lines Selected for the Study

MFN Tariffs	Number of Tariff Lines With the Specified MFN tariff	Percentage of Total Tariff Lines With the Specified MFN Tariffs
0%	32	26.7%
Above 0% and up to 5%	2	1.7%
Above 5% and below 10%	17	14.2%
10%	0	0%
Above 10% and up to 15%	41	34.2%
Above 15% and up to 20%	19	15.8%
22%	9	7.5%

Source: Department of Commerce, Government of India
Note: As per effective tariff.

No close link between the level of tariff and import share under the tariff line: High tariffs are normally imposed to reduce imports and protect the domestic market. An implicit presumption is that lower the tariff, more the imports, and likewise higher the tariff, less the import.

However, while for individual specific tariff categories a higher tariff may lead to reduction in imports, this conclusion is not evident at the overall level as such. A closer look at the MFN tariffs imposed on 120 tariff lines for electronics by India shows that the tariff lines with low import shares have tariffs ranging from 0 to 22%, i.e. the entire range of India's MFN tariffs (Table 3.3). Thus, it is not evident that high tariffs necessarily are linked to lines with low imports and low tariffs necessarily lead to high imports.

Table 3.3. Low and High Tariffs Are Not Linked to Import Share of Tariff Lines

HS Categories With Individual Import shares of:	Number of HS Lines	Import Share of the HS Lines, 2019-20	Range of MFN Tariffs On These Tariff Lines
More than 15%	1	16.02%	11%
More than 10% and up to 15%	1	11.42%	0%
More than 5% and up to 10%	3	19.4%	0% to 22%
More than 2% and up to 5%	6	16.35%	0% to 22%
Above 1% to 2%	12	15.92%	0% to 22%
From 0.5% to 1%	14	10.14%	0% to 22%
From 0% to less than 0.5%	81	10.76%	0% to 22%

Source: Department of Commerce, Government of India

Note: (1) Import share data was not available for four tariff lines in 2019-20. They have been allocated based on their import share data for 2020-21, to calculate the number of lines. A list of the HS 8-digit tariff lines considered for this Table is provided in the Annex 5. (2) Two tariff lines, 85176290 and 85177090, each have two separate tariff rates. Since import share information is provided for HS 8-digit tariff lines, these four lines are considered as two tariff lines.
Note: As per effective tariff.

Yet another statistic that could be used to indicate whether high tariffs achieve a low import share for the imported products is shown in Table 3.4. That Table shows the different levels of India's MFN tariffs and their corresponding total import shares per tariff line in each tariff category. For example, in Table 3.4, nine lines with MFN tariff of 22% together have an import share of 13% within the 120 HS categories being considered. With this information, the average import share per tariff line could be calculated for each MFN tariff level. For 22% tariff, the average import share per tariff line is 1.44%. In this manner we could compare the average import share per tariff line for different tariff categories in Table 3.4, which shows that the average import share is high for tariff levels of 0% and 22%, and similar estimates for high and low tariff categories. Thus, both high and low tariffs lead to high imports and there is no simple link between the level of tariff and import share for the product. This result shows that tariff per se is not adequate to reduce imports unless domestic capacity does not respond quickly enough. If such a response is not feasible nor forthcoming, the high tariffs would create inefficiencies for domestic output.

Therefore if tariffs are raised or lowered to change import shares, it is not clear that such tariff changes would have the desired effects on imports. This would depend on the capability of and skills of the domestic producers. Furthermore, as this study shows below, if increasing domestic value added is the purpose of raising tariffs, it is not evident that this objective would be adequately achieved through high tariffs. Moreover, to the extent that imports are reduced due to high tariffs, the domestic production would be more oriented towards the domestic demand and not exports, because adopting higher tariffs is not an export oriented strategy but focuses on import substitution. For achieving higher exports in such a situation, additional support policies such as PLI support would be required. An interesting and important result in this report is that high tariffs erode the impact of such support policies like PLI.

Table 3.4. India: Tariff Profile of HS 8 Digit Tariff Lines Selected for the Study

Effective Duty on Imports	Number of Tariff Lines	Import Share of Covered HS 8 Digit Lines, 2019-20	Average Import Share per HS Line (Column 3 Divided By Column 2)
22%	9	13%	1.44%
Above 15% and up to 20%	19	13.17%	0.69%
Above 10% and up to 15%	41	25.09%	0.61%
10%	0	0%	0%
Above 5% and below 10%	17	5.47%	0.32%
Above 0% and up to 5%	2	1.31%	0.66%
0%	32	42.3% 2	1.32%

Note: As per effective tariff.

4
Some Important Factors in Tariff Comparison

Before we begin the comparison of tariffs in India and the competing economies, certain important factors need to be kept in mind for understanding the results of the comparison. These include:

Comparison of tariffs involves a two-step process

A comparison of the applied tariff regimes of India and other nations would begin by a consideration of the most favoured nation (MFN) tariffs. MFN tariffs are the tariffs imposed on imports from WTO member countries, unless the importing nation has a free trade agreement (FTA) with the WTO member country. This is an especially important factor in the tariff comparison of India with Vietnam. If some country has a very large portion of imports coming from its FTA countries, that becomes the basis for the second step of tariff comparison.

FTAs sharply reduce the applied tariffs compared to MFN tariffs

In the case of FTAs, the applicable tariffs are much lower than MFN tariffs, mostly at zero rate of duty. If an economy has an FTA with the country which is an important source of imports, the imports coming from FTA sources would be subject to zero in most cases under the FTA.

The major import sources for electronics products are China (most prominent), EU, US, Japan, South Korea, Hong Kong, Taiwan, and certain ASEAN countries. Among these import sources, India has FTAs with Japan, South Korea and ASEAN. The competing countries have FTAs with many more of these economies (see Table 4.1), and except for Mexico a much larger share of their electronics imports come from the countries with which they have FTAs. Thus, the tariffs on a large

part of their imports are much lower than their MFN tariffs. For example, if India's MFN tariffs for its non-zero tariff lines are compared with tariffs of Thailand's and Vietnam's tariffs on imports from China, Indian tariffs are not less than their tariffs for any of the line compared (see Table 5.5).

Table 4.1. Preferential/FTA Tariffs of India and Selected Competing Economies With Major Import Sources for Electronics Products

India	China	Mexico	Thailand	Vietnam
ASEAN countries Japan Republic of Korea	ASEAN countries Japan Republic of Korea Hong Kong Taiwan	Japan Malaysia Singapore Vietnam USA European Union	ASEAN countries Japan Republic of Korea China Hong Kong	ASEAN countries Japan Republic of Korea China European Union Hong Kong Mexico

The Indian HS 8-digit tariff line does not have the same HS line number for the products in other economies, nor does it necessarily have a single corresponding tariff line in the country being compared

The starting point of the tariff comparison in this report is the tariff line numbers of India. A one to one tariff comparison is complicated because the tariff line categories of India do not always have a single corresponding tariff line for comparison in the competing economies. Therefore, for some tariff lines, more than one tariff line of the other country has to be considered. This at times results in a range of tariffs in the competing economy compared with a single tariff line of India. For tariff lines with a range of tariffs in competing economies, this study has considered the highest tariff value within the range for comparison with India's tariffs.

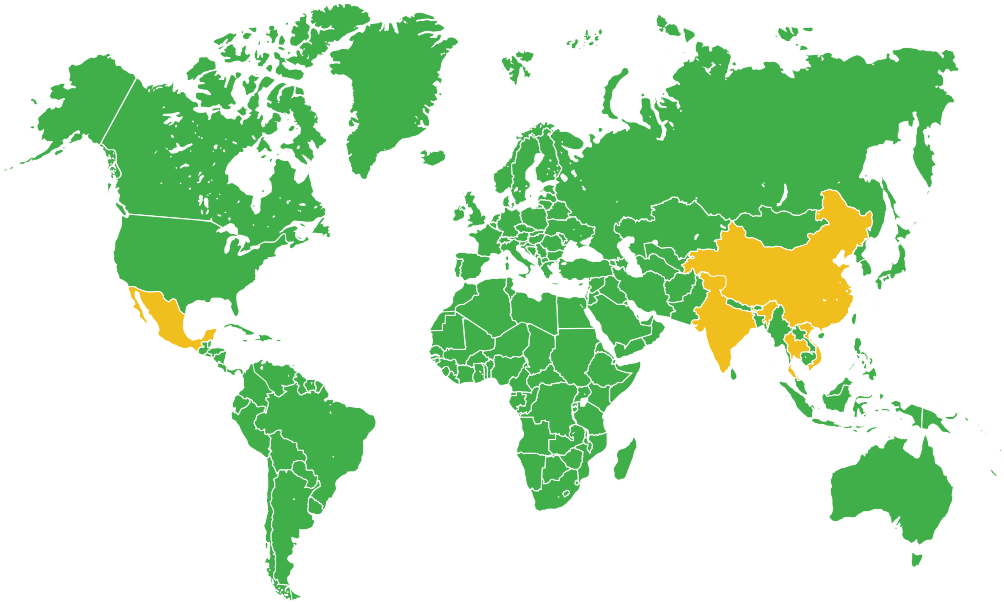
For the comparison, tariff lines of India with zero tariffs need to be distinguished from those with non-zero tariffs

India has zero duty on 32 tariff lines among the 120 lines considered for the comparison. No country could have a tariff lower than zero. Thus, any tariff comparison would be relevant for non-zero tariff lines, unless for a tariff line on which India has zero duty the tariff imposed by a competing country is higher than zero. For the tariff lines on which India has a zero tariff, China has higher tariffs for five lines, and for Mexico and Thailand one of the 32 lines have a tariff level higher than zero. Vietnam on the other hand has zero duty for each of the 32 tariff lines for which India has zero MFN tariff. It is noteworthy that all these competing economies have zero tariffs on many more lines compared to India (Table 5.3).

The tariff comparison below is carried out keeping the above four important points in mind.

5

Comparison of Tariffs in India with Competing Economies



There are a number of alternative ways to compare and contrast the tariff regimes in different countries. This paper has relied on three different methods. One is the average tariff levels. The second is the tariffs that prevail for individual tariffs lines. The third is to compare the number or percentage of tariff lines that have zero tariffs. i.e. an indicator of the proportion of tariff lines which are tariff-free.

5.1 India is in General a High Tariff Economy

India has high tariffs in comparison to its competing economies in general, including for the electronics sector. In this context, the electronics sector, particularly the mobile phone sector has seen a number of tariff increases in recent years as well, including for its inputs. This creates inefficiencies which are discussed in more detail in the later sections of this report.

Table 5.1 below shows the average most favoured nation (MFN) tariffs for India and the competing economies. **India's MFN tariffs are significantly higher than the levels in competing economies. Table 5.2 shows that the competing economies in general have many more MFN tariff lines with zero duty in comparison to India.** This situation prevails for electronics as well. For electronics tariff lines considered for this study too, the competing economies have many more tariff lines with zero tariffs compared to India (see Table 5.3 below).

Table 5.1. Average MFN Applied Tariffs in Selected Countries in 2019 (%)

	India	China	Mexico	Thailand	Vietnam
Average MFN Applied Tariffs - All Products	17.6	7.6	7.1	10.2	9.6
Average MFN Applied Tariffs - Non-Agriculture	14.1	6.5	6.0	7.2	8.4

Source: WTO, World Tariff Profile 2020.

Table 5.2. Percentage of Total Number of Tariff Lines for Non-Agriculture Products With Zero MFN Applied Tariffs in 2019 (%)

India	China	Mexico	Thailand	Vietnam
1.8%	7.4%	53.4%	40.2%	38.6%

Source: WTO, World Tariff Profile 2020.

5.2 Comparison of India's tariffs with those of Competing Economies for Imports of Electronics

The comparison for electronics is conducted for two sets of product groups. One is the larger group of 120 HS 8-digit lines, identified by the industry as the products to be covered for the mobile sector in electronics. The second is a smaller group within this category, i.e., the list of priority products identified by the industry as priority products. The comparative tariffs are examined for the levels of finished products, sub-assemblies and components.

For electronic products as well as for priority electronic products, India's tariffs are in general higher than those applied by the competing economies in 2020-21. Moreover, during the period 2014 to 2020, a much larger number of India's tariff lines have shown a rise in tariffs than the competing economies. Likewise, the competing economies have more tariff lines for which tariffs were lower in 2020 compared to 2014.

(5.2.a) Comparison of the tariffs on the 120- HS tariff lines: The tariff comparison for the 120 HS categories is first conducted for the situation in 2020-21. This is supplemented by a comparison of the tariff changes for each country from 2014 to 2020. The comparison begins with a profile of the MFN Tariffs (Table 5.3), followed by more detailed comparison of individual MFN tariff lines of India with those of the competing economies (Table 5.4). The discussion also shows the significance of considering the FTA tariffs where the MFN tariffs do not provide a compelling conclusion because the applicable tariff in the competing economy is largely that prevailing under an FTA. This is particularly important for Vietnam, which has a comparatively large share of its electronics imports coming from FTA countries. These tariffs are zero in most cases, thus making the applied tariffs of Vietnam for electronics significantly below the MFN tariff levels.

Table 5.3. Comparison of Percentage Share of Electronics MFN Tariffs

MFN Tariffs	India (Number of tariff lines)	China (Number of tariff lines)	Mexico (Number of tariff lines)	Thailand (Number of tariff lines)	Vietnam (Number of tariff lines)
0%	32	53	74	55	59
Above 0% and up to 5%	2	21	23	8	12
Above 5% and up to 10%	17	45	8	54	11
Above 10% and up to 15%	41	1	14	0	22
Above 15% and up to 20%	19	0	1	2	8**
Above 20% and up to 25%	9	0	0	0	7*
30%	0	0	0	0	1*
Specific Tariff	0	0	0	1	0

Sources: Tariff Schedules of individual countries

Notes: (1) * = 100% of the imports of Vietnam in the tariff line with 30% tariffs come from FTA countries, thus making effectively duty free. For the 7 lines in the category "Above 20% and up to 25%" MFN tariff, Vietnam's share of imports from FTA sources are as follows: 94% to 99% of imports for four of these tariff lines, 88% for two tariff lines, and 82% for one tariff line.
(2) ** = For these tariff lines, Vietnam's imports from FTA countries range from 81% to 95% of the total imports under individual specific tariff lines.
(3) The total includes some lines of India which were compared with a range of tariff lines of the other country because of the covered product being in more than one tariff line of the country being compared. For these lines, the highest tariff within the range for the competing economy was compared with Indian tariff.
(4) For two tariff lines, the products under each have two different tariffs. Each of these tariff lines is thus considered to comprise two tariff lines.

Table 5.3 shows that:

(a) Each competing economy has many more tariff lines at zero duty than India: When comparing the tariffs of India and competing economies, an important point to note is that each of the competing economies have zero tariffs on many more tariff lines than India. Thus, as a starting point it is evident that their import regimes for electronics are more permissive than India's tariff regime.

(b) India has a larger share of its tariff lines (57.5%) with tariffs higher than 10%, compared to each competing economy. Vietnam, which appears to have higher number of tariff lines above 10% in terms of MFN tariffs (31.7% of the lines), has many applied tariffs much lower because of a significant level of its imports coming from FTA sources (see Table 5.6 below).

(c) In general, the competing economies have peak tariffs less than India's tariffs: India's MFN tariffs range from 0% to 22%. In comparison, except for one tariff line, China's highest MFN tariff rate is 10%. Mexico's highest tariff rate is 15%, with the exception of one tariff line. Thailand has a couple of lines with 20% as its highest ad valorem MFN tariff. Vietnam is an exception in that its highest MFN tariff is 30%, i.e. more than India. However, all its imports under this tariff line with 30% tariff come from FTA countries at zero or close to zero tariffs. Moreover, 82% to 99% of Vietnam's imports under its tariff lines with MFN tariff of "Above 20% and up to 25%" come from FTA countries, implying near zero percent average

applied tariffs for these imports as well. Likewise, for the tariff lines under the category "Above 10% and up to 15%", Vietnam's imports from FTA countries range from 81% to 95% of the total imports under individual specific tariff lines. This too shows that the import regimes of competing economies for electronics products related to mobile phones are more permissive than India's tariff regime.

(d) Tariff lines for which India has zero MFN tariff: Table 5.4(a) compares the tariff lines for which India has zero tariffs. Vietnam has a zero tariff for all the lines for which India has a zero tariff. Mexico and Thailand each have zero tariffs for all but one of the lines for which India has zero tariffs. For the 32 lines being compared, China has zero tariff for 27 lines. It is noteworthy that when all 120 tariff lines are compared, each of the competing economies has more lines with zero tariff than India (Table 5.3).

(e) Comparison of MFN tariff lines: Tables 5.4(a) and 5.4(b) show that in general India has higher MFN tariffs than competing economies. For the 120 lines, three of the competing economies have a very small share of their tariffs that are higher than for India, i.e. ranging from 7.5% (China) to 11.7% (Thailand). About 24% of Vietnam's MFN tariffs are higher than those of India, but in reality many of these tariff lines have much lower tariffs because a large share of the imports enter at zero or close to zero tariffs under FTAs, as discussed in more detail below based on Table 5.6.

Table 5.4(a) Comparison of MFN Tariffs for 32 HS 8 Digit Lines of India With Zero Tariffs

	India's MFN Tariffs Same As Competing Country's MFN Tariff	India's MFN Tariff Lower Than Competing Country's MFN Tariff
China	27	5
Mexico	31	1
Thailand	31	1
Vietnam	32	0

Source: Tariffs Schedules of Countries.
Note: For a comparison of these tariff lines of India with others, for those tariffs where the competing economies have a tariff range, the highest value in the tariff range is taken for the comparison. This has resulted in tariffs of the competing economy being higher than India as follows: China (4 lines) and Mexico (1 line).

Table 5.4(b) Comparison of MFN Tariffs for 88 HS 8 Digit Lines of India With Non-Zero Tariffs

	India's MFN Tariff Higher Than The Competing Country's Tariff	India's MFN Tariffs Same As The Competing Country's Tariff	India's MFN Tariff Lower Than The Competing Country's Tariff
China	84	0	4
Mexico	78	0	10
Thailand	75	0	13
Vietnam	75 (59)	0 (0)	13 (29)

Source: Tariffs Schedules of Countries.
Notes: (1) The number of tariff lines for Vietnam take account of its large imports coming from its FTA partner countries. This changes the picture for most of the tariffs for Vietnam. In the Table, the numbers in brackets show the corresponding numbers if the comparison is only with MFN tariffs of Vietnam. Vietnam's tariffs are considered to be lower if more than 80% of its imports under the tariff line come from FTA sources, and India's share of FTA imports for that line are less than 30%. See discussion relating to Table 5.6 for more detail.
(2) For those tariffs where the competing economies have a tariff range, the highest value in the range is taken for the comparison. This has resulted in tariffs of the competing economy being higher than India for several tariff lines.

(f) Illustration of the major impact of FTA tariffs on the results of a comparison of tariffs: The likely change in applied tariffs is illustrated by a comparison of the tariffs on imports from China, a very significant supplier of the relevant imported products to India, Thailand and Vietnam. The shares of electronics imports from China for India, Thailand and Vietnam's are 43% each for India and Thailand, and 38% for Vietnam. While India imposes MFN tariffs on these imports, Thailand and Vietnam have mostly zero FTA tariffs on their imports from China.

Among the 120 lines compared, for which India levies zero tariffs on imports from China, both Thailand and Vietnam also have zero tariffs on their imports from China; Thailand's one tariff line with an MFN tariff higher than zero becomes duty free for imports come China. For the tariff lines of India which have an MFN tariff more than zero, both Thailand and Vietnam import the relevant products from China at zero or near zero tariffs. Thus, for these tariff lines, all of India's non-zero tariffs are higher than those imposed by Thailand and Vietnam (Table 5.5).

Table 5.5 Comparison: Tariffs of Thailand and Vietnam on Imports from China compared to Indian tariffs on imports from China

	Tariff Lines For Which India Has Non-Zero MFN Tariffs		Tariffs Lines For Which India Has Zero MFN Tariffs	
	Number of Tariff Lines	India's MFN Tariffs More Than Competing Economy's Tariffs on China (No. of lines)	Number of Tariff Lines	Country's Tariff on China Same As India's MFN Tariff (No. of lines)
Thailand	88	88	32	32
Vietnam	88	88	32	32

(g) Vietnam has a very high share of its electronics imports from countries with which it has FTAs: For the tariff comparison conducted here, FTAs have a significance for those tariffs lines where the competing country's MFN tariff is either the same as for India or higher than the tariff imposed by India. A large share of imports from FTA's will in effect imply that the applicable tariffs are actually much lower than the MFN tariffs. This is relevant in particular for Vietnam because in comparison to other competing economies, that is a country for which a relatively larger number of MFN tariffs are higher than those of India.

Table 5.6 shows the tariff lines for which Vietnam's MFN tariffs are more than the tariffs of India. These Tables show that for many of these tariff lines, Vietnam has a much larger proportion of its imports coming in from FTA sources in comparison to India. In this comparison, we consider in particular those tariff lines for which FTA tariffs apply to 80% or more of Vietnam's imports of the relevant products. This in effect means that MFN tariffs apply to no more than 20% of the imports under that line; in most cases these imports account for much lower portion of imports. For these tariff lines, we identify those lines for which less than 30% of India's imports come at FTA tariffs, i.e. MFN tariffs apply to 70% or more of its imports under the line. For these tariff lines, Vietnam's average applied tariffs are lower than those of India for at least half of more of imports under that lines. The applied tariffs Vietnam on such lines are considered to be lower than those of India.These lower tariffs, particularly on inputs, help to build Vietnam's export competitiveness in global markets, leading to a much stronger balance of trade position.

Another relevant point for the comparison of tariffs of India and Vietnam is that most of Vietnam's production is exported, and thus the tariffs on most inputs into those exports would be remitted or exempted under schemes similar to the Advance Authorisation scheme of India. In effect, this would result in most of the imports being duty free due to tariff remission/ exemption for sub-assemblies and components that go into making the finished products exports.

[21] *The comparative data on value of imports of other countries is available at HS 6 digit level. Therefore, the share of imports from FTA countries is calculated foe the HS 6 digit tariff lines.*

Table 5.6 Comparison of Share of FTA imports in Total Imports Under Selected HS Categories for Vietnam and India For HS Lines Where Tariff of India is Less Than the Tariff of Vietnam

Number of HS Tariff Lines (Vietnam)	Share of Vietnam's FTA Imports in Total Imports of the HS Tariff Line	India's Share of FTA Imports in Total Import of the HS Tariff Line (2019-20)	India's Share of FTA Imports in Total Import of the HS Tariff Line (2020-21)
48191090	95%	18.7%	18.5%
85043100	95%	13.4%	17.2%
85369090	95%	30.2%	31.1%
85287100	98%	56.2%	73%
42023190	99%	1.5%	6.2%
85271300	100%	0.9%	9.1%
85389000	90%	27.3%	27%
48192090	90%	28.1%	44.9%
85198940	90%	4.3%	6.8%
39199090	91%	38.7%	35.3%
39199010	91%	20.4%	12.9%
76169990	93%	14.3%	18.4%
85366990	94%	22.2%	26.9%
48211090	85%	13.5%	13%
48211020	85%	9.3%	21.8%
85361090	88%	38%	38.4%
85361060	88%	37.1%	26.9%
48239090	80%	15.8%	25.4%
48219090	81%	6.8%	8.6%
49111090	81%	5.8%	4.1%
48219010	81%	14.3%	10.6%
35069999	83%	22.7%	22.5%
39191000	83%	27.7%	22.2%
85365090	84%	36%	33.8%

Source: WTO and the Tariff schedules of India and Vietnam.
Note: The import share for Vietnam is calculated for tariff lines at the HS 6 digit level.

(5.2.b) Comparison of the tariffs on products considered as priority by the industry

In addition to the 120 tariff lines, the industry also provided a smaller list of products which they consider as high priority to them. These products cover 29 HS 8-digit tariff lines, but for the comparison are considered as 31 tariff lines because in one case the HS category has two MFN applied tariffs on products covered by it, and in another case the products within the HS category are in two different categories, some under "sub-assemblies" and others under "components.

The conclusions reached from the larger set of tariffs remain valid for these priority products as well. In general, India's MFN tariffs are higher than those of the competing economies (Table 5.7). Similarly, the competing economies have many more HS 8-digit lines subject to zero tariff.

India's applied tariffs are lower than those of the competing economies for one tariff line each for China and Vietnam[22]. These tariff lines for China and Vietnam are for finished products. For sub-assemblies and components, Table 5.8 shows that:

(a) For all tariff lines of India with tariffs above zero, India's tariffs are higher than those of the competing economies.
(b) For all tariff lines of India with tariffs of zero, the competing economies also have zero tariffs

Table 5.7. Noteworthy Features of the MFN Tariff Regime for Priority Products (Number of Lines)

	India	China	Mexico	Thailand	Vietnam
Total Number of HS 8 Digit Lines	31	31	31	31	31
India's applicable tariffs Higher Than The Applied Tariffs of Competing Economies		22	22	22	21
Applied Tariff of India Lower than those of the Competing Economies		1	0	0	1* (See Note below)
Applied Tariffs of India and the Competing Economy are the Same		8	9	9	9

Source: Tariffs Schedules of Countries.
Note: * = For one tariff line which India has lower tariffs than Vietnam (85287100), 98% of Vietnam's imports come in from FTA sources.

[22] *This takes account of the share of imports from FTA countries, based on the criteria described in the discussion of Tables 5.6(a) and (b).*

(b) Comparison of the priority products in terms of finished products, sub-assemblies and components: Table 5.8 below shows the MFN tariffs on finished products, sub-assemblies, and components. In general, India imposes higher tariffs for all the three categories, namely final products, sub-assemblies and components. The overall picture from this comparison is that for priority products, India's tariffs in general are higher for finished products (such as, mobile phones, smart watch, earphones, set-top box),[23] as well as on sub-assemblies and components (e.g., battery pack, charger/adapter, PCBA, cables, earphones speakers, mechanics under category 73181500).

The comparatively higher tariffs on inputs (sub-assemblies and components) result in an increase in cost of production of India, creating a competitive disadvantage. Later sections of this report provide a more detailed discussion of the impact of higher tariffs on India's input costs.

Table 5.8. Comparison of the Tariff Regime for Priority Products, Taking Account of FTA Tariffs and Share of FTA Imports (Number of Tariff Lines)

	India's Tariff Lines	India's Tariffs Higher Than Others (Number of Lines):	India's Tariffs Same as Others (Number of Lines):
For Tariff Lines with Non-Zero MFN Tariffs in India:			
Finished Products	5	5 (Except Vietnam) 4*(Vietnam)	0
Sub-Assemblies	9	9	0
Components	8	8	0
For Tariff Lines with Zero MFN Tariffs in India:			
Finished Products	2	Not Applicable	2 (All except China) 1 (China) #
Sub-Assemblies	3	Not Applicable	3
Components	4	Not Applicable	4

Note: (1) * = MFN duties apply to only 2% of the total imports under one tariff line for Vietnam for which India's tariff is lower than that for Vietnam.
(2) # = China's tariff ranges from 0% to 1.5%.

[23] *The few tariff lines for which India's MFN tariff is lower are mentioned in points (a) to (c) above. In the case of two tariff lines of Vietnam, it is noteworthy that MFN tariffs apply respectively only to 25% and 2% of the total imports under these lines.*

6 Trends in Tariffs, Exports and Imports for India and Competing Countries

6.1 Comparison of average MFN tariffs during the period 2014 to 2020

Since 2014, the Indian tariff regime has become more protectionist than the competing economies. For HS 6 digit tariff lines, during the period 2014 to 2020:

A. Indian average MFN tariffs increased for more tariff lines compared to each competing economies (Table 6.1).

- For the 98 tariff lines compared,[24] India's MFN tariffs in 2020 were higher than in 2014 for about 30% of the lines
- China, Mexico and Thailand had only 1% to 6% tariff lines with higher MFN tariffs in 2020 compared to 2014.
- Vietnam had about 15% lines with higher MFN tariffs in 2020 than 2014. However, as mentioned above, applied tariffs of Vietnam are lower than its MFN tariffs due to its FTAs with the main supplying countries.
  - *Thus, a noteworthy feature is that in many of these tariff lines, a small share of Vietnam's imports were subject to MFN tariffs.* [25]

[24] *As mentioned above, these lines are at HS 6-digits.*
[25] *For most of them, the share of imports subject to MFN tariffs ranged between 0% to 20%. In a couple of cases, MFN tariffs were only on 25% of the imports. Further, India's MFN tariffs are lower than those of Vietnam only for 5 of these 15 lines.*

B. Compared to others, India had the smallest number of tariff lines which had a lower tariff in 2020 compared to 2014.

- In 2020, only 4% of the tariff lines of India had MFN tariffs lower than in 2014.
- The corresponding estimates for the competing economies were about 32% for Thailand, 30% for China, 10% for Vietnam and about 6% for Mexico.
- Vietnam's tariff reductions in its applied tariffs have also taken place through its FTAs.
- Since 2014, Vietnam has negotiated a number of deep FTAs such as CPTPP, RCEP and the EU-Vietnam FTA. Its previous FTA with China was already in place under the ASEAN-China FTA that entered into force in 2005.

C. Mexico and Vietnam were the countries with the largest share of tariffs remaining unchanged in 2020 compared to 2014.

- MFN tariffs on about 90% of tariff lines remained unchanged for Mexico compared to 2014.
- For Vietnam, tariffs in 2020 were the same as 2014 for about 74% of the tariff lines compared.

Table 6.1 Changes in HS 6 Digit Average MFN Tariffs of India and the Competing Countries, 2014 to 2020

	India	China	Mexico	Thailand	Vietnam
Average Tariffs for HS 6 Digit Lines	2014 to 2020	2014 to 2020	2014 to 2020	2014 to 2020	2014 to 2020
Total HS 6 Digit Tariff Lines	98	98	98	98	98
Increased	29	3	1	6	15
Decreased	4	29	6	32	10
Remained Unchanged	65	66	91	60	73

Source: WTO

6.2 Trends in Electronics Trade for India and Competing Economies

For each year during the period from 2014 to 2020, exports of electronics products of all competing economies were higher than India (Table 6.2). [26]

- In 2020, the ratios of their exports to India's exports were: China (81 times of Indian exports); Mexico (8.2 times of Indian exports); Thailand (4.6 times Indian exports); and Vietnam (11.3 times Indian exports).
- In 2020, imports of electronics by the competing countries were higher than India for three of them (China, Mexico and Vietnam). Thailand's imports, in contrast, have been lower than those of India for the past few years.
- India's imports are far larger in terms of its exports of electronics, especially when compared with the competing economies. In 2020, India's ratio of imports to exports was about 6.4 times that of the ratio for China, 6.1 times that of Vietnam, 5.2 times the ratio for Thailand, and 4.5 times the ratio of exports to imports for Mexico.
- Electronics exports of China, Thailand and Vietnam exceed their imports, resulting in a trade surplus in electronics for them.
- In contrast, India has registered a trade deficit each year during 2014 to 2020.
- The electronics trade surplus, i.e. exports minus imports, of China has been about $200 billion for most of this period.
- In each year since 2016, Vietnam's trade surplus in electronics has been more than India's electronics exports. Thailand has maintained a small trade surplus during 2014 to 2020.
- Mexico has a trade deficit, though this trade deficit has been much smaller than that of India.

This shows that in terms of both exports and trade deficit/surplus, the competing economies have performed better than India which in general higher has tariff levels than these economies. Further, during 2014 to 2020, India's tariffs regime has become more protectionist but its trade performance is not better than the competing economies. In terms of an objective to comparatively increase exports or reduce the trade deficit, the data shows that India has been less successful than the competing economies. This has been achieved by the competing economies with relatively lower tariffs than India.

One additional point worth considering is that growth in exports generally requires an increase in imports. Therefore, import curbs per se through tariffs or non-tariff measures would likely diminish the growth momentum of exports.

[26] *The coverage of electronics in Table 6.2 is as per the HS categories considered by the Government of India.*

Table 6.2 Trade in Electronics of Competing Economies Based on HS 6 Digit Lines (US$ Billion)

Exports	2014	2015	2016	2017	2018	2019	2020
India	6.4	5.7	5.9	6.0	7.9	11.2	10.1
China	720.1	719.8	658.0	714.3	789.5	772.4	818.2
Mexico	80.0	80.0	77.8	84.6	88.9	88.7	81.9
Thailand	44.5	44.0	43.2	48.1	49.1	47.1	46.6
Vietnam	38.1	50.1	59.0	78.8	89.6	98.6	113.8
Imports	2014	2015	2016	2017	2018	2019	2020
India	36.2	41.1	41.1	52.3	57.5	55.9	48.9
China	509.3	507.8	479.4	518.2	590.5	562.6	616.3
Mexico	85.8	87.7	86.1	86.3	94.5	97.0	87.4
Thailand	39.1	38.7	38.0	42.6	45.6	43.6	43.0
Vietnam	32.2	39.5	45.0	61.3	65.8	74.4	90.0
Exports Minus Imports	2014	2015	2016	2017	2018	2019	2020
India	-30	-35	-35	-46	-50	-45	-39
China	211	212	179	196	199	210	202
Mexico	-6	-8	-8	-2	-6	-8	-5
Thailand	5	5	5	5	3	3	4
Vietnam	6	11	14	18	24	24	24

Source: Comtrade, UNCTAD's trade database

6.3 India's exports of electronics and its relative insignificance in Global markets

In terms of its GDP, India is amongst the largest economies in the world. However, its rank in terms of international trade is much lower. The fact that exports have grown for both small and large economies (e.g. Vietnam and China), suggests that market size is not the major determining factor for competitiveness and export performance. That would indicate that domestic market size is not the determining factor for FDI, exports and competitiveness especially if the policies used for the sector restrict scale of operations and do not emphasise cost reduction. As explained in this report, the use of tariff policy becomes very significant in this context.

Nonetheless, there is a perception that India is in an advantageous position because it has a large and growing domestic market for most electronics products. This view about the significance of India's domestic market appears to be a misconception for many electronics products, including those on which there is a particular emphasis in the Indian tariff policy on electronics. Some examples are provided below.

Mobile phones: Mobile phone is the most important product in the electronics sector, in terms of both domestic production and exports of India.[27] It is also a major area of focus for the government. Here we consider the smartphone segment of the mobile phone market because that is the growth sector in this segment. And major producers will focus on this higher value part of the mobile phone market.

In 2020-21, India's domestic market for mobile phone was US$ 29 billion, and it's size is expected to reach US$ 55 billion by 2025-26. The global market size was estimated to be US$ 445 billion in 2020-21, with the market size forecast to reach US$ 625 billion in 2025-26.[28] Thus, at present the Indian domestic market is about 6.5% of the global market, with a possibility of growing to 8.8%, if the growth forecasts are reasonably robust. At present, India's market share is not attractive enough for FDI to choose India as a location primarily on the basis of its domestic market per se, especially if India's policies result in cost inefficiencies which create obstacles to accessing a much larger global market. Instead, the investors may prefer an alternative export oriented location which would provide a possibly easier access to rest of the global market, i.e. 93.5% of the global market. In this background, the key driver for FDI would be policies that provide the global investor a possibility to export in a growing global market as well as selling in India. A very significant part of the aspirational growth of India's mobile phone sector in the period till 2025-26 is based on a sharp increase in exports (see Table 6.3 below). This requires policy support which improves export capabilities and competitiveness, and not those which increase costs and limit the possibility of getting access to a larger part of the global market. Thus, it is important to avoid higher tariffs, particularly on inputs, because they increase the cost of production, reduce scale of operations, and tend to lower the ability to compete in both the global market as well as in the domestic market. Furthermore, high tariffs on inputs also tend to reduce the impact of schemes like PLI (see discussion in section 8 below).

Table 6.3. Projected Growth in Mobile Phones and the Electronics Sector

	2020-21 (US$ Billion)	2025-26 (US$ Billion)	Increase During the Period
Mobile Phone Exports	3.6	47	13 Times
Mobile Phone Domestic Sales	About 26.5	63	2.4 Times
Mobile Phone Production	30	110	3.7 Times
Electronics Production	74.7	260	3.5 Times

Source: India Cellular and Electronics Association

[27] *Mobile phones account for 44% of electronics production in India. See page 106 of https://www.meity.gov.in/writereaddata/files/MeitYAR English 2020-21.pdf*

[28] *The estimate for the global market is from IDC.*

Hearables and Wearables: Table 6.4 below shows the global share of the Indian market in terms of volume of production. Some products like hearables have a share of over 7%, while some others like smart watches have a very small share. A caveat to the numbers given in Table 6.4 is that these shares are based on the number of units of the products. The market size distribution is different if considered in terms of the value of the product, because compared to India the developed countries have a much larger value per unit for the products sold in their markets compared to India. In this situation, the apparently significant share in terms of volume becomes much smaller in terms of value of sales.

Table 6.4 India's Market Share in Global Market in Low Value Products (Including Components)

	Global Market	Global Market	Indian Market	Indian Market	Share in Global Market	Share in Global Market
	2019 (Mn Units)	2020 (Mn Units)	2019 (Mn Units)	2020 (Mn Units)	2019	2020
Hearables	170.5	234.3	8.5	17.3	4.99.%	7.38%
Wristband	92.4	67.7	5.3	2.5	5.74%	3.69%
Smart Watches	69.4	91.4	0.9	1.4	1.3%	1.53%
Others	4.2	2.6	-	-	-	-
Total	336.5	396	14.7	21.2	-	-

Source: IDC/ Trade Map and Future Source Consulting.

6.4 A closer look at India's recent tariff levels/ changes, and trade of priority electronics products

Annex Tables 3.1 to 3.3. show India's tariffs, exports, imports and exports surplus (exports minus imports) of priority products identified by the industry. Recent tariff increases have taken place for earphone, headsets, chargers/adapters, PCBA, camera modules, display assemblies, and somewhat earlier (in 2018) for mobile phones. For products with high tariffs and those for which tariffs were increased recently, imports have in general declined. However, this is not the case for all products with high tariff levels, e.g. imports of mobile phone went up in 2020-21, as did the imports under HS category 85176290 after registering a fall in imports during the previous year due to pandemic driven online study and work.

As shown in the discussion below, one of the impacts of high tariff on inputs is that the cost of production increases, and thus affects the ability to export. The Table on exports in Annex 3 shows that exports declined for a number of products with high tariffs (e.g. mechanics), but in some cases exports have also increased. The increase in exports is more likely to be an impact of subsidy policies, such as MEIS earlier and PLI going forward, rather than tariffs. As discussed above, tariff increases tend to result in production more for the domestic market rather than the export market, and if tariffs increase on inputs then the ability to export is reduced due to loss in competitiveness. The analysis in the subsequent sections illustrates how a tariff increase on inputs reduces the effective benefit from support schemes like PLI.

7
Increase in tariffs in 2020 and 2021

A new round of manufacturing relocation and global value chain renovation has been initiated. The migration of manufacturing to another country normally takes at least two to three years to transition into mass production from initiation; pre-study of migration feasibility requires an excessive amount of research about targeted countries' demographics, economic openness, infrastructure, logistics, etc.

It is an inevitable trend for manufacturers to leave China for cheaper production, but given the scale of its economy, China will continue to be the world's largest manufacturing hub, surrounded by multiple satellite countries with respective specializations in certain product categories.

The relocation of manufacturing from China has been largely towards Vietnam and Mexico. Further Covid-19 has had a much greater effect on India than on comparator countries. While in 2020 India's growth declined by 8%, China grew by 2%, Vietnam by 3% and Mexico was more or less stagnant.[29] Further Vietnam's exports have exceeded that from India in value terms in 2020 and neighbouring countries such as Bangladesh and Pakistan have higher growth rates than India.[30]

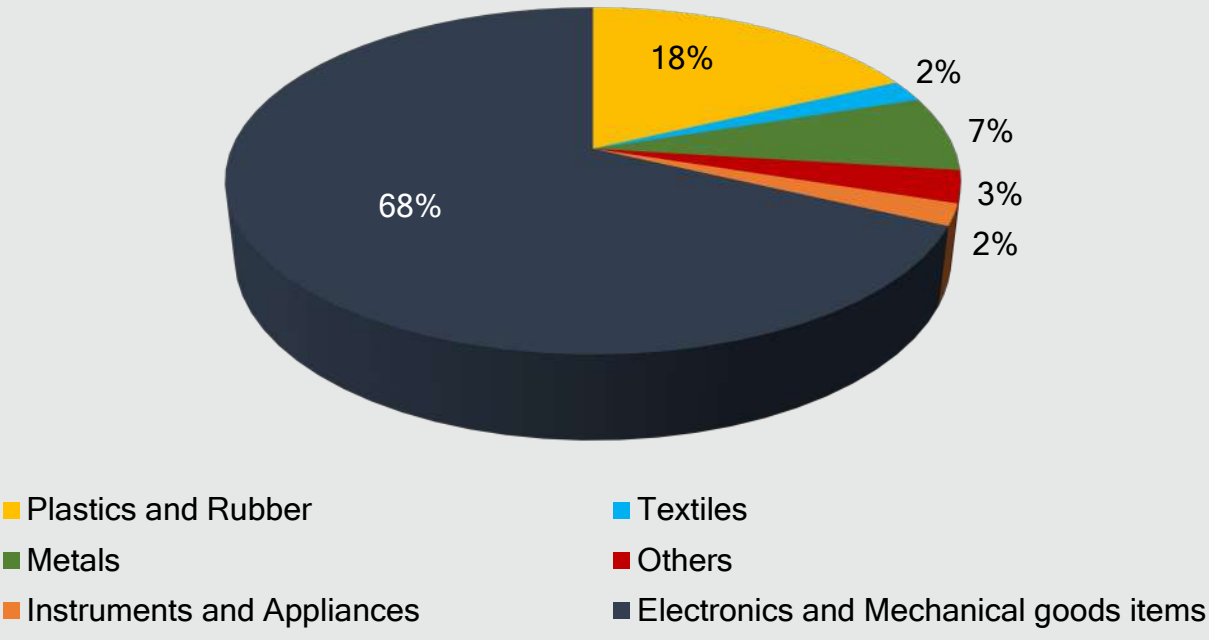
[29] *https://www.imf.org/en/Publications/WEO/Issues/2021/03/23/world-economic-outlook-april-2021*
[30] *Ibid, World Trade Statistics, WTO, 2020*

7.1 How much has been the tariff increase in 2020 and 2021

It is because of this background and the idea that India would be a natural choice for relocation of the electronics industry from China that tariffs in electronics were increased in India. However the recent 2020 and 2021 tariff increases in electronic products have caused distortions in the markets without generating commensurate gains. The delicate balance between incentives and tariffs appears to have been disturbed as the electronics sector has received a disproportionate share of punitive import tariffs.

Roughly 68% of total import value of products affected by tariff increases are from the electronics sector. See figure 7.1 below. This implies that if US$100bn worth of imports to India were affected by tariff hikes in 2021, around 68% was from the electronics sector. If these tariffs had been imposed in a context where domestic production of these items had started then their impact could have been mitigated. In the absence of domestic production capacity, tariffs increase the cost of production, makes products uncompetitive **globally and does not results in any tangible value to the country.** This was observed for several products in the electronics.

Figure 7.1: Share of Electronics in Import tariff hikes



Source: https://www.livemint.com/news/india/electronics-goods-face-biggest-tariff-hikes-in-india-s-atmanirbhar-push

Table 7.1 below shows the magnitude of tariff increases on selected electronic products in 2020.

Table 7.1: Magnitude of Tariff Increase in 2020

S .No	Item	HS Codes	Previous BCD (%)	Revised BCD (%)
1.	Vibrator Motor / Ringer for use in manufacture of cellular mobile phones	85177090	NIL	10 (Applicable from 1/04/2020)
2.	PCBA's for the manufacture of mobile Phones	85177010	10	20 (Applicable from 1/04/2020)
3.	Display Assembly for use in manufacture of cellular mobile phones	85177090	NIL	10 (Applicable from 1/10/2020)
4.	Touch Panel/ Cover Glass Assembly for use in manufacture of cellular mobile phones	85177090	NIL	10 Applicable from 1/10/2020
5.	Fingerprint reader/Scanner for Mobile Phones	85177090	NIL	15
6.	Chargers/Power Adapters [except those covered in Information Technology Agreement-I]	850440	Applicable- NIL/10%/ 15%	20
7.	Solar Cells (Assembled in module or made up into panel)	85414012	NIL	20
8.	Social Welfare Surcharge (SWS)	All chapters of 84, 85 and 90	Exemption from SWS on specified items of Chapter 85.	Entire Chapters 84, 85 and 90 will now be liable to SWS at the rate of 10% of BCD

Source: Budget 2020

Around 7 electronic product categories including inputs and intermediates saw a tariff increase of 5-20%. On top of the BCD a social welfare surcharge of 10% on the BCD was also levied on some products. BCD on some parts notably inputs for connectors was reduced from 5 to 0. However, several of the products above are not produced in India. Firms have claimed that they could produce it or make investments to produce it. But Covid-19 and Indo-China bilateral issues have been a big deterrent to production. Vibrator motor etc. accounts for a very small proportion of total costs around 0.5% of BOM. Hence levying a tariff of 10% would not have a disproportionate impact on costs. Display and touch assembly together account for 20% of the bill of material (BOM) costs for high end phones. India had some fledgling capacity in producing these products. Investments were brought in from China but the product has not been tested yet commercially in India due to an earlier blanket ban on visas for Chinese engineers and growing uncertainty going forward. Thus both these products continue to be imported with high tariffs and social welfare surcharge significantly increasing the cost of the final product, i.e. mobiles. Wired headphones require sophisticated technologies and are not by and large produced in India. India does not have the scale for its production at economic prices. Hence increasing the BCD on this product does not make good economic sense. BCD was further increased in 2021 though the magnitude of increase was lower than that in 2020. Table 7.2 provides the tariff increase in 2021.

Table 7.2 Tariff increases in 2021

		From (%)	To (%)
1	Inputs, parts or sub-parts for manufacture of specified parts of mobile phones, including: (1) Printed Circuit Board Assembly (PCBA) (2) Camera module (3) Connectors [To apply with effect from 01.04.2021]	0, 0, 0	2.5, 2.5, 2.5
2	Printed Circuit Board Assembly [PCBA] and Moulded Plastic, for manufacture of charger or adapter	10	15
3	Inputs and parts [other than PCBA and moulded plastic] of mobile charger	0	10
4	Inputs, Parts and Sub-parts [other than PCBA and Lithium Cell] for manufacture of Lithium-ion battery and battery pack [w.e.f. 01.04.2021]	0	2.5
5	Specified insulated wires and cables	7.5	10/ 15

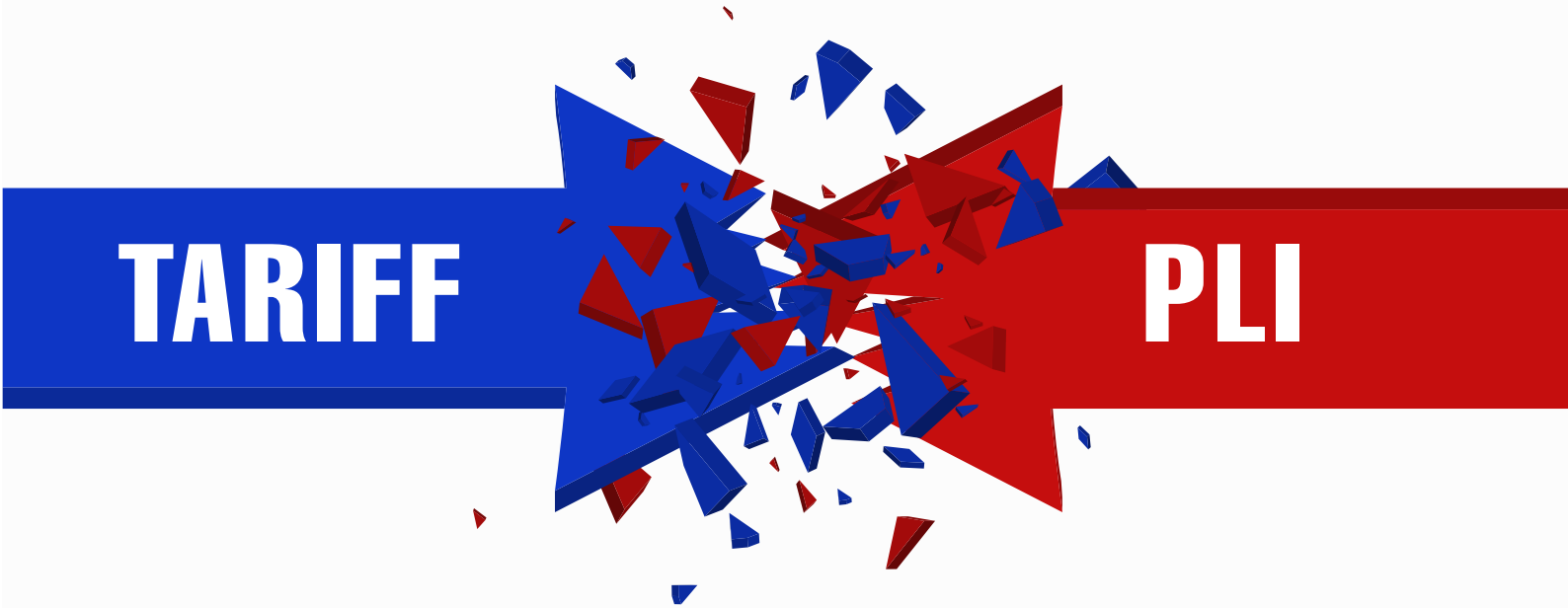
Source: Budget 2020

Tariff increases of 2021 have distorted the cost of manufacture of mobile chargers. This was one product in which India had become competitive by 2019. However, with the tariff increases on components of battery chargers, the cost of making it in India and the cost of import even with a 20% tariff will be about the same. Hence these tariffs go against the principle of Atmanirbharta. Most such tariff hikes were on mobile phone parts, ranging from wires, printed circuit boards, connectors and cameras to moulding plastics for chargers or adapters. The duty rate in these sectors increased from zero to 2.5% in most cases, and to 10% or 15% in the rest. [31]

[31] *https://www.livemint.com/news/india/electronics-goods-face-biggest-tariff-hikes-in-india-s-atmanirbhar-push*

8

Tariffs increase cost of production and reduce the effective support provided by PLI



8.1 Effects on Costs

The effects will depend on the proportion of imports in the final product as well as the tariff hike on it. Table 6.1 shows the proportion of different inputs in the BOM of a mobile phone.

The impact on costs will depend on the tariff hike as well as its proportion in the BOM. Another factor which is important is whether domestic producers are able to step in to pick up the deficit caused by the decrease in exports. During Covid-19 times India has seen a decline in electronics output by around 42% in financial year 2020 largely attributed to nation-wide lockdowns, migration of labour, spread of infection, scarcity of vaccines and social distancing norms preventing mass labour deployment.[32] However countries like Vietnam saw a 10% increase in the electronics

8.2 Tariff hikes and its cost effects in 2020

Table 8.1shows the effects on costs due to tariff hikes in 2020. These are simple calculations which rely on the share of a component in mobile phones and the tariff hikes on them. However, the actual increase in costs would be influenced by several complex factors such as GVCs. The cascading effect of tariffs will be felt through the value chain and as shown in the next section, output effects through the input output chain are magnified. Hence the impact on costs indicated here may be an underestimate.

[32] *https://elcina.com/currentupdate.php*

Table 8.1. Cost Effects on the BOM of a Mobile phone of Tariff hikes in 2020

S. No.	Product	HSN Codes	% in BOM*	Increase or Decrease	Change in duty (by)	Net Impact on mobile cost
1	(1) Printed Circuit Board Assembly (PCBA)	8504, 8517, 8518, 8532	45%	increase	10.00%	4.50%
	(2) Camera module	85177090, 85258020, 85258090, 85299090	14%			
	(3) Connectors	85177090	1.50%			
2	Charger and inputs of chargers	8544, 8504, 8542, 8532	2%	increase	5%	0.10%
3	Specified insulated wires and cables	85441990, 85444299, 85444999	0.60%			
4	Vibrator Motor / Ringer	85177090, 85013119	1%	increase	10%	0.10%
5	Display assembly, Touch Panel and Cover Glass	85177090	15.50%	increase	10%	1.55%
6	Fingerprint reader/Scanner for Mobile Phones	85177090	0.50%	increase	15%	0.07%
7	Inputs for manufacturing of Connectors	85369090	1.50%			
8	Inputs on Mechanics, metal and plastic	39269099, 85049090	9.50%			
					Average increase	**6.32%**

** Industry average.*
Source: Calculations based on Industry information and Budget 2020, Government of India

8.3 Tariff hikes and their cost effects in 2021

The tariff hikes of 2021 were relatively lower except for battery chargers and their components. Nevertheless, they did have an impact on BOM costs as tariffs going up by as little as 2.5% can also have magnified cost effects on account of GVCs.[33] Table 8.2 shows the effects of tariff hikes in 2021 on BOM costs of a mobile phone.

Table 8.2 Cost Effects on BOM of a Mobile Phone from Tariff Increase in 2021

S. No.	Product	HSN Codes	% in BOM*	Increase or Decrease	Change in duty (by)	Duty impact post budget on input cost	Net Impact on mobile cost
1	Inputs, parts or sub-parts for manufacture of specified parts of mobile phones, including:						
	(1) Printed Circuit Board Assembly (PCBA)	8504, 8517, 8518, 8532	45%	Increase	2.50%	0.20%	0.11%
	(2) Camera module	85177090, 85258020, 85258090, 85299090	14%	Increase	2.50%	7%	0.98%
	(3) Connectors	85177090	1.50%	Increase	2.50%	2.5%	0.04%
2	Printed Circuit Board Assembly [PCBA] and Moulded Plastic, for manufacture of charger or adapter	8544, 8504, 8542, 8532	2%	Increase	5%	11.03%	0.22%
3	Inputs and parts [other than PCBA and moulded plastic] of mobile charger				10%		
4	Inputs, Parts and Sub-parts [other than PCBA and Li ion Cell] for manufacture of Lithium-ion battery and battery pack [w.e.f. 01.04.2021]	85076000	3%	Increase	2.50%	0.30%	0.01%
5	Specified insulated wires and cables	85441990, 85444299, 85444999	0.60%	Increase	2.50%		0%
6	Inputs, parts, sub-parts for use in manufacture of Vibrator Motor / Ringer	85177090, 85013119	1%				0%
7	Inputs, parts, sub-parts for use in manufacture of display assembly	85177090	15.50%				0%
8	Inputs, parts, sub-parts for use in manufacture of touch panel/ cover glass assembly						
9	Fingerprint reader/Scanner for Mobile Phones	85177090	1.50%				0%
10	Inputs for manufacturing of Connectors	85369090	1.50%				0%
11	Inputs on Mechanics, metal and plastic	39269099, 85049090	9.50%	Increase		16.95%	0.40%
Average Increase							1.76%
Total Average Increase for two years i.e. 2020 and 2021							8.08%
* Industry average.							

Source: Industry Information and Budget 2021

[33] *https://www.ecb.europa.eu/pub/economic-bulletin/focus/2019/html/ecb.ebbox20190801da0137b70b.en.html*

Cumulatively the cost increase in BOM from tariff increases in 2020 and 2021 amounts to over 8%. As BOM accounts for nearly 70% of the ex-factory price of smartphones and nearly 60% of the ex-factory price of a feature phone, the average share of BOM would be about 65%. Hence the cost increase is around 65% of 8%. In addition a surcharge of about 10% is levied on the tariff rate, so the cost increase would in effect be 8.8 or nearly 9% on the BOM. This implies that for mobiles the ex-factory price would increase by 5.72%. Reducing the cost increase to the ex-factory price was important for comparing the tariff hike with the PLI provided to the industry.

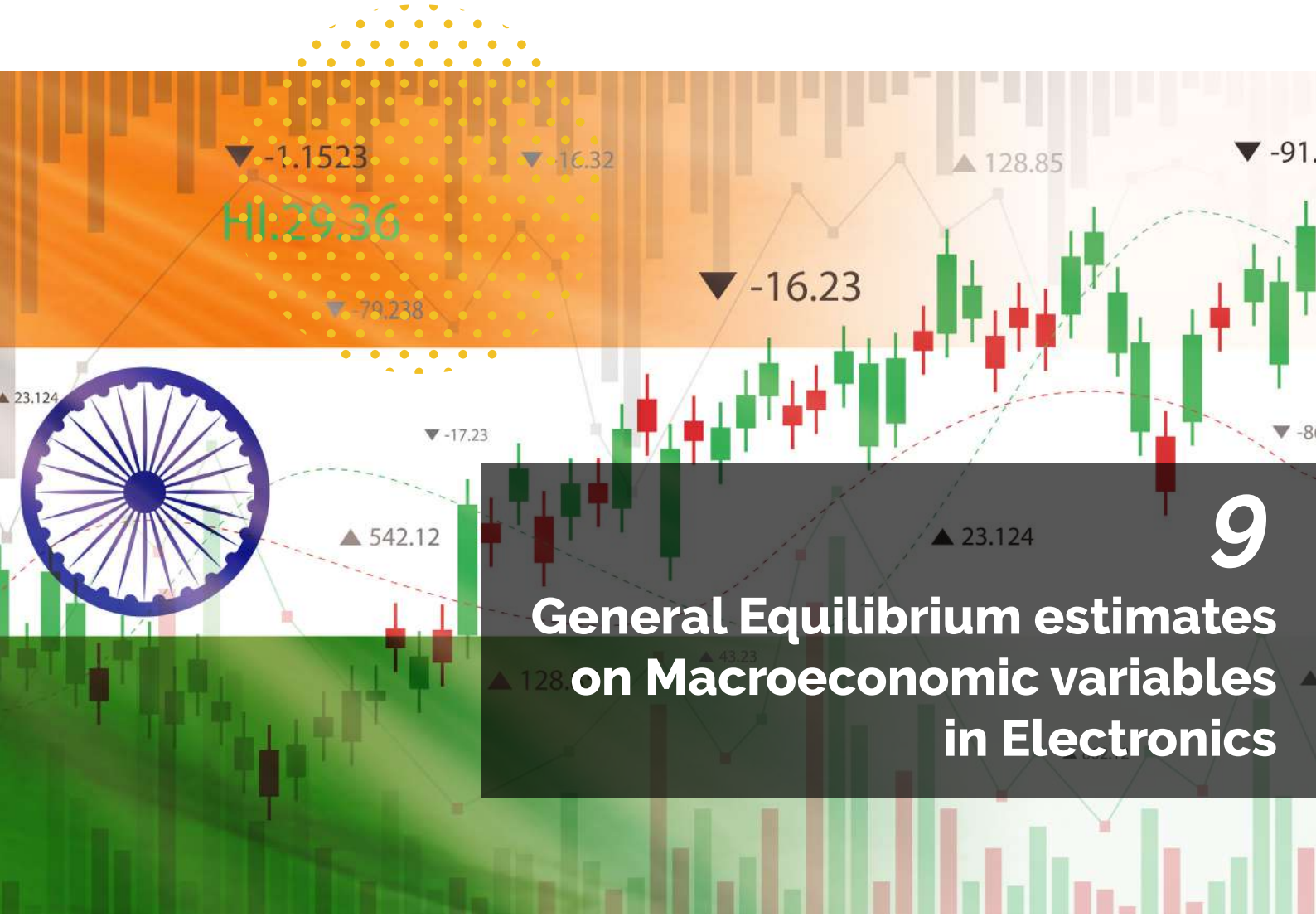
8.4 Comparing PLI and cost increase because of tariff hike

Table 8.3. Impact on PLI of Tariff Hikes

Categories	Rate
PLI on Mobile Phones	4-6%, average value 5.0% or 5.2% of costs
Cost increase because of tariff hikes	5.72%
Net PLI benefits on Mobile Phones	0%

Source : Calculations as shown above

Hence raising tariffs on inputs would in effect neutralise the support provided by schemes such as PLI. While these estimates are very simple calculations based on back of the envelop estimates, more in-depth analysis of the effects is required especially in these Covid-19 times when domestic production has decreased drastically. The next section examines the effects of tariff increases using input output linkages and the presence of GVCs in this sector. Using these tariff changes and a GTAP model the estimates provide some deeper insights.



9 General Equilibrium estimates on Macroeconomic variables in Electronics

The quantitative importance of magnification effects through GVCs of tariff increases is usually investigated in general equilibrium trade models. In this case the report uses the Global Trade Analysis Project (GTAP) model. Upstream tariffs are computed as the weighted average of tariffs applied to intermediate goods used by a country-industry, with weights referring to the share of inputs in a country-industry's total output. The measure is extended to also include tariffs imposed by countries further upstream in the supply chain by following insights on cumulative tariffs presented by the GTAP model database. Tariffs imposed downstream in the value chain could also affect the output of upstream industries.[34] Forward linkages can imply that the tariff costs are passed on to third markets downstream in the value chain.[35] However as India is a very small exporter these effects may be insignificant. The brunt of the tariff effects in the context of GVCs in electronics will be borne by the Indian domestic industry and its exports. For more information on the model structure see Annex 4.

[34] *Rouzet, D. & S. Miroudot, The cumulative impact of trade barriers along the value chain, June 2013 Conference Paper, GTAP resource No 4184, 2013.*

[35] *See, for example, Mao, H. & H. Görg (2019), Friends like this: The Impact of the US – China Trade War on Global Value Chains. Kiel Center for Globalization Working Paper No. 17.*

9.1 Results from the GTAP analysis

The results derived by the model works from one general equilibrium to another. This implies that the shock is given in a stationary state and the disturbance then ripples through the economy before it settles to another general equilibrium when all markets clear. This includes products, prices, trade, investment and factor markets such as land, labour and capital. Normally this period of moving from one general equilibrium state to another can take anywhere between one and a half to three years or four years. The period is determined by how smooth are the adjustments in the market, how rapidly technology is changing and how quickly the market signals are being transmitted in the economy. In this report based on empirical literature, it is assumed that the period of adjustment is on an average 3 years. However, as adjustments to the economy have become much longer during Covid-19 times, it is assumed that to go back to 2019, the economy will take three years and then another three years for a stable general equilibrium. Hence the actual effects of the tariff increases in 2020/2021 will be felt till 2025 impacting the targets envisioned under NPE 2019 and PLI policy. This will have a cascading impact if subsequent budgets continue to approve tariff hikes.

For purposes of the analysis in this report, the GTAP analysis was divided into 2 periods. That before Covid-19 and that after it. Covid-19 related lockdowns led to a decrease in output of 7% in FY 21. The supply chain of components has been affected by Chinese shutdowns. A delay of at least 4 –5 weeks is expected in the shipment of products upon re-opening of production units across the globe with limited cargo vessels. This will also result in increased marginal cost of logistics (i.e., logistics cost per unit of product). The ESDM sector has been strained with liquidity crunch due to production shutdowns in India because of the nationwide lockdown. The reduced demand post Covid-19 will further pose cash flow constraints, and MSMEs will be the worst hit. The pandemic has also posed a challenge for the companies in meeting the regulatory compliances.[36]

The first period witnessed tariff increases because of the Phased Manufacturing programme. In order to isolate tariff effects, no incentive such as the MEIS was included in the analysis. Thus to an extent the actual trade effects of the first period tariffs were lower than that shown because of the 2% MEIS later raised to 4% MEIS on exports. In addition the Make in India policy and few other policy measures associated with it also had a positive effect on exports.

9.2.1 Results from 2014-2018 and how do they compare with Reality

The figures obtained from the modelling exercise (Shown in Table 9.1) can be compared with the actual experience in the electronics sector in India. Figures on mobile phones and battery chargers are available. The model shows that with tariff increases output of mobile phones should have fallen by 4% over this period and exports and imports by 22% and 42% respectively. While imports fell by more than half, exports, investment and employment all rose.[37] In fact the highest increase in exports were seen in financial year 2018-2019. This is because incentives such as MEIS was increased in 2017 from 2 to 4% for mobile phones. Tariffs at the same time were increased by around 10%. In addition M-SIPS for capital investment was introduced and large firms were able to take advantage of this scheme too. Thus MEIS used with duty drawbacks did have a positive influence on output and exports, as well as return on investment.

[36] *https://assets.ey.com/content/dam/ey-sites/ey-com/enin/topics/government-and-public-sector/2020/09/managing-the-impact-of-covid-19-on-india-supply-chains.pdf*

[37] *https://economictimes.indiatimes.com/tech/hardware/mobile-phone-export-grows-over-8-fold-to-rs-11200-cr-in-2018-19/articleshow/71294075.cms?from=mdr*

Table 9.1 Effects of Tariff increases on Selected Products in the Mobile Sectors

(All Figures are in Percentages with 2014 as the base year and 2018 as the end year)

Under HS Code	Products Description	Output	Exports	Imports
391990	Display	-5.4	-12.4	-19.8
850440	Battery Chargers	-4.0	-9.0	-23.5
850440	Adapters	-2.5	-12.0	-24.5
850450	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Choke coils (Chokes)	-2.5	-14.0	-26.3
854050	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Other	-2.6	-14.5	-28.8
851770	Mobile Phones But Not Including PCBAs Under Headings 8443, 8525, 8527 or 8528 - Parts - Populated, Loaded or Stuffed Printed Circuit Boards	-4.0	-22.2	-41.8
852580	Camera Modules	-3.4	-19.2	-36.1
852580	Transmission Apparatus	-3.0	-16.6	-32.9
853610	Electrical Apparatus for Switching or Protecting Electrical Circuits, For a Voltage Not Exceeding 1,000 Volts - Fuses: Electrical Fuses	-3.3	-18.2	-34.7
853690	Electrical Apparatus for Switching or Protecting Electrical Circuits, ...	-3.6	-20.1	-38.2
854449	Insulated Wires and Cables, Conductors, Optical Fibres	-4.3	-24.0	-47.7

Source: Estimates from the GTAP model

With the 'Make in India' plan for mobile phone manufacturing remaining largely about assembling, India had to import $13 billion worth of components in 2018.[38] "Not many high-value components are being sourced from India. As a result, local value addition in India was at 17% during 2018. This helped the country save US$2.5 billion in forex but increased assembly operations in India led to imports of mobile phone components going up to US$13 billion."[39] This impacted the balance of trade. With tariff increase the domestic price of imports will rise thus leading to a decrease in demand for inputs. This in turn will have a depressing effect on output.

The implementation of customs duties under Phase III, which targets Display Assembly, Touch Panel/Cover Glass Assembly and Vibrator/Motor Ringer have been delayed under PMP. However, the GoI has introduced these tariff hikes in 2020 and 2021 when there was little capacity to produce it in India.

The component eco-system of low-value components were strengthened in the period 2014-2018 and export incentives such as the MEIS were strengthened along with tariffs introduced under PMP. In this period Chinese players like Xiaomi, OPPO, and Vivo had transitioned from semi-knocked down (SKDs) to completely knocked down units (CKDs).[40] Half of the handsets sold in India in 2018 were imported as SKDs while only 34% were imported as CKDs.

[38] *https://www.counterpointresearch.com/india-imported-13-billion-worth-mobile-phone-components-2018/*

[39 & 40] *Ibid*

Table 9.2 shows the effects of tariff hikes on Employment, prices and investment in India during the period 2014-2018.

Table 9.2 Effects of Tariff Increases on Employment, Prices and Investment, 2014-18

(All Figures are in percentages with 2014 as the base year and 2018 as final year)

Under HS Code	Products Description	Employment	Prices	Investment
391990	Display	-5.6	7.1	-5.0
850440	Battery Chargers	-4.1	5.0	-3.7
850440	Adapters	-4.9	3.9	-3.4
850450	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Choke coils (Chokes)	-2.6	9.5	-1.8
854050	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Other	-2.7	10.3	-1.9
851770	Mobile Phones But Not Including PCBAs Under Headings 8443, 8525, 8527 or 8528 - Parts - Populated, Loaded or Stuffed Printed Circuit Boards	-4.1	15.1	-4.6
852580	Camera Modules	-3.5	13	-2.4
852580	Transmission Apparatus	-3.1	12	-3.1
853610	Electrical Apparatus for Switching or Protecting Electrical Circuits, For a Voltage Not Exceeding 1,000 Volts - Fuses: Electrical Fuses	-3.4	12.5	-3.1
853690	Electrical Apparatus for Switching or Protecting Electrical Circuits, ...	-3.7	13.7	-3.2
854449	Insulated Wires and Cables, Conductors, Optical Fibres	-4.4	17.2	-4.5

Source: Estimates from the GTAP model

Dramatic results were also found in terms of output, export and import of battery chargers. Modelling results show that output and exports would decrease by 4% and 9% respectively. However domestic capacity increased and incentives helped boost output and exports. This is because domestic capacity for battery chargers was already in India and as it was possible to scale up production to reduce costs. Also inputs to battery chargers were kept at 0% tariffs. Hence tariff increases under PMP when accompanied by incentive schemes were not as punitive as the tariff increases in 2020 and 2021. Also the positive effects of incentives such as MEIS and Make in India far outweighed the negative effects of tariffs. MEIS was an easy scheme to administer and several firms were able to avail its benefits.

It is also to be noted that tariff hikes for most products did not kick in till 2017. (See Annex 1). In that very year MEIS and Make in India incentives such as MSIPS were also introduced. The PMP under which tariffs were increased in the initial phases used a calibrated approach and hence had an encouraging effect on output and exports.

Thus while there was delay in the implementation of the PMP, India made significant strides in developing its mobile manufacturing ecosystem. Local value addition has risen from a meagre 6% level in 2016 to 17% in 2018 and in 2018 there were 120 assembling plants in the country as compared to just two in 2014.[41]

Table 9.3: Progress of PMP for mobile manufacturing in India

Year when Duty was Introduced	Component	Duty Structure under Phased Manufacturing Plan updated till 2021	Duty Implementation Status	%Age Contribution of BoM (Bill of Material)	Local Sourcing
2016-17	* Charger/Adapter * Battery Pack * Wired Handset	20% 15% 15%	Implemented	6%	High
2017-18	* Mechanics * Die-cut parts * Microphone, Receiver * Key Pad * USB Cable	15% 15% 15% 15% 15%	Implemented	7%	Low for Mechanics, Die-cut parts and Microphone, and receivers. High for others.
2018-19	* PCBA * Camera Module * Connectors	20% 10% 10%	Implemented	62%	High for PCBA. Low for others.
2020-21	* Display Assembly * Touch Panel/Cover Glass Assembly * Vibrator Motor/Ringer	10% 10% 10%	Implemented	25%	Very low. Just started

However the GoI increased tariffs precisely on these products and even their inputs in 2020 and 2021. The impact of tariff increases coupled with Covid-19 related lockdowns has already seen a decrease in output, exports and imports by 4-5% in 2020-2021 financial year. The introduction of the PLI meant that the Indian industry met its target of investment but was unable to meet it for output and exports on account of Covid-19. Employment is typically sticky downwards. Hence it moves slower than other parameters.

[41] *Ibid*

9.2.2 Results of tariff hikes of 2020/2021 and how do they compare with reality

Table 9.4 shows the effects of tariff increases in 2020 and 2021 on selected products. For comparing effects the base year was taken as 2018, just one year before the tariff increases and the Covid-19 crisis.

Tariff hikes of 2020 and 2021 would have a far more chilling effect on the electronics sector than the calibrated hikes under PMP in the period 2014-2018. Price increases would affect the mobile sector disproportionately as several components would become costlier. Employment would decrease and investment too by close to 10%. This calls for a rethink on tariffs and a mid-course correction. The protective effects of tariffs will be outweighed by the cost effects. Hence it is necessary to determine a threshold level of domestic production of components which are already on stream before imposing tariffs on components. It was shown above how tariffs would outweigh the benefits of incentive schemes such as PLI and hence it is imperative to implement and disburse PLI expeditiously.

Table 9.4 : Projected effects of tariff hikes of 2020/2021

(All figures are in percentages with 2019 as the base year and 2025 as the Final year)

Under HS Code	Products Description	Output	Exports	Imports
391990	Display	-9.2	-20	-30.4
850440	Battery Chargers	-6.6	-19	-30.4
850440	Adapters	-11	-27	-30
850450	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Choke coils (Chokes)	-5.7	-19.5	-32
854050	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Other	-6	-20	-35
851770	Mobile Phones But Not Including PCBAs Under Headings 8443, 8525, 8527 or 8528 - Parts - Populated, Loaded or Stuffed Printed Circuit Boards	-9	-31	-51
852580	Camera Modules	-8	-27	-44
852580	Transmission Apparatus	-6.8	-23	-40
853610	Electrical Apparatus for Switching or Protecting Electrical Circuits, For a Voltage Not Exceeding 1,000 Volts - Fuses: Electrical Fuses	-7.5	-25.5	-42.5
853690	Electrical Apparatus for Switching or Protecting Electrical Circuits, ...	-8.2	-28	-46.8
854449	Insulated Wires and Cables, Conductors, Optical Fibres	-10	-33.4	-58.3

Source: GTAP calculations

How do these results compare with the real growth rates. Figures on exports and imports of most products covered by the GTAP analysis are now available for 2020-2021. Annex 3 shows the actual trade from the years 2018 to 2021 in India.

Dramatic effects are to be seen in the mobile phones sector. This is because tariffs have been introduced on inputs which account for around 80-90% of the BOM value of mobile phones. Of all these inputs currently India has the domestic capacity to manufacture only some of the sub-assemblies. These account for roughly up to 20% of the total cost of inputs, as shown in Table 9.3. However the rest of the inputs are still imported and may take time to develop capacity and scale. The PMP scheme showed that tariffs alone were insufficient to develop manufacturing capacity. On the other hand tariffs may decrease competitiveness, and hence output and exports. Hence the model results correspond with reality.

Table 9.5: Projected Effects of tariff Increases on Employment, Prices and Investment of 2020/2021

(All figures are in percentages with 2019 as the base year and 2025 as the Final year)

Under HS Code	Products Description	Employment	Prices	Investment
391990	Display	-9.4	11	-8.5
850440	Battery Chargers	-6.8	6.4	-6.1
850440	Adapters	-11.1	4.8	-7.7
850450	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Choke coils (Chokes)	-6	11.6	-4.1
854050	Electrical Transformers, Static Converters (e.g. rectifiers) and Inductors - Other Inductors: Other	-6.1	13	-4.3
851770	Mobile Phones But Not Including PCBAs Under Headings 8443, 8525, 8527 or 8528 - Parts - Populated, Loaded or Stuffed Printed Circuit Boards	-9.3	18.5	-8.3
852580	Camera Modules	-8.1	16	-5.6
852580	Transmission Apparatus	-7	14.5	-7.8
853610	Electrical Apparatus for Switching or Protecting Electrical Circuits, For a Voltage Not Exceeding 1,000 Volts - Fuses: Electrical Fuses	-7.7	15.3	-6.2
853690	Electrical Apparatus for Switching or Protecting Electrical Circuits, ...	-8.4	17	-7.5
854449	Insulated Wires and Cables, Conductors, Optical Fibres	-10.5	21	-11.2

Source: GTAP calculations

How do these results compare with the reality. Figures on exports and imports of most products covered by the GTAP analysis are now available for 2020-2021. Annex 3 shows the actual trade from the years 2018 to 2021 in India.

Dramatic effects are to be seen in the mobile phones sector. This is because tariffs have been introduced on inputs which account for around 80-90% of the BOM value of mobile phones. Of all these inputs India has the domestic capacity to manufacture roughly 30-40% of the products at home as shown in Table 9.3. However the rest of the inputs are still imported and may take time to develop capacity and scale. Meanwhile the decrease in output and exports would continue. Hence the model results correspond with reality.

The other important product to note is battery chargers. Battery chargers and battery packs saw a very large decline in exports and imports from 2018. In fact, in reality the decline has been much larger than that shown by the model. This is because the model shows results till 2025 when the industry is expected to recover and some of the negative effects may be attenuated. As markets adjust to the new Covid-19 reality and factor markets accommodate to a post Covid-19 world some increase in output, exports and imports as well as the other macroeconomic variables are to be expected. The Government of India is also readjusting to these measures as is shown by the likely deferral of PLI output target to 2021-2022.[42] However harsh immediate effects of tariff increases have been already felt by the industry in 2020 as is shown by Annex 3. (tariff hike will still impact even if the PLI first year is changed)

To attenuate tariff effects incentives such as the PLI, SPECS etc should be implemented rapidly.. None of the countries which compete with India in global markets have increased tariffs. Further even for revenue purposes, GST generated by increased output would far exceed tariff revenue from decreased imports. Using 2019 as a base and ICEA data that only 3% of mobiles are imported, GST revenue fall according to Model estimates would be 1.62%, whereas revenue rise according to model estimates through tariffs would only be 0.38%. Hence the country would end up becoming a net loser of revenue through tariff rises.

The macroeconomic effects of the tariff rise are also likely to be negative for India. India is not a part of the global GVCs of mobile handsets. Shifting parts of the value chain to India may have been encouraged by schemes such as PLI, SPECS and EMCs. However tariffs would have a chilling effect on further investment as most of the machines brought into India in 2020 have not as yet started production. Table 9.5 shows the macroeconomic effects of tariff increases in selected electronic products in the period 2018-2025.

In addition as explained above, FTAs imply that effective tariffs remain low. For example in this situation if India were to import inputs from Vietnam due to ASEAN India FTA, the effective tariffs on inputs despite the 2020/2021 tariff increase would be 0. However as shown earlier India imports most of its inputs under MFN tariffs unlike Vietnam which imports them under FTA tariffs. Hence India would not feel the adverse effects on exports of tariffs if it had FTAs with countries from which it imports components. Further even with existing FTAs procedures for input imports should be eased.

9.3 Effects on other sectors

Electronics are used in several areas and the macroeconomic effects of tariffs and consequent cost rises are likely to spillover to other sectors. In this report only two sectors with over 40% share of electronics in their total costs have been considered. These are Automobiles and Medical Devices sector. These two sectoral effects are used merely for illustrative purposes. The GTAP model has been used to determine the total effects of the hike in electronics prices. The electronics inputs in Indian automobile and medical devices are based on current input-output norms provided in the GTAP database.

[42] *https://www.news18.com/news/tech/govt-may-relax-pli-targets-for-mobile-phone-makers-in-india-after-difficult-fy21-report-3782258.html*

Table 9.6 Estimated Effects on Automobiles from tariff hikes in Electronics

(All figures are in percentages with 2019 as the base and 2025 as the end year)

Years	Output	Exports	Imports	Employment	Prices	Investment
2014-2018	-1.3	-2.5	-4.7	-1.3	0.4	-3.5
2018-2025	-1.4	-3.2	-5	-1.42	0.5	-3.8

Source: GTAP calculations

Note: The impact on this sector is calculated using a CGE framework. Electronics account for 20% to 35% of the total cost of automobiles. The impact on this sector is calculated using a CGE framework. See https://www.statista.com/statistics/277931/automotive-electronics-cost-as-a-share-of-total-car-cost-worldwide/. According to another source electronics account for 40% of a new car cost. https://www.caranddriver.com/features/a32034437/computer-chips-in-cars/.

Table 9.6 shows that tariff hikes on electronics between 2014 and 2018 would have reduced trade and output by around 1-5%. This is because through input output linkages electronics which accounts for a large share of the total costs of automobiles would affect the cost of producing automobiles. The impact is relatively smaller than the electronics sector but it is to be noted that recent increases in tariffs would have a larger impact on the automobiles sector than the previous increases. Further prices of automobiles are likely to rise by small percentages because of the cost increase in the electronics sector on account of tariff hikes. Investment in this sector would also decrease. The effects on the automobiles sector is partly attenuated by the fact that several components can be sourced locally, including electronic components. For example the printed circuit board (PCB) for automobiles is locally manufactured. The automobile sector in India is a mature industry with complete backward and forward linkages. This is not the case for the medical devices sector which is an emerging industry with large dependence on imports of inputs.

Table 9.7 Estimated effects on Medical Electronics Devices Sector from tariff hikes in Electronics (All figures are in percentages with 2019 as the base year and 2025 as the end year)

(All figures are in percentages with 2019 as the base year and 2025 as the end year)

Years	Output	Exports	Imports	Employment	Prices	Investment
2014-2018	-1.7	-2.0	-5.3	-1.8	0.7	-5.3
2018-2025	-2.8	-4.2	-6.7	-3	1	-8.4

Source: GTAP Model Results

Note: Electronics account for 50% of the total cost of automobiles. The impact on this sector is calculated using a CGE framework. https://www.ibef.org/industry/medical-devices.aspx.

The effect on the medical devices sector is much larger as the share of electronics is higher and several electronic components are not manufactured locally. Again the chilling effects are higher in the period of recent tariff hikes. Investments probably show a higher decline as most of the electronics components are not sourced locally. As the import content of exports is high, exports also decline by a higher margin than in the case of automobiles.

- The report has given arguments on how conventional reasons for protecting the Indian electronics sector through tariffs may not work in the present milieu. This is because of the extensive GVCs in the electronics sector which make firms reluctant to enter India when tariffs for components are high. While the large electronics markets of India may look attractive, they are very small in global terms. Moreover India does not produce about 50% of the components on which tariff has been increased. Hence the impact of tariffs is likely to be adverse on India's competitiveness.

- India's tariffs have to be compared with that of competing countries. India's MFN tariffs on almost all electronic products and components and sub-assemblies. Even in products where countries have higher tariffs than India, their imports come under FTA tariffs which in most cases in 0. India's tariff issues are hence compounded by the fact that competing countries have several FTAs, while India's imports mostly come (86%) under MFN tariffs.

- While Indian output and exports of electronics has grown since 2014, that of competing countries has in general grown much faster. India accounts for a very small share of global markets in electronics despite its huge population. These changes in exports have to be seen in the context of the trend in tariffs of electronics and components in competing countries. Tariffs of most competing countries has remained stable or declined from 2014-2020, whereas Indian tariffs have shown large increases.

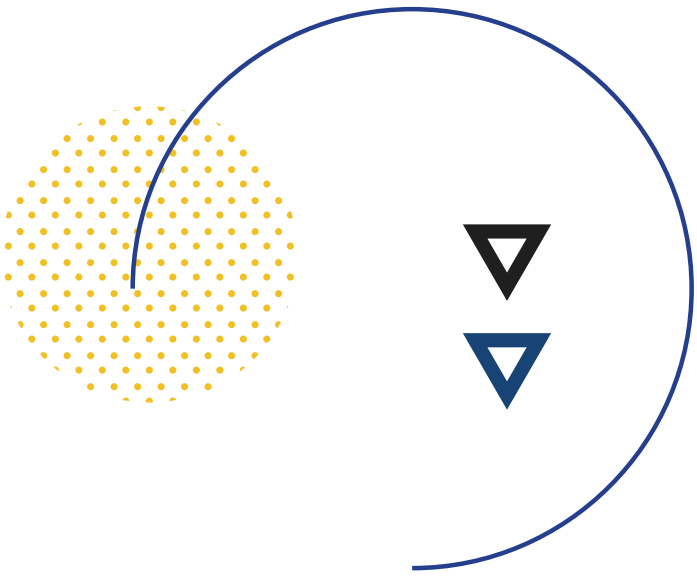
- The fact that Indian output and exports have grown in the period 2014-2018 has been despite tariff increases in 2017 can be attributed to a number of attenuating factors. First of all the introduction of MEIS in 2016-17 and the subsequent rise in its rate from 2 to 4% boosted exports and hence output. Secondly, tariff increases were introduced post 2016-17 and hence their effects take time to work out. The effects of these tariff increases would be felt after 2018.

- Tariff increase has an adverse effect on cost, prices, output, exports and imports. It also negates the effect of supportive polices such as PLI. While the global economy, especially the US is increasing its tariffs on electronics, if India is to be integrated into Asian supply chains it must keep its tariffs at least at levels of its competitors. Further before increasing tariffs India should ensure that there is domestic capacity to produce the products on which tariffs are being levied.

- Incentives such as PLI, SPECS and EMCS should be implemented before tariff increases come on board. Moreover tariff increases and PLI appear to contradict each other. Hence tariffs should be kept to 0 for products on which PLI is being granted. Only when the industry becomes competitive can tariffs be imposed.

- Model predictions and actual import and exports for 2020-2021 are in the same direction namely a sharp decline. In fact the actual decrease in exports and imports is much larger than the model predictions. This is probably because the model takes a larger time frame over which adjustments do occur.

- As the global economy enters the post China phase of industrialisation, it is important that India keeps a rational approach to tariff increases.



Annex 1: Evolution of Tariffs on Selected Electronic Products in India

Annex Table 1.1. Tariffs on Selected Electronic Products in India, 2014 to 2019

Products	2014	2015	2016	2017	2018	2019
Charger/Adapter	8.3	8.3	10	10	15	15
Battery Pack	0	0	10	10	15	15
Wired Headset	0	0	10	10	15	15
Mechanics	0	0	0	10	15	15
Die Cut Parts	0	0	0	10	15	15
Microphone/Receiver	0	0	0	10	15	15
Key Pad	0	0	0	10	15	15
USB Cable	0	0	0	10	15	15
PCBA	0	0	0	0	10	10
Camera Module	0	0	0	0	10	10
Connectors	0	0	0	0	10	10
Display Assembly	0	0	0	0	0	10
Touch Panel Glass Assembly	0	0	0	0	0	10
Vibrator/motor ringer	0	0	0	0	0	10
Transformers	10	10	0	10	10	10
Mobile phones	0	0	10	10	20	20

Source: Extracted from COMTRADE Database

Annex 2: Tariffs on Priority Products and Inputs

Annex Table 2.1. MFN Tariffs on Final Products, Sub-Assemblies and Components

		India MFN Tariff	China MFN Tariff	Mexico MFN Tariff	Thailand MFN Tariff	Vietnam MFN Tariff
HS Category	**Finished Products**					
85171211	Mobile Phone	22	0	0	0	0
85171290	Mobile Phone	22	0	0	0	0
85176290	Smart Watch	22	0	0	0	0 to 10 (75% FTA)
85176290	Bluetooth Earphones/ Headsets for mobile phones	11	0	0	0	0 to 10 (75% FTA)
85287100	OTT Set Top Box/ Set Top Box	22	5	0 to 15	10	0 to 25 (98% FTA)
85176960	OTT Set Top Box/Set Top Box	0	0 to 1.5	0	0	0
84713010	Laptop	0	0	0	0	0
	Sub-Assemblies					
85076000	Battery Pack	16.5	10	0	10	0
39209999	Battery Pack	16.5	6.5	0	5	6
85044030	Charger/Adapter	22	1.7	10	10	0
85044090	Charger/Adapter	22	1.7	10	10	0
85177090	Camera Module; Display Assemblies, Connectors, Vibrator Motor for Mobiles Phones	11	0	0	0	5
85299090	Others	16.5	0	0	0	0
85258090	Others	11	0	0	0	0
85177010	PCBA	22	0	0	0	0
85444299	Cables	16.5	0 to 5	5	10	10
85258020	Digital Camera	0	0	0	0	0
84715000	Desktop / PC	0	0	0	0	0
84713090	Tablet	0	0	0	0	0
	Components					
73181500	Mechanics	16.5	8	0 to 5	10	12
73269099	Mechanics (SIM Socket)	16.5	8	0	10	10 (89% FTA)
85176100	Base Station	22	0	0	0	0
85389000	Mechanics for Mobile Phones	16.5	7	0	7 to 10	12 (90% FTA)
85183000	Earphones	16.5	0	0 to 15	10	15
85182200	Speakers	16.5	0	15	10	15
85177090	Others	16.5	0	0	0	5
85235100	Flash Storage	11	0	0 to 10	0 to 10	0
85340000	PCB	0	0	0	0	0
84717020	Hard Drive	0	0	0	0	0
84718000	Graphics Card	0	0	0	0	0
84733020	Motherboard	0	0	0	0	0

Source: Based on industry feedback and Country tariff schedules.

Note: The numbers within brackets for Vietnam show the extent of imports for the tariff line which come from countries with which Vietnam has a Free Trade Agreement (FTA).

Annex Table 2.2. MFN Tariffs on Parts / Inputs for Manufacture of Parts of Mobile Phones

Products	% of BOM Cost	HS Code	India -MFN Tariff	China -MFN Tariff	Mexico - MFN Tariff	Thailand - MFN Tariff	Vietnam - MFN Tariff
1. Camera module	14%	85177090	11	0	0	0	5
		85258020	0	0	0	0	0
		85258090	11	0	0	0	0
		85299090	11	0 to 7.5	0	0 to 10	0 to 5
2. Inputs, parts, sub-parts for display assembly	15.5%	85177090	0	0	0	0	5
3. Inputs, parts, sub-parts for touch panel/ cover glass assembly		- As above	- As above	- As above	- As above	- As above	- As above
4. Inputs- Mechanics, metal and plastic	9.5%	39269099	16.5	10	0 to 15	10	12
		85049090	16.5	1.3	0	0	0
5. Inputs, Parts and Sub-parts [other than PCBA and Lithium Cell] for Lithium-ion battery and battery pack	3%	85076000	16.5	10	0	10	0
6. Connectors	1.5%	85177090	11	0	0	0	5
7. Fingerprint reader/Scanner for Mobile Phones	1.5%	85177090	16.5	0	0	0	0
8. Inputs for manufacturing of Connectors	1.5%	85369090	2.75	0	0 to 5	0 to 10 (Note 2)	25 (Note 2)
9. Inputs, parts, sub-parts for Vibrator Motor / Ringer	1%	85177090	0	0	0	0	5
10. Specified insulated wires and cables	0.6%	85441990 85444299 85444999	16.5 16.5 16.5	10 0 to 5 0 to 8	5 5 10	10 10 10	5 10 10
11. Printed Circuit Board Assembly (PCBA)	45%	8504; 8517; 8518; 8532	See Note 3	See Note 3	See Note 3	See Note 3	See Note 3
12. Printed Circuit Board Assembly [PCBA] and Moulded Plastic, for manufacture of charger or adapter; Inputs and parts [other than PCBA and Moulded Plastic] of mobile charger	2%	8544; 8504; 8542; 8532	See Note 4	See Note 4	See Note 4	See Note 4	See Note 4

Notes: (1) The products under 84719000 are divided into four categories for Vietnam. Three of them have zero tariffs. One category "Electronic Fingerprint Identification System" has an MFN Tariff of 3%.
(2) For the two tariff lines, 85369090 and 85013119, virtually all imports of Vietnam come in at FTA tariffs, i.e. for these two tariff lines respectively only 5% and 7% of the imports enter at MFN tariffs. The applied tariffs for these categories are therefore lower than the Indian tariff.
(3) Out of 120 tariff lines, for these categories India has the following number of tariff lines: 8504 (10 lines), 8517 (10 lines), 8518 (5 lines), and 8532 (5 lines). Among these categories the competing economies have lower tariffs than India for all tariff lines of 8504. For 8517, all countries have nine tariffs less than India. For one tariff line, Mexico, Thailand and Vietnam have the same tariff as India, and China has higher tariff than India. For 8518, Vietnam has four tariffs less than India and others have all five tariffs less than India. For 8532, all countries including India, have zero tariffs.
(4) For 8542, all countries except China have zero tariffs. For the three tariff lines under this category, China's MFN tariffs range between 0 to 0.7 % for two lines and 0 to 1,7% for one lines. There are three tariff lines under 8544, For all these three lines, India's tariffs are higher than those of the competing economies. The comparison for 8504 and 8532 is discussed in footnote 3.

Annex 3: Trade of Selected Electronic Products from 2018-2021

Annex Table 3.1. Exports of Priority Electronics Products

Product	HS Category	2018-19 (US$ Mn)	2019-20 (US$ Mn)	2020-21 (US$ Mn)
Finished Products				
Mobile Phone	85171210	14.55	961.33	
Mobile Phone	85171211			3,007
Mobile Phone	85171290	1,598.10	2,875.79	69
Smart Watch, Bluetooth Earphones/Headsets	85176290	610.27	449.85	611
OTT Set Top Box/Set Top Box	85287100	2.04	67.87	65
Laptop	84713010	40.86	10.59	24
OTT Set Top Box/Set Top Box	85176960	0.89	0.16	0
Sub-Assemblies				
Battery Pack	85076000	6.43	9.68	7
Digital Module	85258020	39.59	35.24	29
PCBA	85177010	73.12	145.88	276
Charger/Adapter	85044030	236.49	471.82	194
Charger/Adapter	85044090	367.63	480.24	411
Battery Pack	39209999	26	28	30
Camera Module; Display Assemblies, Connectors, Vibrator Motor for Mobile Phones	85177090*	186	159	189
Others	85299090	93	136	178
Cables	85444299	58	70	88
Others	85258090	27.29	20.02	41
Tablet	84713090	21	24	20
Desktop / PC	84715000	39	50	62
Components				
Mechanics	73181500	302	293	250
Mechanics (SIM Socket)	73269099	761	708	680
Base Station	85176100	2	1	2
Mechanics for Mobile Phones	85389000	441	439	416
Earphones	85183000	10	6	8
Speakers	85182200	48	6	3
Flash Storage	85235100	31	41	32
Hard Drive	84717020	17	17	11
Motherboard	84733020	25	22	30
PCB	85340000	137	121	113
Graphics Card	84718000	7	13	6

** HS Category 85177090 also contains some components (connectors etc.), but since the HS category is already included under "sub-assemblies", and trade information is at the aggregate 8-digit level, the category 85177090 is not included under "Components".*

Annex Table 3.2. Imports of Priority Electronics Products

Product	HS Category	MFN Tariff India, 2020	2018-19 (US$ Mn)	2019-20 (US$ Mn)	2020-21 (US$ Mn)
Finished Products					
Mobile Phone	85171210	22	399.96	329.51	
Mobile Phone	85171211	22			2,157
Mobile Phone	85171290	22	1,216.51	707.59	73
Smart Watch, Bluetooth Earphones/Headsets	85176290	22 11	5,336.11	3,052.86	3,534
OTT Set Top Box/Set Top Box	85287100	22	388.34	449.9	259
Laptop	84713010	0	2,966.84	3,167.92	4,745
OTT Set Top Box/Set Top Box	85176960	0	42.48	10.46	16
Sub-Assemblies					
Battery Pack	85076000	16.5	1,225.87	1,246.22	1,193
Digital Camera	85258020	0	595.31	905.69	853
PCBA	85177010	22	2,120.72	699.73	538
Charger/Adapter	85044030	22	68.63	50.41	91
Charger/Adapter	85044090	22	766.3	704.14	754
Battery Pack	39209999	16.5	387	376	321
Camera Module; Display Assemblies, Connectors, Vibrator Motor for Mobile Phones	85177090*	11	6,592	7,225	6,445
Others	85299090	16.5	1,313	1,317	2,045
Cables	85444299	16.5	178	177	170
Others	85258090	11	27.29	20.02	41
Tablet	84713090	0	275	311	497
Desktop / PC	84715000	0	1,795	1,706	1,836
Components					
Mechanics	73181500	16.5	453	374	285
Mechanics (SIM Socket)	73269099	16.5	728	653	555
Base Station	85176100	22	44	34	118
Mechanics for Mobile Phones	85389000	16.5	632	575	567
Earphones	85183000	16.5	282	312	343
Speakers	85182200	16.5	165	168	126
Flash Storage	85235100	11	308	301	307
Hard Drive	84717020	0	484	458	369
Motherboard	84733020	0	219	193	247
PCB	85340000	0	682	617	719
Graphics Card	84718000	0	106	107	93

** HS Category 85177090 also contains some components (connectors etc.), but since the HS category is already included under "sub-assemblies", and trade information is at the aggregate 8-digit level, the category 85177090 is not included under "Components".*

Annex Table 3.3. Exports Minus Imports of Priority Electronics Products

Product	HS Category	2018-19 (US$ Mn)	2019-20 (US$ Mn)	2020-21 (US$ Mn)
Finished Products				
Mobile Phone	85171210	-385.41	631.82	
Mobile Phone	85171211			850
Mobile Phone	85171290	381.59	2,168.2	-4
Smart Watch, Bluetooth Earphones/Headsets	85176290	-4,725.84	-2,603.01	-2,923
OTT Set Top Box/Set Top Box	85287100	-386.3	-382.03	-194
Laptop	84713010	-2,925.98	-3,157.33	-4,721
OTT Set Top Box/Set Top Box	85176960	-41.59	-10.3	-16
Sub-Assemblies				
Battery Pack	85076000	-1,219.44	-1.236.54	-1,186
Digital Module	85258020	-555.72	-870.45	-824
PCBA	85177010	-2047.6	-553.85	-262
Charger/Adapter	85044030	167.86	421.41	103
Charger/Adapter	85044090	-398.67	-223.9	-343
Battery Pack	39209999	-361	-348	-291
Camera Module; Display Assemblies, Connectors, Vibrator Motor for Mobile Phones	85177090*	-6,406	-7.066	-6,256
Others	85299090	-1,220	-1.181	-1,867
Cables	85444299	-120	-107	-82
Others	85258090	-855.75	-1.316.6	-916
Tablet	84713090	-254	-287	-477
Desktop / PC	84715000	-1,756	-1,656	-1,774
Components				
Mechanics	73181500	-151	-81	-35
Mechanics (SIM Socket)	73269099	33	55	125
Base Station	85176100	-42	-33	-116
Mechanics for Mobile Phones	85389000	-191	-136	-151
Earphones	85183000	-272	-306	-335
Speakers	85182200	-117	-162	-123
Flash Storage	85235100	-277	-260	-275
Hard Drive	84717020	-467	-441	-358
Motherboard	84733020	-194	-171	-217
PCB	85340000	-545	-496	-606
Graphics Card	84718000	-99	-94	-87

** HS Category 85177090 also contains some components (connectors etc.), but since the HS category is already included under "sub-assemblies", and trade information is at the aggregate 8-digit level, the category 85177090 is not included under "Components".*

Annex 4: Description and purpose of the GTAP model use

The purpose of the GTAP model is to determine the effects of a change in tariffs levied on imports on the various endogenous variables of the model – prices, production, consumption, exports, imports and welfare. Introducing such changes in the model is known as a shock or a simulation; the consequent result represents what the economy would look like if the policy change or shock had occurred. The difference in the values of the endogenous variables in the base data and the simulation represents the effect of the change.

Global Trade Analysis Project (GTAP) model is a publicly available multi-sectoral multi-regional Computable General Equilibrium (CGE) model. This has several standard features of a global CGE model such as Constant Elasticity of Substitution, nests for production and trade, a flexible Constant Difference Elasticity, functional form for consumption, Cobb-Douglas utility function for the aggregate regional household, perfect competition, constant returns to scale, conversion of all global savings into all global investment and Armington assumption to capture product heterogeneity between domestic and imports as well as amongst imports from different sources. This model is well-documented at length in Hertel (1997).

The GTAP analysis in this study has worked with a range of simulations to assess the implications of tariff changes on different products in the electronics sector. Two sets of the simulations have been performed.

The first consists of introducing tariffs on the different products in 2015/2016 under the PMP. The second estimated the effects of the tariff hikes in 2020 and 2021. For comparative purposes the period of one year before these shocks were taken.

All the electronic products are aggregated in a GTAP sector named "ele",or Electronic and Computer Products. Given the disaggregated products covered in this report, the standard model had to be modified. There are various approaches to this – such as splitting the sectors completely using the shares on input-output, trade, tariff, protection, etc., at disaggregated level, (e.g. Narayanan and Khorana (2014) does this in the context of cotton and coffee sectors) and simply using the trade and tariff data that is more easily available than these other data components (e.g. Narayanan et al (2010) does this in the context of auto industry). Both of these methods have their pros and cons; the first one has many simplifying assumptions as it is difficult to get all these datasets at such a disaggregated level; the second one ignores the production function and complementarities between the disaggregated sectors.

Therefore, for this paper, a newly developed simplified yet concise methodology was used to get the results at the disaggregated sector level. The IO datasets and elasticities at the level of "ele" or electronics, were used to disaggregate trade, costs, tax and tariff datasets at the disaggregated levels. The overall percent changes in the "ele" sector, were then disaggregated corresponding to each component's tariff shock, and then the results to the disaggregated sector, were derived based on its trade share and costs breakdown.

Annex 5: List of 120 HS categories considered for this report

S. No.	HS Code
1	32089090
2	34039100
3	35069999
4	39039090
5	39079900
6	39089000
7	39191000
8	39199010
9	39199090
10	39209999
11	39232990
12	39235090
13	39239090
14	39269099
15	40169320
16	40169990
17	42023190
18	48191090
19	48192090
20	48211020
21	48211090
22	48219010
23	48219090
24	48239090
25	49019900
26	49111090
27	59119010
28	73181500
29	73181600
30	73269099

S. No.	HS Code
31	74102100
32	75089090
33	76169990
34	83113010
35	84713010
36	84713090
37	84715000
38	84716040
39	84716050*
40	84716060
41	84717020
42	84718000
43	84733020
44	85011011
45	85042100
46	85043100
47	85043200
48	85044010
49	85044030
50	85044090
51	85045010
52	85045090
53	85049010
54	85049090
55	85051190
56	85076000
57	85079090
58	85171211
59	85171219
60	85171290

S. No.	HS Code
61	85176100
62	85176290
63	85176290
64	85176960
65	85177010
66	85177090
67	85177090
68	85181000
69	85182200
70	85182900
71	85183000
72	85189000
73	85198940
74	85235100
75	85235210
76	85258020
77	85258090
78	85271300
79	85287100
80	85322200
81	85322300
82	85322400
83	85322500
84	85322990
85	85332119
86	85332129
87	85333120
88	85334030
89	85334090
90	85340000

S. No.	HS Code
91	85361060
92	85361090
93	85365090
94	85366990
95	85369010
96	85369090
97	85371000
98	85372000
99	85381010
100	85381090
101	85389000
102	85411000
103	85412100
104	85412900
105	85414011
106	85414020
107	85416000
108	85423100
109	85423200
110	85423900
111	85439000
112	85444299
113	85444910
114	85444999
115	85469090
116	90142000
117	90181990
118	90223000
119	90328910
120	90328990

Note:

1. The HSN Codes list and tariffs have been considered taking into account the end-use of items for electronics and specifically mobile handset manufacturing.

2.* Fingerprint Scanner for Mobile Handsets was imported under HS Code 84716050 at zero duty. Since FY 2020 this item is being imported at an effective duty rate of 16.5%.

3. As per effective tariff.

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About the Authors

IKDHVAJ Advisers LLP is a boutique consultancy firm comprising a select group of experts dedicated to bridging the gap between systemic issues in trade policy and industrial/regulatory policy analysis. The experts at IKDHVAJ each have over 30 years of experience in industrial policy and trade, with deep insights into the overlap of trade policies with domestic policies. The research and advisory work of IKDHVAJ helps develop strategies for Indian policymakers and industries to improve effectiveness of policy measures, identify priority areas for strategic and policy focus, selection of appropriate policies for meeting major objectives, improve options for negotiations of trade-related agreements, and suggest ways to improve access to markets abroad. Our research and advisory work is also focused on helping Indian industries remove operational constraints and enhance capabilities of domestic industries, provide a supportive framework to improve the domestic regulatory environment, establish structured interaction with various stakeholders, and develop relevant institutions including those that enable industry to self-govern. The strategies we help create are both sustainable and holistic, and provide policy makers and industries with the flexibility to combat a constantly changing global trade landscape, as well as to enhance domestic competitiveness

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About ICEA

ICEA with its motto - INSPIRE, ENABLE, and LEAD is the apex industry body for mobile and electronics industry comprising of manufacturers, brand owners, technology providers, VAS application & solution providers, distributors and retail chains of mobile handsets and electronics. ICEA is committed to carrying forward its vision of building strong “self – reliant and export focused” Indian electronics manufacturing and design ecosystem while consolidating the gains made in the mobile handset and components industry. ICEA is fully devoted towards improving the competitiveness and growth of the industry by closely working with the ministries of the Government for creating a robust, legal and ethical electronics industry, thereby creating an innovative market environment in the country.

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