RECOMMENDATIONS FOR UNION BUDGET 2024-25

A COMPARATIVE STUDY OF IMPORT TARIFFS IMPACTING INDIA'S COMPETITIVENESS IN MOBILE MANUFACTURING & EXPORTS

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CHINA

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Mobile and Electronic Devices Export Promotion Council

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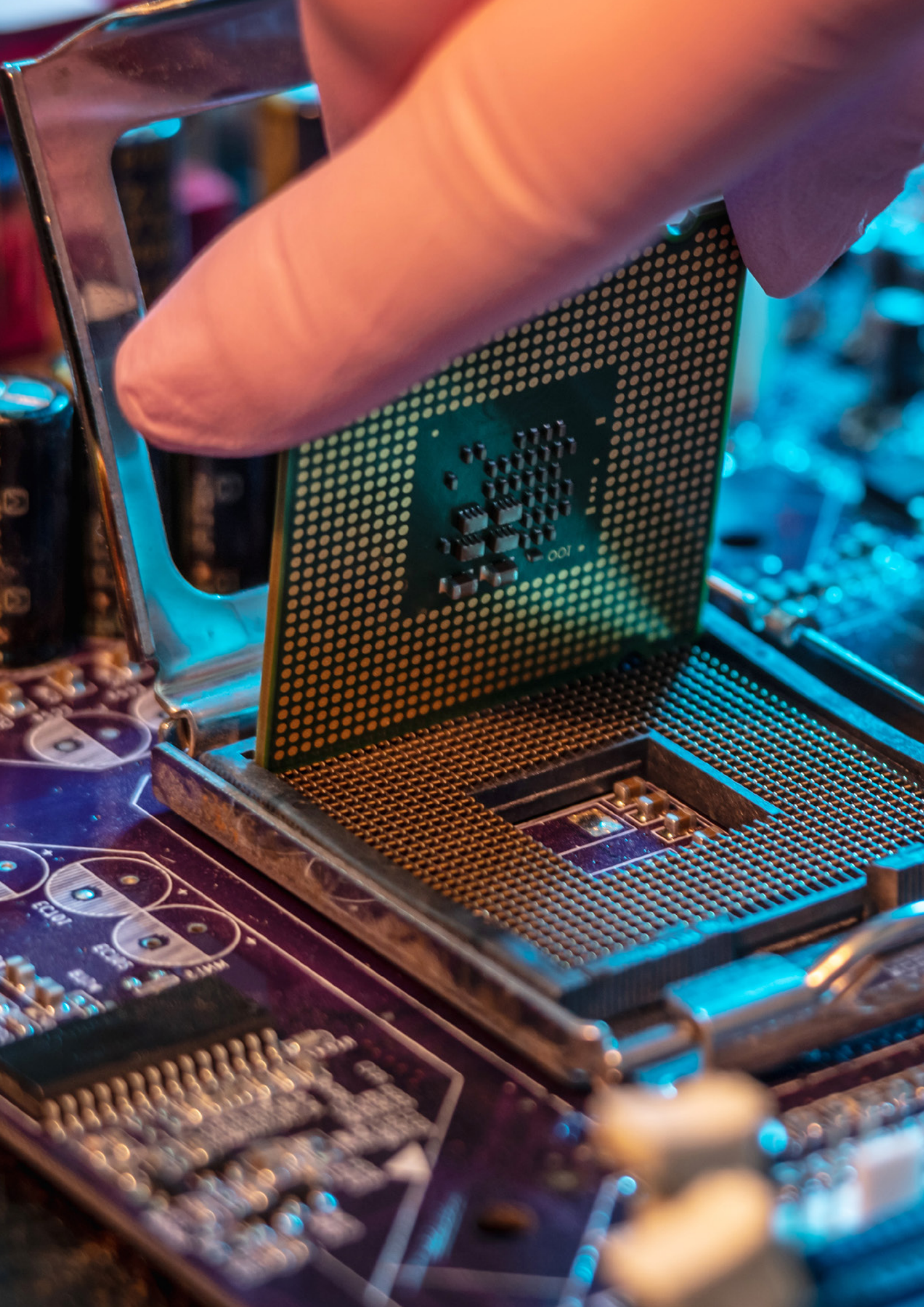

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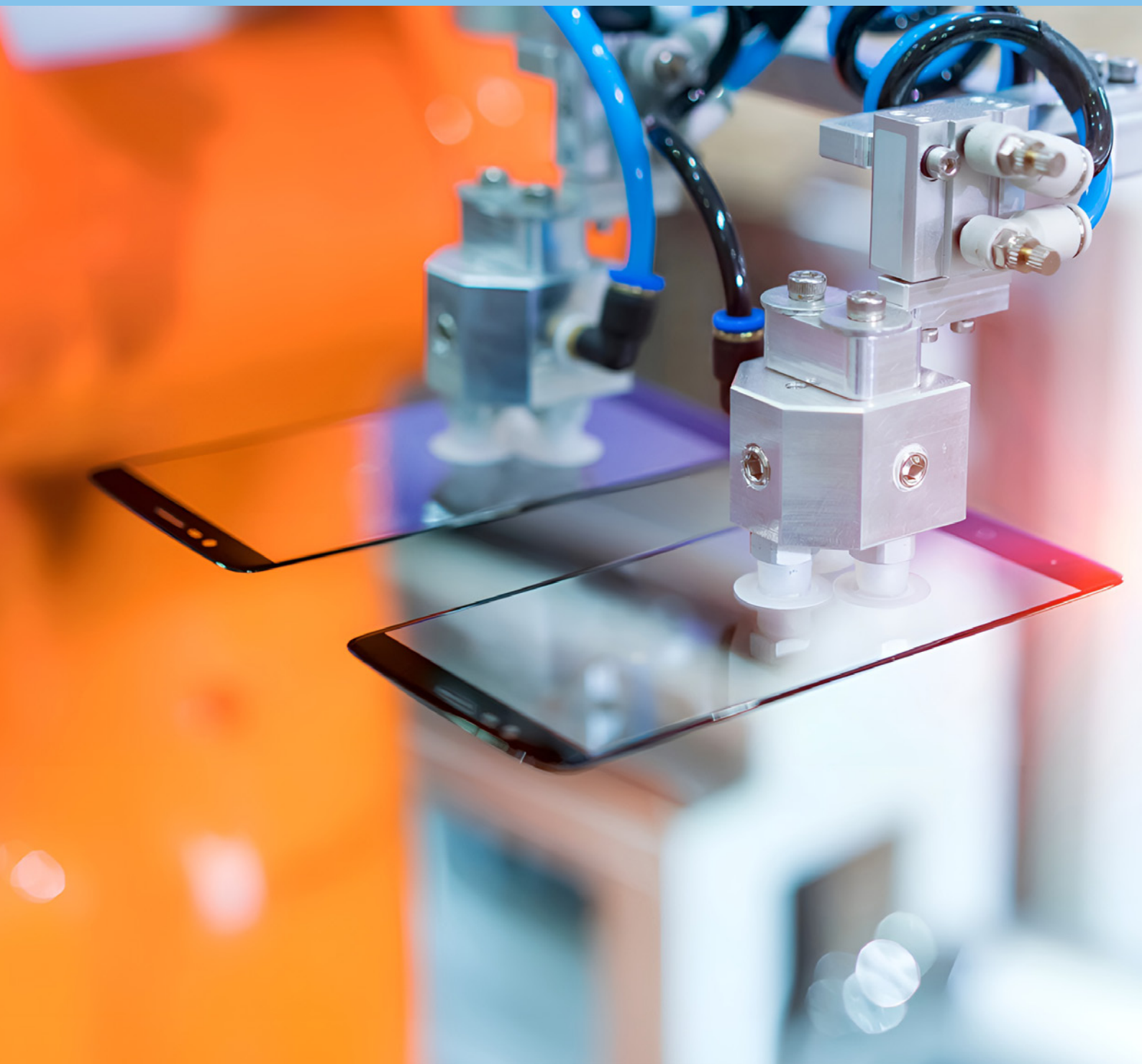


Introduction

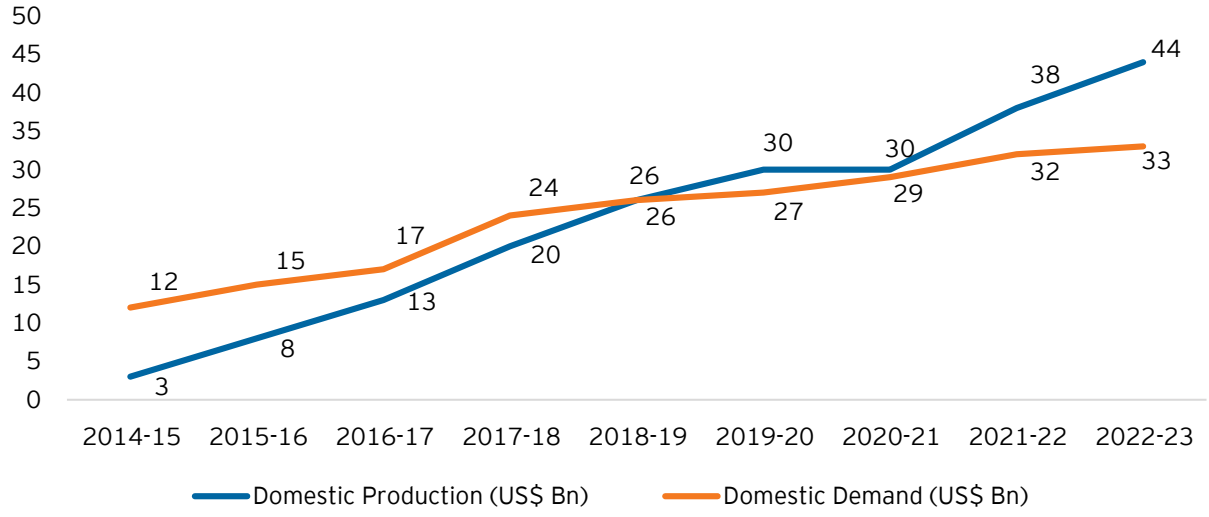
India's domestic production and exports of mobile phones/ smartphones have been increasing steadily, with significant changes achieved especially since the Production Linked Incentive (PLI) scheme was introduced in 2020. The Financial year marked the first time when domestic production exceeded domestic demand, and exports of mobile phones became one of the top ten HS six-digit export categories for India (Figure 1 and Table 1). The ranking of these exports stabilised during the COVID-19 years, and then increased rapidly in 2022-23. A 91% increase in these exports in 2022-23 enabled smartphones to rank among India's top five export items considered at six-digit HS product categories (Table 1). A similar sharp progress has also occurred globally, with India becoming the sixth largest exporter of mobile phones in the world in 2022 (see Table 2.2 in Chapter 2). The momentum and growth of mobile phone production and exports are steps in the direction of meeting the ambitious targets set by the Government for the electronics sector, with mobile phones playing a major role in achieving that vision.[1] This has important implications for a reconsideration of policy measures applied to the sector as discussed below:

Table 1. India: Ranking of Exports of Mobile Phones at Six-Digit HS Categories

	2022-23	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16
Rank	5	9	9	8	19	19	239	178

Source: Department of Commerce, Government of India

Figure 1. India: Domestic Production and Domestic Demand of Mobile Phones, 2014-15 to 2022-23



Source: ICEA

1. Mobile Phones/Smartphones have entered a New Phase

After 2018-19, India's Mobile Phone Sector Has Entered a New Phase: Both Table 1 and Figure 1 above illustrate that major changes have taken place in India's mobile phone sector. Since 2019-2020 domestic production exceeded domestic demand. Exports now provide the major stimulus for growth of the sector.

1 Completely bulit unit in this case mobile phones

1.1(a). Exports will now drive major growth: The growth of the sector now depends on exports, i.e., the extent to which Indian producers can gain global markets through their competitive positions.

This implies that the policy measures need to focus on improving the competitiveness of India's mobile phone sector. The Government has begun implementing several policies such as such as the Production Linked Incentive (PLI), Phased Manufacturing Programme (PMP), Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS), etc., which help reduce cost of production and improve competitiveness. However, one important policy that impacts costs has yet to be addressed fully. This concerns India's tariff policy for the mobile sector, which imposes relatively high tariffs on the inputs of mobile phones and the final product, when compared with India's main competing economies. This Report provides insights into the overall cost impact of India's tariffs on components and sub-assemblies of a smartphone. It also identifies the specific inputs for which tariffs result in a significant increase in the cost of production.

1.1(b). Increase in tariffs on inputs does not lead to higher domestic manufacturing: Imposing higher tariffs on components and sub-assemblies create a protected domestic market for the products concerned. However, localisation does not substantially increase due to two main factors. The first is the lack of skills and technology needed to produce the input. Second, the overall aggregate demand necessary for domestic investment in some inputs is much larger than the demand created by the prevailing production level. This deters businesses from investing in the domestic production of relevant inputs.

The additional demand to support investment can come from domestic demand or from exports. In the situation currently prevailing in India where exports are the key source of growth, high tariffs on inputs limit the very engine of growth that would lead to higher production. High tariffs on inputs reduce exports because they become uncompetitive, leading to lower production of the final product, i.e., mobile phones. Addressing this requires a reduction in tariffs on inputs.

1.1 (c). The suppliers of inputs, both domestic and global, raise their prices in protected markets: The final price in the domestic market depends on:

1. The level of tariff.
2. The extent of price increase by the global supplier.
3. The extent of rent seeking and price increase by domestic suppliers.

The extent of price increase for imported inputs for exports depends on:

1. The price charged by global suppliers.
2. The negotiating power of the purchasers of inputs vis a vis the global suppliers.

Inputs procured domestically from manufacturers carry a margin due to price protection that import tariff enables for them. This results in a globally inefficient pricing of inputs especially for export production of smartphones. Further, this also leads to price margin topping up of inputs by global suppliers considering the comparative price of inputs in the domestic markets (which is tariff protected). This price of inputs from domestic suppliers or global suppliers acts as an inefficient floor price of inputs, rendering the export pricing uncompetitive vis-a-vis competing manufacturing

destinations especially China and Vietnam. Since the scale of production in India is still small compared with manufacturers in China or Vietnam, the global input suppliers have a strong bargaining position because of the comparatively lower value of smartphone production in India. As a result, they tend to offer higher prices of inputs.

1.1(d). Scale is critical for high exports and domestic production of inputs. Higher exports will drive scale of production. Increasing exports need competitiveness via low tariffs: A Higher scale of production provides a stronger business case for local production of inputs, and helps establish the domestic initiatives to improve skills and technological capabilities. This in turn creates a virtuous cycle by increasing investment and scale of operations, which are crucial for creating a deeper domestic ecosystem (see Figure 2).

Figure 2. Virtuous Cycle of Production

2. Comparison of India's Tariffs with Key Competing Economies

This Report provides a comparison of the tariffs on inputs (components and sub-assemblies) in the Bill of Materials (BOM), for India, China and Vietnam. China and Vietnam are the main competing economies for India in the global mobile phone market. In addition, a tariff comparison is carried out with four other competing economies, namely, Malaysia, Mexico, Thailand and Philippines. The qualitative results of the comparison of India's tariffs with all these economies is the same, i.e., India's tariffs on inputs are much higher than its competing economies, and these high tariffs lead to higher costs for finished goods.

Tariffs on a total of 65 tariff lines covering the main inputs for a smartphone are compared among India, China and Vietnam. For India and China, their Most Favoured Nation (MFN) tariffs are compared. Since Vietnam imports about 80% of its inputs from countries with which it has Free Trade Agreements (FTAs), a comparison of Indian and Vietnamese FTA weighted average tariffs is relevant, because comparing MFN tariffs would not be valid in such a situation.

The report shows that:

1. India has much higher simple average tariffs than either China or Vietnam.
   (a) For MFN tariffs: India's simple average tariff is 8.5%, and that for China is 3.7%.
   (b) For FTA weighted average tariffs, India's simple average tariff is 6.8% compared to Vietnam's 0.7%.
2. Both China and Vietnam have many more tariff lines with zero tariff than India. While India has about one quarter of the compared lines with zero tariffs, China and Vietnam respectively have 54% and 60% of their tariff lines with zero tariff.

3. The highest MFN tariff of China is 10%. In contrast, about 54% of India's tariff lines have MFN tariffs greater than 10%.

4. Similarly for the FTA weighted average tariffs, the highest tariffs of Vietnam are less than 10%. About 97% of Vietnam's tariffs are between zero and 5%. India has almost one-third of the tariff lines with FTA weighted average tariffs above 10%.

5. A line-by-line comparison of these countries shows that:

   (a) China has lower MFN tariffs for 85% of India's lines which have non-zero tariffs; and,

   (b) Vietnam has lower FTA weighted average tariff for 100% of India's lines with non-zero tariffs;

   (c) Of the 15 tariff lines of India with zero tariffs, both China and Vietnam have higher tariffs for one of these lines and zero tariffs on all the others.

   (d) Thus, India predominantly has higher tariffs than those of China and Vietnam.

The higher tariffs of India on inputs result in higher costs of production and lower competitiveness.

3. Tariffs and Competitiveness of Smartphones

A high tariff on sub-assemblies and components of sub-assemblies thereof increases the costs of these sub-assemblies, thus making them less competitive than their competitors. This in turn decreases the competitiveness of smartphones produced in India.

Another specific aspect of India's tariff regime has been the imposition of high tariffs on mobile phones to discourage imports and promote domestic manufacturing. At present the domestic market is not the primary driver of the production of mobile phones. Therefore, maintaining high tariffs on mobile/smart phones is no longer required.

This report takes a closer look at the tariffs on inputs, and measures the cost effects of these tariff by considering how much would the cost of BoM would decrease if Vietnamese or Chinese tariffs were applied in India. In the case of Vietnam, FTA average tariffs have been used, whereas in the case of China a comparison has been conducted at two levels. One is with the MFN tariffs of China and the second is the zero tariffs applied in bonded-zone which produces a significant portion of China's exports.

Sub-assemblies: Due to tariffs on sub-assemblies alone, the BOM cost of a Smartphone produced in India would be about 6% to 7% lower if China's tariffs were applied. The cost reduction applying Vietnam's relevant tariffs is about 5% to 6%. This figure does not include the PCBA, which accounts for nearly 45% of the BoM, as it is largely localised.

Components of sub-assemblies: The cost effects increase when tariffs on components of sub-assemblies are included. For example, after adjusting for localisation, the PCBA and its components result in a cost difference of 1.3% compared to China and 1.2% compared to Vietnam. Adding these to the total, the cost increase of BOM in India goes up to about 7% vis-à-vis Vietnam and 8-9% in comparison to China.

Chargers are fairly competitively produced in India, yet the cost difference versus Vietnam on chargers alone is about 4% for India. As chargers constitute a small proportion of BOM, the cost difference versus Vietnam is only about 0.03%.

Tariffs on components of Camera modules and Mechanics add another one to one and a half percent to BoM costs, thereby increasing the competitiveness effects to 8-9% vs Vietnam and 8-10% vs China.

While not comprehensive, this report includes nearly 93% of the sub-assemblies and 80-90% of the key components of the sub-assemblies such as the PCBA, camera module, batteries etc. Hence it is fairly representative of the cost distortions caused by tariffs.

The overall cost disadvantage due to tariffs alone to India vs Vietnam and China is between 8-10% of **BoM, or 5-7% of the total cost, thus outweighing the benefits of PLI. Adjusting for localisation, the cost disadvantage to India is still about 6% of BoM costs vs China and Vietnam.**

To position India as a global manufacturing powerhouse, it is strategic to focus on the most impactful aspects of smartphone production rather than aiming to locally produce every single one of the components. A targeted approach should prioritize the localization of sub-assemblies and components while also rigorously evaluating the impact of tariffs on cost to ensure competitiveness in the global market

The higher tariff imposed on sub-assemblies and components could erode all the benefits of assembling smartphones in India for the global market. These tariffs would discourage foreign smartphone makers from relocating to India for manufacturing. Zero tariffs on several parts and components of smartphones helped China become the number one smartphone exporter in the world.

When China started to assemble Smartphones 15 years ago, Chinese firms' only contribution was labour-intensive task-assembly, about 3.6 percent of the total manufacturing value added. This has increased steadily over time to more than ten times this level. To shift supply chains in a more significant way, the scale of production needs to grow and tariffs on components and sub-assemblies need to be reduced to make India competitive in global markets. Supply Chains cannot reach a global scale if tariffs on components and sub-assemblies are subject to frequent increases, creating uncertainty for manufacturers.

4. Tariffs and Localisation

Tariffs on inputs have been increased in India to encourage domestic production of products. If the extent of localisation remains relatively low despite prolonged tariff protection, then the outcomes are likely influenced by either technical or business-related constraints.

Addressing **technical gaps** requires skills and technological capability because relatively low level of localisation could be due to the prevailing technological gaps. Consider the example of China, which has extensive experience in electronics manufacturing, and still shows low localization levels for certain inputs. This suggests that specific technical capabilities are hard to develop. Consequently, it's reasonable to infer that India may also face challenges in achieving the technological proficiency required to locally produce all inputs, underlining the need for a strategic and selective approach to localization. In such cases, high tariffs would only increase the costs of production and reduce overall competitiveness.

Business reasons are relevant because a certain minimum domestic demand is required for the domestic investor to produce the relevant input at a commercially profitable scale. If domestic demand falls short of a commercially viable scale, tariffs will not promote a high level of localisation. Instead, producing the item below a commercially profitable scale will increase costs, lower competitiveness, and a reduction in potential exports, which in turn would likely reduce domestic production or would make it further uneconomic.

As discussed earlier, increasing the scale of production is key to addressing these constraints.

Tariffs and increase in localisation: While sub-assemblies or modules have been localised in India, components of these sub-assemblies are still imported. Indian imports of modules or sub-assemblies are only 37% of the mobile phone value chain, and that of components is 63%.

Even among sub-assemblies, it is difficult to correlate tariff increases with local manufacturing. For example, the highest tariff increases since 2016 have been on PCBA and Camera modules. While PCBA's have been 96% localised, camera modules show only 25% localisation. The reason for this could be that while the cost effects due to tariffs on components of PCBA was about 0.2%, that for camera modules varied between 2% to 2.5%. Hence, the cost effects of tariffs in the case of camera modules may have hindered GVCs from locating in India.

Furthermore, technological capabilities are closely correlated with domestic manufacturing. Domestic manufacturing of mobile phones and battery chargers is high because of domestic manufacturing capability and low intensity of technology required. For many other products that have had high tariffs for over four years such as die cut parts or mechanics or camera modules, domestic manufacturing meets less than 25% of domestic demand.

Localisation in China-Lessons for India

China has achieved nearly 100% localisation for complex sub-assemblies such as die-cut parts, connectors, and camera modules by keeping stable and low tariffs (almost zero). In contrast, India increased tariffs in the period 2016-2022 for these sub-assemblies and components. Despite over 15 years of component production, China has only achieved 20% localisation for active components. This implies that India should focus first on passive components and keep tariffs low on active components, thereby, highlighting the complexity of such manufacturing processes. This precedent strongly suggests that India should initially concentrate on localising passive components, where achieving success is more viable.

5. Conclusions

Increasing the scale of production is the key to gaining competitiveness for exports. To achieve a large scale of production, India needs to export and participate in global GVCs. Shifting GVCs to India requires low tariffs on components, sub-assemblies and final products. Therefore, tariffs on sub-assemblies and components identified in Chapter 3 and mentioned below in table 2, should be reduced immediately to attract supply chains for these sub-assemblies.

Currently, the average MFN tariff of India (8.5%) is much higher than those of China (3.7%). In the case of Vietnam, taking FTAs into account, India's weighted average tariff is 6.8% compared to Vietnam's 0.7%. India has higher tariff peaks and a lower number of Zero tariff lines than either China or Vietnam. For India's tariff lines with non-zero tariffs, 85% are higher than those of China, while Vietnam's tariffs are lower tariffs for 100% of these lines.

Further, since 2016, India has been increasing tariffs on sub-assemblies and components whereas China and Vietnam have been reducing their tariffs consistently. This tariff increase has meant that both China and Vietnam have lower BoM by approximately 8-10% compared to India. Even adjusting for localisation BoM costs in India remain 6-7% higher. Given that Vietnam benefits from lower input tariffs due to FTAs with several countries and India's complex economic structure poses challenge in negotiating FTAs, reducing tariffs on inputs is a simpler and more direct strategy to enhance competitiveness.

Furthermore, the increase in tariffs on almost all sub-assemblies since 2016 has not uniformly boosted the local manufacturing of sub-assemblies in India. High levels of localization have only been achieved In sub-assembles such as PCBAs, battery packs and chargers. Those with more complex technological requirements have not seen similar progress.

A stable tariff policy along with low tariffs, is essential to encourage investment in domestic manufacturing of sub-assemblies and components, as demonstrated by China's experience. Thus, India should not adopt a strategy focussed on increasing tariffs with each Budget. As even after years of pursuing localisation, China has managed to locally produce only 20% of the active components. Accordingly, India's tariff policy should focus on tariff reduction and rationalisation of components to support the growth of local manufacturing, rather than attempting to produce all components domestically.

6. Recommendations:

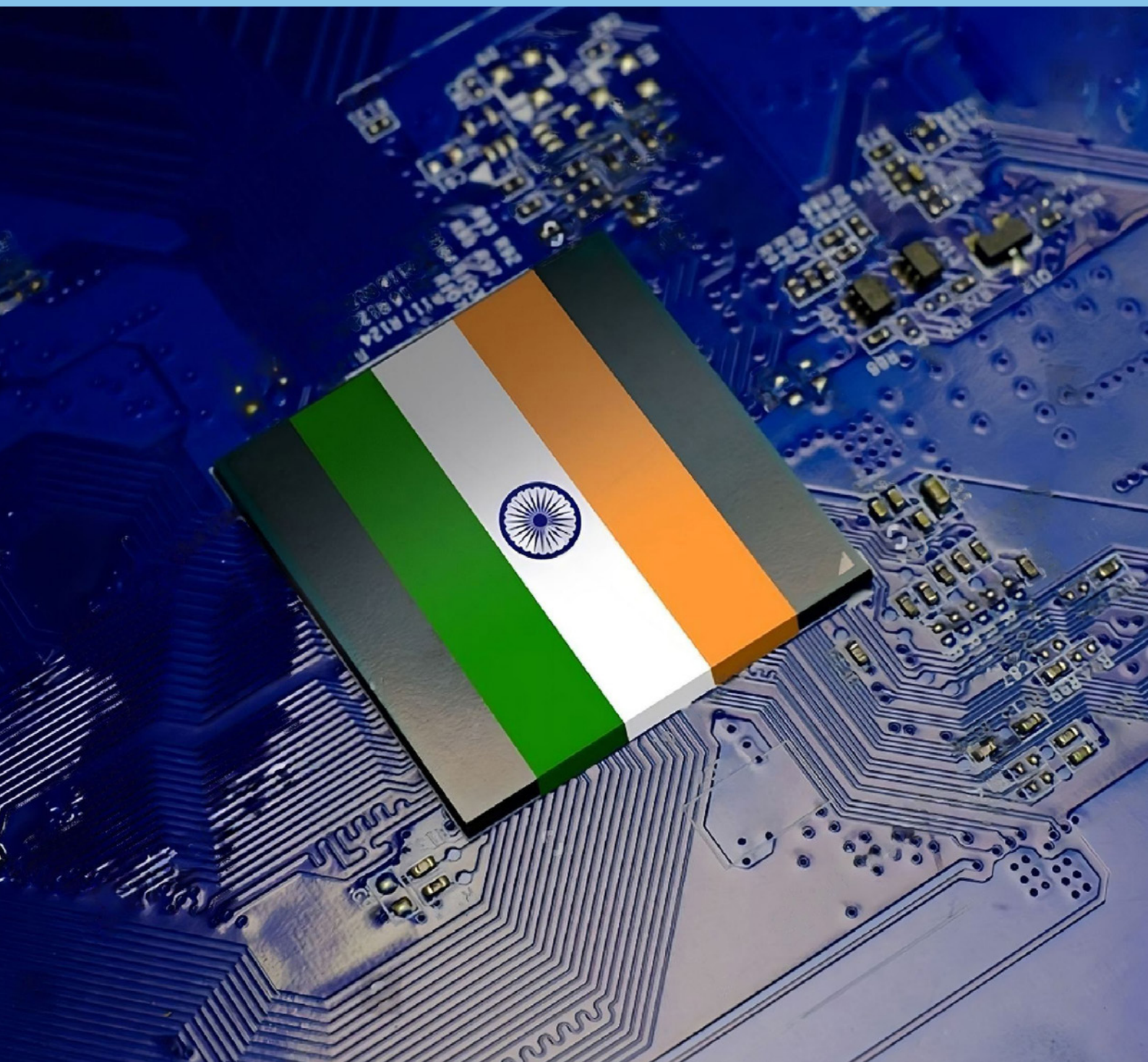
1. Tariff competitive re-alignment may begin in FY 2024-25 and must converge at the Vietnamese and Chinese levels by FY 2026-27 to ensure competitiveness, scale and exports from India.
2. All the tariff lines which increase costs significantly should be brought down to Zero. These should include components of complex sub-assemblies.
3. India currently has one of the most complex tariff structures with multiple tariff slabs. These need to simplified and reduced to fewer slabs. A simplified and structured glide path with three slabs i.e., 0%, 5%, and 10% should be brought in by 2025.
4. The "Others" category of parts of smart phones/mobile phones should be brought down from 15% to 10% to reduce instances of misinterpretation and all avoidable litigation.
5. Recommended Glide Path for smart phones (to avoid inverted duty structure) and its parts in FY 2024-25 to increase India's competitiveness, is mentioned below:

Table 2: Glide Path for Tariffs on Inputs

Sr. No.	Description	HSN	Existing	Proposed
			2023-24	2024-25
A. Finished Goods				
1	Mobile Phone	85171300 / 85171400	20	**15**
B. Duty Reduction From 20%				
2	Charger/ Adapter	85044030 / 85044090	20	**15**
3	Printed Circuit Board Assembly (PCBA)	85177910	20	**15**
C. Duty Reduction From 15%				
4	Others	85177990	15	**10**
5	Mechanics	8517 7990 / 73269099 / 73181500	15	**10**
6	Inputs of Mechanics	Any Chapter	15	**0**
7	Mic and receiver and Speaker	85177990 / 85182990	15	**10**
D. Duty Reduction From 5%				
8	Cell	85076000	5	**0**
E. Duty Reduction From 2.5%				
9	Ferrite inductor	85045090	2.5	**0**
10	Other parts of Battery charger/Adapter	Any Chapter	2.5	**0**
11	Parts of PCBA	Any Chapter	2.5	**0**
12	Parts of Camera Module	Any Chapter	2.5	**0**
13	Parts of Connector	Any Chapter	2.5	**0**

Source: ICEA

01 Introduction



The Atmanirbhar Bharat Campaign that we are running today is also fully committed to global goods and global supply chain. India also has the capacity and capability to strengthen the global supply chain, and most importantly reliability.

Hon'ble PM at WEF's meeting at Davos in 2021.

Encouraged by this success of the past years, we have now increased our export targets and have doubled our efforts to achieve them. Collective effort of everyone is very necessary to achieve these new goals... I will urge you to set not only short-term but also long-term export targets.

Hon'ble PM at the inaugration of Vanijya Bhavan, June 2022.

In January 2022, the Government of India released a Vision Document Volume 2 which projected a strong growth of India's electronics sector, with electronics production in India reaching US$ 300 billion in 2025-26 (Table 1.1 below).[2] With 40% of total electronics production, mobile phones are the most important item in this sector, and its growth is expected to be slightly faster than the overall electronics sector.

Table 1.1: Roadmap to manufacture US$300 billion Electronic Products

Product Segment	2020-21 (US$ Billion)	2022-23 (US$ Billion)	2025-26 (US$ Billion)
Mobile Phones	30	44	126
IT Hardware (laptops, tablets)	3	4	25
Consumer electronics (TV and audio)	9.5	12	23
Strategic electronics	4	4.75	12
Industrial electronics	10.5	11.75	25
Wearables and hearables	-	1	8
PCBA	0.5	1	12
Auto electronics	6	9.5	23
LED Lighting	2.2	3	16
Telecom Equipment	-	1	12
Electronics Components	9	10.75	18
Total	**74.7**	**103**	**300.0**

Source: Industry Estimates and Vision Document 2 https://static.pib.gov.in/WriteReadData/specificdocs/documents/2022/jan/doc20221247801.pdf

The Vision Document projects an even stronger export growth for mobile phones than its production.[3] In 2022-23, production and exports of mobile phones were respectively about 1.5 times and 3.6 times the levels in 2020-21.

An important objective of India's policy approach is to promote local production of important inputs especially technology intensive inputs accounting for a major share of the Bill of Materials (BoM).

2 https://pib.gov.in/PressReleasePage.aspx?PRID=1792189.

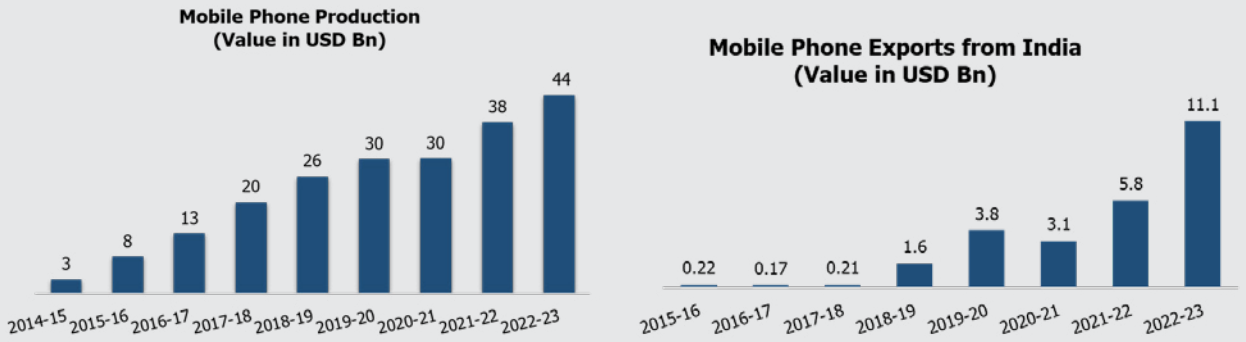
3 Exhibit 7 of the ICEA Vision Document 2 in https://icea.org.in/blog/wp-content/uploads/2022/01/FinalReport_VisionDocument_24012022.pdf

The higher tariffs are part of the policy approach to achieve this objective. However, the challenge remains that local production of components and sub-assemblies have not seen any significant progress since 2020-2021. Notable exceptions are PCBA and battery chargers, which are primarily assembled in India. However, components including those that go into the PCBA, are imported. This raises a crucial question: why did the Production Linked Incentive (PLI) Scheme and the PMP work for mobile phones and some sub-assemblies, but not result in an increase in production of other components and sub-assemblies. Moreover, high tariffs on components inhibit India's participation in GVCs of electronic products.

1.1 The Success Case of Mobile Phone Manufacturing and Exports

Mobile phone production and exports of India have registered a very large increase since 2020-2021 i.e., the year when the PLI scheme was introduced in India (see Figure 1.1).

Figure 1.1. Production and Exports of Mobile Phones, 2014-2015 to 2022-23 (US$ billion)



Source: ICEA

The relatively high export growth of smartphones has led to an increase in the ratio of exports to production, and in 2022-23, exports were slightly above 25% of total production of mobile phones in India (See Figure 2.6 in Chapter 2). This indicates that mobile phones could become the mainstay of India's export drive in electronics. However, can India continue to remain competitive in export markets without participating in GVCs or producing components competitively in India? This report analyses these questions from the perspective of India's high tariff on components.

1.2 Challenges and Solutions

The Hon'ble Prime Minister has emphasized the importance of scaling up and increasing exports, as well as domestic value addition.[4] In this context, he made a specific reference to the PLI scheme and exports of mobile phones.[5] Electronics exports take place primarily through global value chains

4 https://www.pmindia.gov.in/en/news_updates/pms-address-at-interaction-with-heads-of-indian-missions-abroad-and-stakeholders-of-the-trade-commerce-sector/

5 Op. cit. He said that: "The Production Linked Incentive Scheme will go a long way in increasing not only the scale of our manufacturing but also the level of global quality and efficiency. This will greatly facilitate the development of a new ecosystem of the Made in India. The country will get new global champions in manufacturing and exports. We are experiencing its impact in the mobile phone sector. Seven years ago, we used to import mobile phones worth about $ 8 billion, which has come down to $2 billion. Seven years ago, India used to export mobile phones worth only $ 0.3 billion, now it has increased to more than 3 billion dollars.

(GVCs). These electronics GVCs are amongst the longest in terms of several stages of assembly of inputs and tasks performed.[6] Different parts of this chain require different skills and technological capabilities. Enhancing production and exports, coupled with local production requires a strategic medium-term approach focusing on "building the domestic ecosystem". Together with the requisite skills and these competencies, domestic companies can integrate into GVCs from a stronger base. An expanding domestic ecosystem would further boost the ability of lead firms[7] and global brands to achieve the required scale in production and exports. Achieving this requires competitive production so that larger shares of global markets could be acquired on a sustained basis.

The geographical concentration of the electronics GVCs suggests that only a few countries are India's primary competitors in terms of attracting Foreign Direct Investment (FDI) and generation of exports and links to GVCs. The main ones are China and Vietnam. Both these countries have a high share of electronics in their exports of manufactures. For instance, in 2021, electronics exports of China were about 29% of its exports of manufactures, and the corresponding share for Vietnam was about 45%. For India, the share of electronics in 2021 was 5.3%. This suggests that there is a large potential of these exports from India to give a strong momentum to overall manufactures exports as well. The report provides an overview of the tariff policy approaches of China and Vietnam, focusing on their main differences when compared with India. Both these nations have a highly supportive policy approach, which has played a role in expediting the establishment of their respective supply chains.

1.3 How Tariffs Inhibit Participation in GVCs

Tariffs affect participation in GVCs in four different ways: (a) average tariffs on imported components make the final product uncompetitive compared to countries with lower input tariffs (b) tariffs imposed higher up in the value chain, specifically at the level of sub-assemblies, increase the cost of inputs in the production chain; (c) tariffs further down in the value chain on the final product promote rent-seeking behaviour, leading to an increase in the domestic price of final product, and (d) tariffs diminish the export orientation of domestic producers.

Empirical studies have shown that upstream and downstream tariffs impede economic activity, exerting negative effects on value added, labour productivity, and total factor productivity. The effect of tariffs amplify as inputs cross international borders at several stages of production[8]. There is an accumulation of tariffs (tariff on inputs at each border crossing), and tariffs imposed higher up as well as further down the value chain have wide ranging adverse economic effects.[9]

1.4 With this Background, What Does the Paper Investigate?

Against this background, it becomes crucial to understand how the electronics industry, especially the smartphone sector, has evolved in India. Although the smartphone sector has leveraged schemes such as PLI and the PMP, component manufacturing has not grown commensurately. This is despite the significant protection given to several components. The reasons for this needs to be investigated.

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6 See Figure 2 in https://voxeu.org/article/global-value-chain-transformation-decade-ahead.

7 Lead firms and their component manufacturers together comprise much of the ecosystem.

8 Yi (2003, 2010), Koopman, Wang, and Wei (2014), Rouzet and Miroudot (2013)

9 Rouzet and Miroudot (2013)

Chapter 2 begins with an examination of the development of the mobile phone industry in India since early 2000. It compares the tariffs on inputs in a smartphone for India, China and Vietnam. India's tariffs are significantly higher than those of its main competing economies, i.e., China and Vietnam. A similar result is valid also when India's tariffs are compared with those in Malaysia, Mexico, Thailand and Philippines.

Based on the tariff levels discussed in Chapter 2, an analysis of the impact of the tariffs on costs is conducted in Chapter 3. This chapter also adjusts for localisation and examines the competitiveness effects on account of tariffs.

Chapter 4 examines the effects of tariffs on localisation. This is done for sub-assemblies which are currently being manufactured in India. The levels of localisation are compared to China against a background of low tariffs. The issue of why some products and sub-assemblies were localised and others were not is examined in this chapter.

Chapter 5 concludes by pointing to the importance of tariff rationalisation in making smartphones competitive especially vs China and Vietnam.

02

Exports of Smartphones and Importance of Tariffs for Competitiveness

Introduction

Exports of smartphones in India are among India's top ten global exports of products at six-digit HS categories. Smartphones have been considered a very important part of the growth strategy of electronics; for instance, the production of mobile phone/smartphones accounted for about 43% of India's total electronics production in 2022-23.[10] A very important feature of smartphones is that in addition to the direct contribution to production and exports, they have a large impact on a nation's overall economic activity as well as the delivery of social projects and other government services.

This Chapter traces the growth of the mobile phone sector in India, its focus on import substitution and the transition in recent years to a phase in which exports provide the main opportunities for growth. In this context, this Chapter makes four important points. One, during the import substitution phase, the domestic market provided a basis for growth of domestic production. Two, once domestic production exceeds domestic demand, the stimulus for growth must come from exports; the domestic market no longer serves as the primary basis for sustained growth of the sector. Three, for export growth to be sustainable, domestically produced smartphones must be competitive with those from other leading exporters. This means that any competitive disability introduced by the policies must be addressed to ensure the sector's sustained growth. Four, in this context, while several cost and policy related disabilities have been addressed since 2020 (including through the Production Linked Incentive scheme), a very important policy that increases costs - the customs tariffs on inputs - remains unaddressed.

An important part of this exercise is to compare India's tariffs on important inputs with the tariffs imposed by major competitors on the same products, especially those items that are a significant part of the supply chain for a mobile phone. Section 2.1 provides a background to the analysis of tariffs including the evolution of India's policy on tariffs. Section 2.2 introduces some caveats in the comparison of tariffs. Section 2.3 compares simple average MFN tariffs of India, China and Vietnam. Section 2.4 compares distribution of these tariffs from zero to highest categories. Section 2.5 conducts line by line comparison of tariffs for India, China and Vietnam. Sections 2.6 and 2.7 show that in actual practice, Vietnam and China's tariffs are even lower than shown in the comparison. Section 2.8 makes the point that focusing on improving competitiveness of India is important because India is now among the major exporters of mobile phones and would attract additional attention from leading exporters. Section 2.9 provides some important conclusions which are drawn from tariff rates of India vis-à-vis competitor countries.

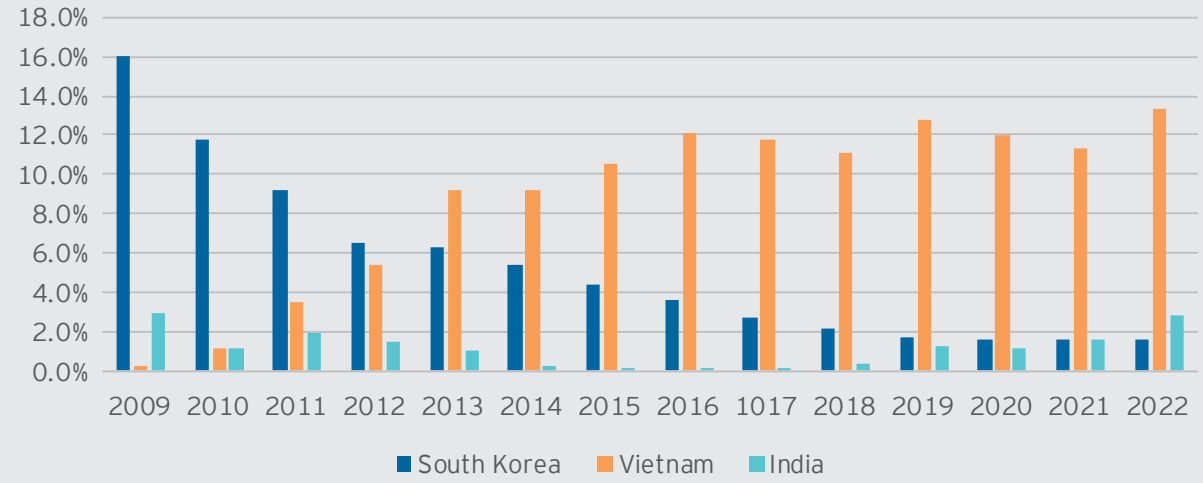
2.1 The Background

The trajectory of India's mobile phone sector can be bifurcated into two distinct phases. First, from the early 2000s until 2013-14, and the other from 2014-15 to the present. In much of the discussion, the term "mobile phone" is used to describe the developments because over time, both smart phones and other cellular phones were part of the market, production, demand, exports and imports. However, as shown in Table 2.3 later in this Chapter, they accounted for almost the entire mobile phone segment in India by 2022. The focus of the analysis and comparison of tariffs in the present time period, therefore, relate to smart phones. The term "mobile phone" relates to the earlier period discussed in this Chapter, and the policy insights that apply to the present situation relate primarily to the smartphone segment.

10 ICEA estimates

(a) **Early 2000s to 2014-15**: In the early 2000s, China and South Korea were the top two mobile phone exporting countries of the world. Vietnam and India emerged as significant exporters of mobile phones around the same time, namely 2009/2010, with India as the larger exporter amongst the two. However, the period since 2010 has seen a rise in the share of Vietnam in global mobile phone exports that far exceeded the performance of India (see Figure 2.1). Meanwhile, South Korea's export share, though significant, kept declining over time. Vietnam has emerged as the second largest exporter of mobile phones in the world. India's story has been different, and more complex.

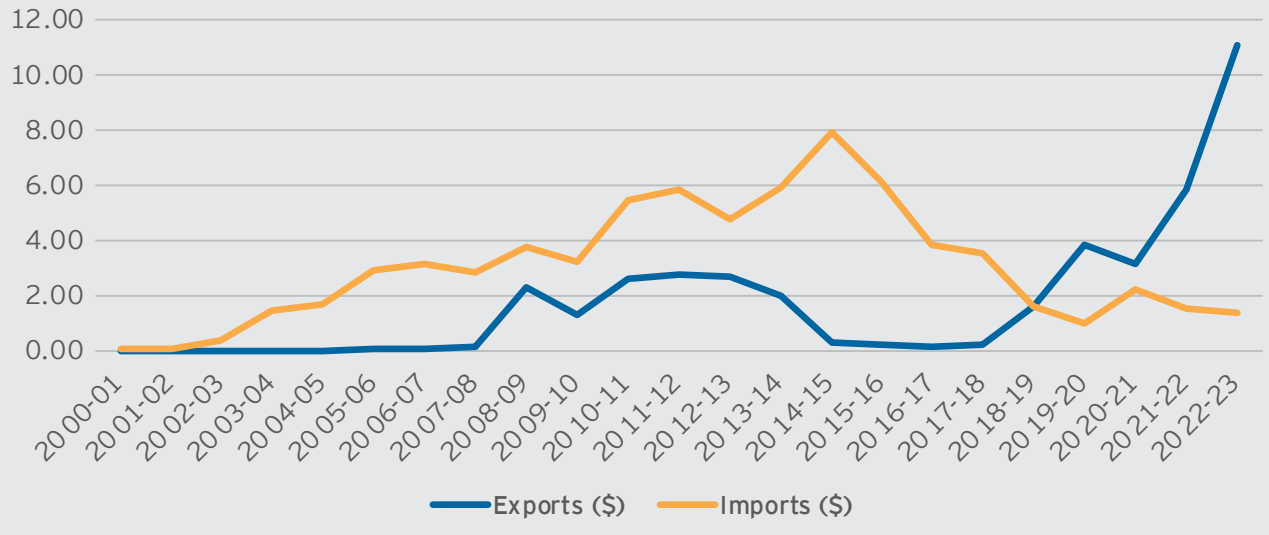
Figure 2.1. Share in World Exports of Mobile Phones: India, South Korea and Vietnam, 2009 to 2022



Source: ICEA and Department of Commerce, Government of India

India's mobile phone exports and imports saw different growth trajectories from early 2000s to 2014-15, and the period after 2014-15 (see Figure 2.2 below). India's imports started increasing in 2003, and saw a sustained rise after that till 2014-15. Its level sharply decreased thereafter.

Figure 2.2. India: Exports and Imports of Mobile Phones, 2001-02 to 2022-23



Source: Authors calculations based on ICEA data

The rise in imports mirrored the increase in India's domestic demand for mobile phones, which started increasing since 2003 and later saw a particular high rise in demand for mobile phones between 2008 and 2010 (Table 2.1). Consequently, India became the 7th largest importer of these phones in the world in 2009, and remained among the top ten importers of the world till 2015 (Table 2.2).

Table 2.1. Total Subscriber Base for Mobile Phone in India, March 2002 to March 2010 (Million)

March 2002	March 2003	March 2004	March 2005	March 2006	March 2007	March 2008	March 2009	March 2010
6.54	13	33.69	52.22	90.14	165.11	261.07	391.76	584.31

Source: TRAI (Table 1.8 of https://www.trai.gov.in/sites/default/files/ar_05_06.pdf ;Figure 1.2 of https://www.trai.gov.in/sites/default/files/ar_08_09.pdf;Table 4 of https://www.trai.gov.in/sites/default/files/ar_09_10.pdf)

In contrast to imports, India's exports of mobile phones were low for most of the first decade. They saw a sharp rise in 2008-09 (Figure 2.2 above), predominantly due to Nokia setting up its Indian mobile phone production unit in that period. This was during a period when customs duty on mobile phone was zero. The level of these exports was broadly sustained for about five years from 2008-09, when they plummeted to very low levels by 2014-15. This was significantly due to the closure of Nokia's factory in India.

The increase in imports during this period was very significant. From 2009 onwards, India was among the top ten importing countries in the world till 2015. With respect to exports, India was not able to maintain its competitive position and by 2014 was not even in the top 20 exporting countries of the world. The story after 2014 has been a completely different one.

Table 2.2. Global Rank of India as an Exporter and Importer of Mobile Phones

Year	Exports of Mobile Phones	Imports of Mobile Phones
2007	113th	176th
2008	112th	180th
2009	9th	7th
2010	14th	6th
2011	11th	8th
2012	12th	10th
2013	16th	8th
2014	23rd	6th
2015	34th	7th
2016	29th	13th
2017	37th	20th
2018	16th	26th
2019	11th	46th
2020	11th	27th
2021	10th	37th
2022	6th	32nd

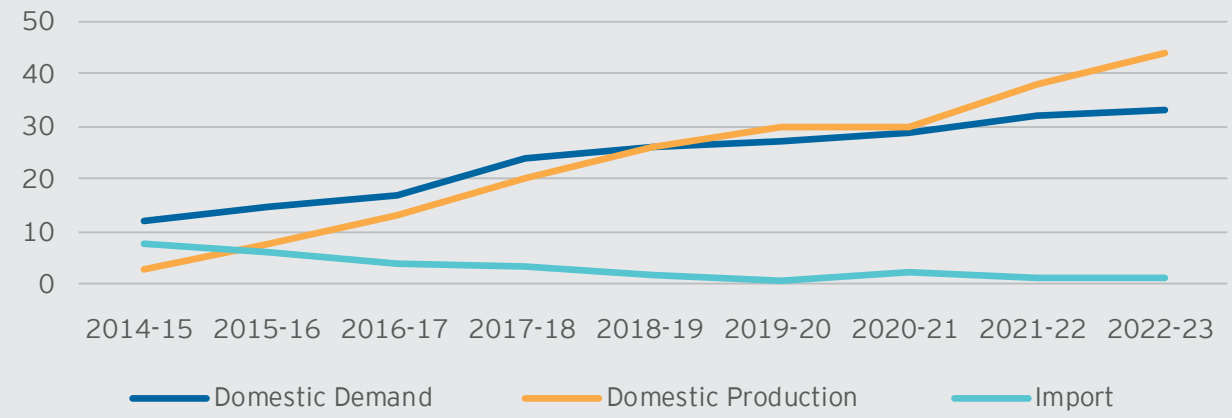
Source: Authors calculations based on ITC Trade Map

Notes: (a) India is the second largest producer of mobile phones in the world; (b) The data on exports in this Table includes phones which are imported and then re-exported; (c) As a mobile phone producing country, India ranks 3rd in terms of mobile phone exports globally.

(b.i) 2014-15 to the present: The momentum of rising imports of mobile phones led to the highest level of Indian imports of smartphones (almost US$ 8 billion) in 2014-15, since domestic production was considerably less than domestic demand (Figure 2.3 below).[11] These imports met over two-thirds of the domestic demand in 2014-15 (Figure 2.3). This led to an emphasis on import substitution policy by the government focusing on raising domestic production of mobile phones to meet an increasing share of domestic demand. In 2022-23, imports were only about 4% of domestic demand.

Exports rose in 2018-19 and 2019-20, it declined slighlty in 2020-21, and then again increased to reach the highest level of exports during the last financial year 2022-23 (see Figure 2.5 below).

Figure 2.3. Domestic Demand, Domestic Production and Imports of Mobile Phones, 2014-15 onwards (US$ Billion)

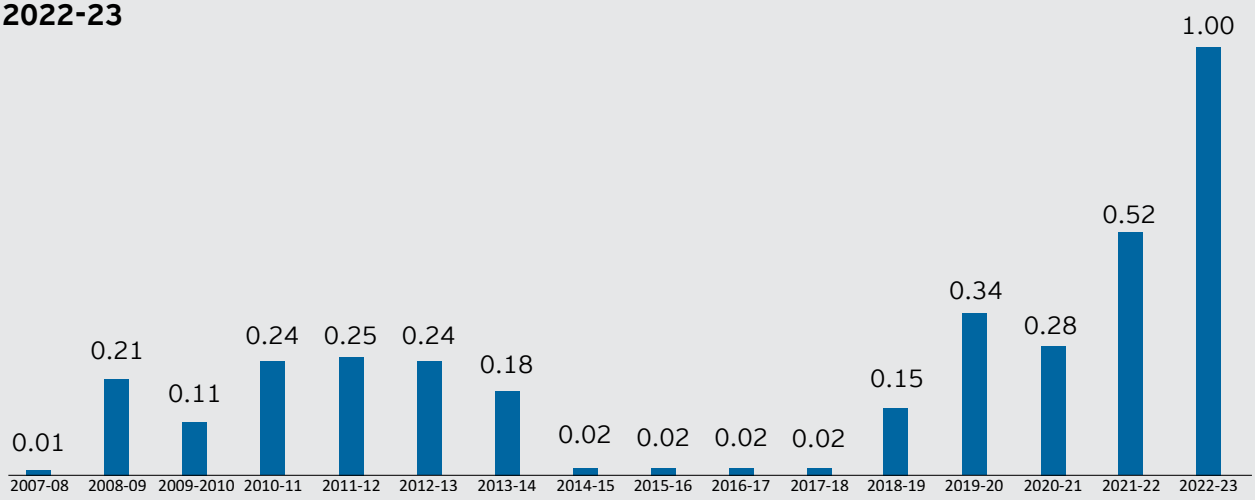


Source: Authors calculations on the basis of ICEA data

11 Imports were US$ 7.95 billion.

For the first time in India's history, India's mobile phone exports crossed US$ 5 billion in 2021-22, and then almost doubled the next year. Thus, the level of exports in the two recent years, 2021-22 and 2022-23 (i.e., the period since the PLI has been provided for smartphones), has been exceptional, with exports moving away from the previous export performance. Further, from a relatively low level of exports and high import levels, the current situation of India is one where exports are significantly larger than imports each year (see Figure 2.2). Figure 2.4 shows the ratio of previous exports to that achieved in 2022-23. In each year till 2020-21, exports of mobile phones were less than half the level achieved in 2022-23. This sustained rise in exports of mobile phones, together with domestic production exceeding domestic demand and imports continuing at a relatively low level compared to earlier, shows that India has now moved beyond the era of import substitution for mobile phones, and a new strategy needs to be evolved.

Figure 2.4. Ratio of India's Mobile Phones Exports to the Level of the Exports in 2022-23



Source: Author's Calculations based on ICEA's data

(b.ii) Important features of this new phase

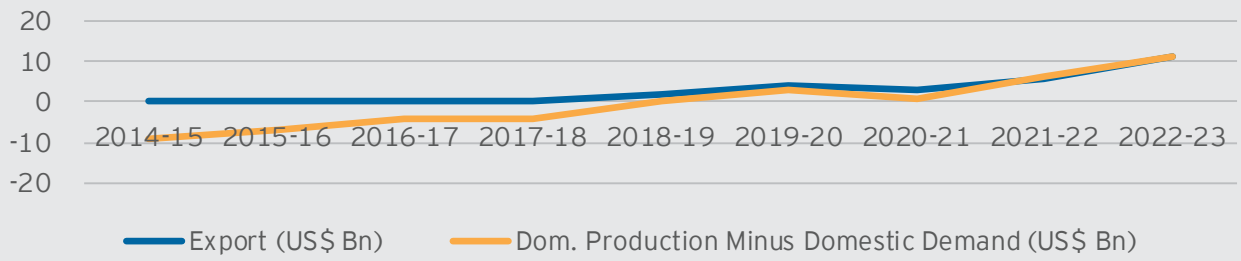
In this new phase, there are at least six different aspects to bear in mind.

First, in this phase, import substitution is no longer the objective, and the domestic market is not the major basis for higher production of smartphones. Given this shift, it becomes imperative to examine policy measures that adversely impact competitiveness. In this scenario, tariffs on inputs are an important policy measure to examine.

Second, an increase in domestic production minus domestic demand is closely linked to a rise in exports. Any increase in domestic production once it crosses domestic demand, has a corresponding positive impact on exports. In turn, higher exports will create the momentum for an increase in production.[12] Figure 2.5 shows that the increase in exports are linked to the rise in domestic production minus domestic demand ("DP-DD"), with a particularly close link from 2021-22 onwards. This is also a period when imports have remained relatively low as domestic production has been more than adequate to meet domestic demand.

12 This is especially because imports have now stabilised to a relatively low level in terms of domestic demand.

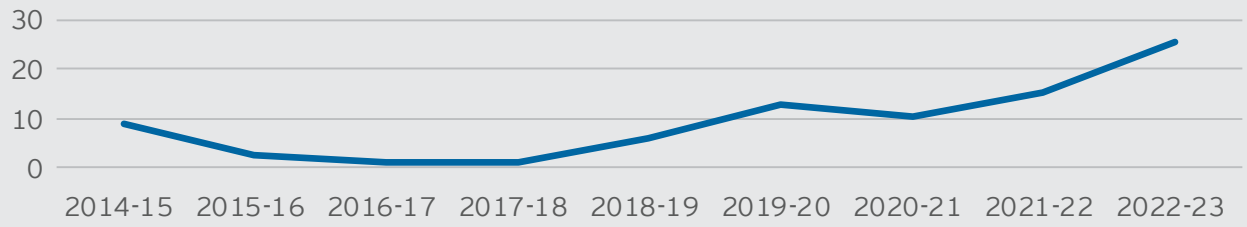
Figure 2.5. The Emerging Period of a Close Link Between Domestic Production Minus Domestic Demand and Exports of Smartphones



Source: Authors calculation based on ICEA data

Third, in this phase, the proportionate increase in exports will be larger than the proportionate increase in domestic production. This trend is evident, for example, in Figure 2.6 below, which shows that the ratio of mobile phone exports in domestic production increased by 2.5 times within two years since 2020-21. As exports and production grow, this ratio is set to climb further. In the medium term, this dynamic will provide a basis for building a stronger domestic ecosystem, facilitating deeper integration with the smartphone supply chain over time. This in turn will strengthen the capability to export from India.

Figure 2.6. India: Ratio of Mobile Phone Exports to Domestic Production of Smartphones (in percentage)



Source: Calculations based on ICEA data

Fourth, India's mobile phone imports are now relatively low and imports are likely to stabilise in a manner that excess of domestic production over domestic demand would continue to rise (see Figures 2.2 and 2.3 above). In this situation, reduction of tariffs on inputs will spur exports and higher domestic production.

Two other developments show the increasing and high potential of mobile phone export growth for India.

Among six-digit HS categories, the export ranking of mobile phones has increased rapidly in the recent years, even with the disruptions caused by COVID-19 in 2020-21 and 2021-22. Mobile phone exports have now become the fifth largest export category for India, a huge increase compared to just six years ago (Table 2.3). This momentum needs to be supported because the potential for further growth is high.

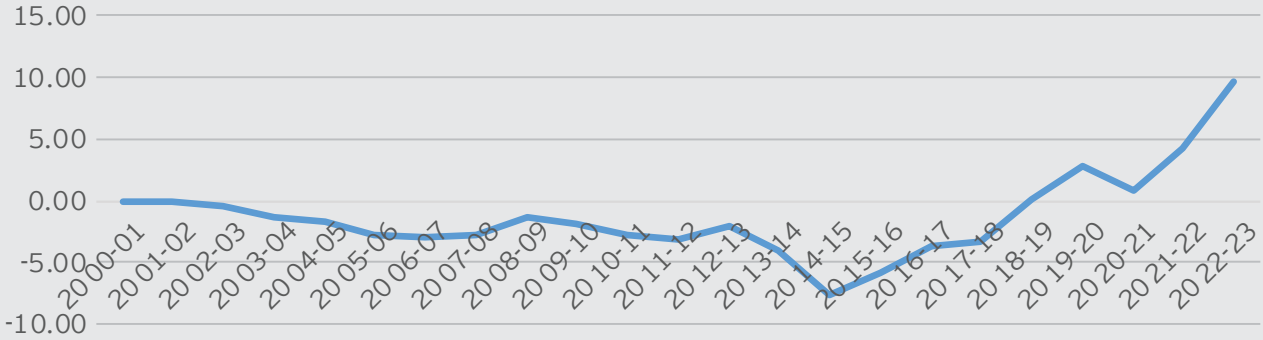
Table 2.3. India: Ranking of Exports of Mobile Phones at Six-Digit HS Categories

	2022-23	2021-22	2020-21	2019-20	2018-19	2017-18	2016-17	2015-16
Rank	5	9	9	8	19	19	239	178

Source: Department of Commerce, Government of India

Similarly, even though India's mobile phone exports came on the world stage for a short period from 2009 (see Table 2.2 above), these exports were less than imports and thus the trade balance for mobile phones was negative (Figure 2.7 below). For the first time in India's history, the export growth for mobile phones is accompanied by relatively lower imports, and since 2019-20, the trade balance for mobile phone is positive. This unique situation shows that India's mobile phone sector is now in a different phase, a phase when competitiveness of the sector must become the primary policy concern.

Figure 2.7. India: Export Minus Imports of Mobile Phones, 2000-01 to 2022-23 (US$ Bn)



Source: Calculations based on data from ICEA and Department of Commerce, Government of India

(c) Focus of the Study is on Smartphones: A Huge and Growing Presence Among Global Mobile Phone Exports

The focus in the comparison of tariffs is on smartphones and its inputs. Smartphones are the dominant part of mobile phone exports as shown in Table 2.4.

Table 2.4. Smartphones are the Dominant Part of Mobile Phones

	Total Exports of Mobile Phones	Share in Total Exports, 2022 (%):	
	2022 (US$ Bn)	Smartphones	Other Mobile Phones
World	278.4	94.5%	5.5%
China	143.5	96.7%	3.3%
Vietnam	37.3	94%	6%
India	7.4	99.8%	0.2%
South Korea	4.2	99.6%	0.4%

Source: ITC Trade Map

Note: The total mobile phone exports are calculated for HS categories 851712, 851713 and 851714. Of these, smartphones are HS 851713 and other cellular phones by 851712 and 851714.

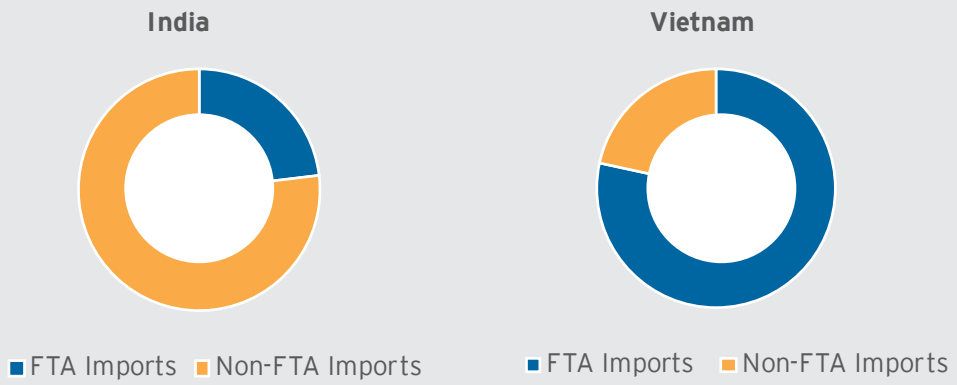
2.2 Caveats in the Comparison of Tariffs

A total of 65 HS tariff lines of India have been considered for tariff comparison. The HS categories for India are given in Annex 2.1. The products selected for comparison are the inputs for a smartphone, which are a part of the Bill of Materials (BoM) for Smartphones. Thus, for instance, packaging, labelling and printed material and catalogues are not included in this comparison. In certain cases, a particular HS category of India has more than one tariff. For any HS category with two (or more) tariffs, that category is considered as two (or more) different tariff lines in the comparison.

The main discussion here focuses on a comparison of the tariffs in India, China and Vietnam. A similar comparison is also carried out with the relevant tariffs in Malaysia, Mexico, Thailand and the Philippines. Tables in Annex 2.2 give the results of these additional comparisons. The qualitative results of these additional comparison are similar to the comparison of Indian tariffs with China and Vietnam, i.e., the comparison shows that India's tariffs on inputs are much higher than those in its competing economies.

The tariff comparison is normally based on the most favoured nation (MFN) tariffs. However, about 80% of Vietnam's imports come from countries with which it has FTAs, while the corresponding figure for India stands at 23.1% (see Figure 2.8 below). In such a situation, weighted average tariffs need to be calculated for the relevant tariff categories, based on share of imports subject to FTA tariffs and the import shares that enter at MFN tariffs. Such weighted average tariffs are calculated for both India and Vietnam, to carry out a meaningful comparison between these two countries. While, the comparison with Vietnam begins with an overall comparison of MFN tariffs, but the effective situation would be shown by the comparison of weighted average tariffs of India and Vietnam.

Figure 2.8. India and Vietnam: Share of Imports from FTA Countries and Non-FTA Countries



Source: TDM database

The initial comparison of tariffs for India and China would be in terms of MFN tariffs. A significant part of China's domestic production takes place in bonded warehouses (>50%, see Section 2.5 below) with duty free treatment of inputs. Therefore, the actual impact of tariffs on production in China will be significantly lower than that indicated by its MFN tariffs.

2.3 Comparison of Simple Average MFN Tariffs and FTA Weighted Average Tariffs

Table 2.5 shows that India's average MFN tariffs are higher than for both China and Vietnam. Moreover, both China and Vietnam have a significantly greater number of MFN tariff lines with zero tariff, compared to India. When considering FTA weighted average tariffs, the difference between India and Vietnam widens even further.

Table 2.5. Simple Average of MFN Tariffs of India, Vietnam and China (in percentage)

	MFN Average Tariff		FTA Weighted Average Tariff
India	8.5	India	6.8
China	3.7	Vietnam	0.7

Source: Country Tariff data for MFN tariffs and TDM database

Note: Vietnam's average MFN tariff is 5%.

2.4 Comparison of the Distribution of Tariffs for India, China and Vietnam

The higher average tariff of India is reflected in the distribution of the tariffs across different lines.

As explained above, the comparison of tariffs with China is in terms of MFN tariffs and that with Vietnam is in terms of FTA weighted average tariffs.

Both China and Vietnam have a significantly large number of their MFN tariff lines with zero tariffs compared to India (Tables 2.6 and 2.7). This shows the significance of ITA and the importance they place on inputs in value chains. Zero tariff lines reduce the process-related costs and expedite time of clearance of inputs integral to a global value chain.

It is noteworthy that China does not have any MFN tariff exceeding 10%. In contrast, about 54% of India's tariff lines have MFN tariffs above 10%.

Table 2.6. MFN Tariff Distribution for India and China

	Zero	0+ to 5%	5+ to 10%	10+ to 15%	15+ to 20%	20+ to 25%
India	15	9	6	21	11	3
China	36	3	28	0	0	0

Source: Country Tariff data and TDM database

Note: For two tariff lines of India, each line corresponds to two different tariff levels of China. This results in two additional tariff lines of China in the comparison of Indian tariff lines.

Likewise, a comparison of FTA weighted average tariffs in Table 2.6 shows that 97% of Vietnam's tariff lines have these tariffs between zero and 5%. In contrast, only about 36% of India's tariff lines are in this range. Also, only two lines of Vietnam have tariffs above 5%, both of them significantly below 10%. In comparison, about one-third of the FTA weighted average tariffs of India are above 10%.

Table 2.7. FTA Weighted Average Tariff Distribution for India and Vietnam

	Zero	0+ to 5%	5+ to 10%	10+ to 15%	15+ to 20%	20+ to 25%
India	15	12	17	15	5	1
Vietnam	39	24	2	0	0	0

Source: Country Tariff Schedules and TDM database

2.5 Line by Line Comparison of Tariffs

(a) Comparison of FTA Weighted Average Tariffs of India and Vietnam

Comparison with India's tariff lines with non-zero tariffs (50 tariff lines): The weighted average tariffs for all these lines of India are higher than those for Vietnam, i.e., Vietnam has lower tariffs for 100% of these lines.

Comparison with India's tariff lines with zero tariffs (15 tariff lines): Of the 15 tariff lines for which India has a zero MFN tariff, Vietnam also has zero tariff for 14 of them. In the case of one tariff line, India has a zero tariff, but Vietnam has a positive tariff[13]. Therefore, India's weighted average tariff for one line is below that of Vietnam (Table 2.8).

Table 2.8. Comparison of Individual FTA Weighted Average Tariffs of India with Corresponding Tariff Lines of Vietnam

Comparison With: ↓	Number of Tariff Lines for Which:		
	India's Tariff is Higher	India's Tariff is Lower	India's Tariff is Same
Vietnam FTA Weighted Average Tariffs	50	1	14

Source: Same as Table 2.7

Note: The one line for which the weighted average tariff of India is lower is 39209999, for which India's tariff is zero and weighted average tariff for Vietnam is 1.1%.

(b) Comparison of MFN Tariffs of India and China

- For two tariff lines of India, each line corresponds to two tariff lines of China. Therefore, the total number of tariff lines in the comparison of China and India is 67, i.e., two more than in the comparison of India and Vietnam.
- Comparison with India's tariff lines with non-zero tariffs (52 tariff lines): A line-by-line tariff comparison shows that the Indian MFN tariffs are higher than those of China for about 85 per cent of the non-zero tariff lines.[14]
- However, as explained in section 2.5(d) below, the actual tariffs applied to most inputs for exports from China are zero. Taking that specific feature into account, India's tariffs are likely to be higher for all of the 52 tariff lines that have non-zero tariffs in India.

13 For both Vietnam and China, there is one tariff line (39209999) for which India has a zero MFN tariff but the competing economies have a positive tariff. The weighted average tariff for zero duty is also zero.

14 In the case of two tariff lines of India, each line corresponds to two tariff lines of China. Therefore, the total number of tariff lines in the comparison of China and India are two more than in the comparison of India and Vietnam.

- **Comparison with India's tariff lines with zero tariffs (15 tariff lines):** For one tariff line of India which has zero tariff, China's tariff is higher. For all other lines of India with zero tariff, China too has zero tariff (see Table 2.9 and the number of zero tariff lines of India shown in Table 2.6).

Table 2.9. Comparison of Individual MFN Tariffs of India with Corresponding Tariff Lines of China

Comparison With: ↓	Number of Tariff Lines for Which:		
	India's Tariff is Higher	India's Tariff is Lower	India's Tariff is Same
China MFN Tariffs	44	9	14

Source: Same at Table 2.8

2.6 Vietnam's tariffs are even lower than shown by the comparison above

Three additional important points in the context of the above tariff comparison are that:

(a) Customs-related procedures in Vietnam, particularly for large exporters, are facilitated to a larger extent than in India. A single firm accounted for about 95% of the phones exported in 2022. Such large firms have rapid customs clearance (green channel) for its imports and exports.[15] Therefore, the process-related costs for production and exports in Vietnam are lower than for India.

(b) Vietnam exports about 96% of its production, which is subject to a tariff remission scheme similar to India's Advance Authorization Scheme of India. In comparison, India's exports are only about 25% of domestic production of mobile phones.

(c) Higher tariffs of parts and components in India compared to Vietnam mean that India's domestically produced inputs contribute a higher cost in the overall cost.

2.7 China's tariffs are much lower than shown by its MFN tariffs

(a) Bonded Zones: A large part of the total production of smartphones in China takes place in bonded zones that allow duty-free imports, particularly for exports. These zones also have easier customs clearance and other facilitation processes.[16] For taxation purposes, the zones, which have a large part of the smartphone production in China are considered as not being part of China. Production in such zones is duty-free, and sales made across these zones for further processing are also duty-free. Moreover, if any input of smartphone produced in these zones is sold to any other regions of China, the tax system ensures that the input faces the

15 See https://theinvestor.vn/vietnam-spends-35-bln-on-smartphone-imports-in-2022-d4757.html

16 China has six types of special commercial areas, including bonded areas, export processing areas, bonded logistics areas and comprehensive bonded zones, which can enjoy favorable taxation policies and are managed by customs authorities. There are 167 special areas in the country, of which 156 are comprehensive bonded areas, accounting for 93.4 percent, located in 31 provinces and municipalities. Data from the customs showed that in 2022, the import and export value of the special areas was 8.4 trillion yuan ($1.15 trillion), a year-on-year increase of 7.4 percent, accounting for 19.9 percent of the country's total foreign trade." From https://www.globaltimes.cn/page/202308/1296412.shtml

same tariff as is imposed on the final product produced using that input. In this case, tariff on the final product (on smartphone) for China is zero. Therefore, in practice, a large proportion of imported inputs for China's smartphone production that is exported does not face any customs duty in the domestic market too.

In effect, these zones have separated the tariff regime applicable to production in Bonded zones and the production in the domestic areas outside these zones. In practice, the tariff regime applies only to the producers within the territory of China that is not part of the bonded zones.

(b) **More than Half of Domestic Production of Smartphones is Exported**: About 60% of the domestic production of smartphones in China is exported.[17] A very significant proportion of these (up to about 80% for certain large exporters)[18] are produced in Bonded zones, using inputs imported at duty-free rates, and supported with facilitated customs and logistics processes. This implies that for most of its exports (and for a significant proportion of its production), China operates under a zero-tariff regime.

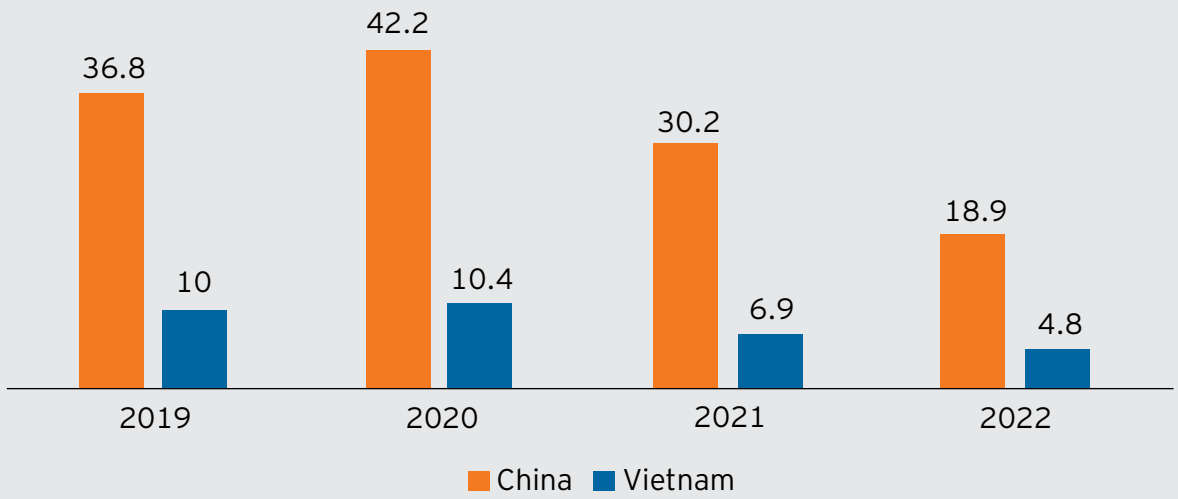
17 Information provided by ICEA.

18 This estimate is based on interviews.

2.8 Competition for Global Markets Will Become Stronger for Indian Smartphones Exports in The Coming Years

As India's exports of smartphones take up a rising share of the global market, their presence compared to the two largest exporting countries becomes more significant (Figure 2.9). The exporters in these economies will take special note of these developments and focus on providing stronger competition to retain their market share. In this situation, Indian policy makers too need to focus on improving India's competitiveness.

Figure 2.9. Smartphone Exports: Ratio of Exports of China and Vietnam to India's Exports



Source: Calculations based on data from ITC Trade Map

2.9 Conclusion

The discussion in this Chapter has shown that the developments for India's mobile phone sector have been very different after 2014-15. This period started with historically highest level of imports of smartphones for India and relatively low exports. This led to a policy focus on import substitution. Over time, domestic production increased, reducing the role of imports of smartphones to meet domestic demand. In 2018-19, domestic production equalled domestic demand, and has thereafter exceeded it. This means that India is now in a very different phase compared to ever before. Major growth of domestic production now depends on exports. This has to be achieved through sales to the global market, i.e., exports. Further, India's high global export ranking implies that it will now face much stronger competition from the top exporters than earlier. In this situation, special focus needs to be given to increasing the competitiveness of Indian production of smartphones, particularly in terms of the policy measures which directly increase costs of production. Tariff is one such policy.

A comparison of the tariffs for India and China is conducted at MFN rates, while that for India and Vietnam is conducted at FTA weighted average tariffs. The reason for this is that about 80% of Vietnam's imports come from countries with which it has FTAs, and therefore a comparison of MFN tariffs would not be valid for the latter.[19]

For MFN tariffs, India has the highest average tariff compared to the competing economies considered in this Chapter. In addition, both Vietnam and China have many more lines with zero tariffs, showing the impact of ITA and the importance they give to inputs in the global supply chain, easier procedures and lower costs due to zero tariffs.

The highest MFN tariff rate for China is 10%. This is significantly less than the peak tariff of India. The MFN tariff comparison with China shows that Indian tariffs are higher than those of China for 85% of the non-zero tariff lines of India. Therefore, the impact of tariffs on costs in China is much lower than is the case for India.

A very important point in the context of tariff comparison of India and China is that a large portion (up to about 80% for some major exporters) of China's exported smartphones are produced in Bonded zones. These zones provide duty-free treatment for imported inputs. This implies that the MFN tariffs for inputs are zero in the case of a bulk of exported smartphones.

The comparison of FTA weighted average tariffs for India and Vietnam shows that Vietnam's tariffs are lower than those of India for 100% of the non-zero lines of India. Furthermore, 97% of the tariff lines of Vietnam have weighted average tariffs within the range of zero to 5%. In contrast, only 36% of India's tariff lines have a weighted average tariff between zero and 5%.

The comparison of India's tariffs with those of some other competing economies (Malaysia, Mexico, Thailand and Philippines) also gives a similar result (see the Appendix Tables). Further as shown in the Tariff Report in May 2023, tariffs of India have been rising since 2016 while that of Vietnam and China have been falling for most line in the same period.

Annex 2.1 The HS Tariff Lines of India Considered for the Tariff Comparison

28332400	39269099	85044030	85177990	85258900	85366990	85444999
28431010	40169990	85044090	85177990	85322990	85369090	85459090
35069999	73181500	85045090	85177990	85323000	85411000	90066900
38109090	73269099	85045090	85182990	85332119	85412900	90318000
39074000	73269099	85049090	85241120	85332129	85414100	90318000
39199090	74153390	85051190	85241220	85334030	85416000	
39209999	74198090	85076000	85241920	85334090	85423100	
39219099	85011019	85076000	85249120	85340000	85423200	
39239090	85011020	85079090	85249220	85365090	85441990	
39269099	85043100	85177910	85249920	85366910	85444299	

Source: ICEA

Note: Some HS tariff lines are given more than once because the HS categories have more than one tariff rates for the products in the study.

Annex 2.2 Tariff Comparison Tables - India, Malaysia, Mexico, Philippines and Thailand

Table A2.1. Simple Average MFN Tariffs for India, Malaysia, Mexico, Philippines and Thailand

	MFN Average Tariff
India	8.5
Malaysia	3.3
Mexico	1.4
Philippines	3.7
Thailand	3.7

Source: Country tariff data

Table A2.2. Comparison of India's Tariffs with Malaysia, Mexico, Philippines and Thailand (No. of Tariff Lines)

	Number of Tariff Lines for Which:		
	India's MFN Tariff is Higher	India's MFN Tariff is Lower	India's MFN Tariff is Same
Malaysia	41	9	15
Mexico	47	5	13
Philippines	45	6	14
Thailand	45	5	15

Source: Country tariff data

Table A2.3. MFN Tariff Distribution for India, Malaysia, Mexico, Philippines and Thailand (No. of Tariff Lines)

	Zero	0+ to 5%	5+ to 10%	10+ to 15%	15+ to 20%	20+ to 25%
India	15	9	6	21	11	3
Malaysia	48	7	1	2	6	1
Mexico	50	11	4	0	0	0
Philippines	35	12	11	7	0	0
Thailand	39	3	23	0	0	0

Source: For Tables A2.1, A2.2, and A2.3 Country Tariff data and TDM database

03

Estimating Competitiveness Effects of Tariffs on Sub-Assemblies and Components

Introduction

Participation in GVCs is not inherently automatic. After Covid, countries have started focussing on the resilience of value chains. To that extent there is a shift from GVCs to regionalised or localised value chains. In this context, tariffs on inputs and sub-assemblies play a larger role. As has been explained in Chapter 2 the role of FTAs becomes critical as was shown in the context of Vietnam. To understand where India is now and where it wants to be as shown by Chapter 1, an assessment of its capabilities for manufacturing electronics is essential. This will also throw some light on where its tariff policy needs to go with respect to electronics. With this background Section 1 of this Chapter explains the dynamics of GVCs in electronics, especially in smartphones.

Other countries notably China and Vietnam are far ahead in this game. Therefore, a comparison with them in terms of India's manufacturing capabilities is warranted. In this context Section 2 highlights China's and Vietnam's capabilities and compares them with India. Section 3 analyses India's possibilities to become a manufacturing hub and the role that low tariffs on sub-assemblies can play. Section 4 explains the competitiveness effects of higher tariffs in comparison to Vietnam and China for India. It goes down to the sub-assembly level for Smartphones. Section 5 concludes by pointing to a need for investigating components of sub-assemblies.

An important point in the context of the impact of tariffs is that the suppliers of inputs, both domestic and global, raise their prices in protected markets. The final price in the domestic market depends on:

1. The level of tariff.
2. The extent of price increase by the global supplier.
3. The extent of rent seeking and price increase by domestic suppliers.

The extent of price increase for imported inputs for exports depends on:

1. The price charged by global suppliers.
2. The negotiating power of the purchasers of inputs vis a vis the global suppliers.

3.1 Electronics GVC and Production of Sub-assemblies

Electronics is not homogeneous – it requires three distinct capabilities. The main components of a smartphone are the battery, PCBA which includes processor and memory and other actives and passives, display, camera modules, flexes, vibrator motor and sensors.[20] The first is the capability to assemble the final product, the second is the capability to assemble sub-assemblies and the third is the capability to produce components. The PCBA accounts for 45% of the BoM, including the assembly of parts. Fig 3.1 below provides the distinct features of the PCBA of a mobile phone.

20 http://www.mobilecellphonerepairing.com/mobile-phone-parts-identification-how-to-identify-parts-components-on-pcb-of-mobile-phone.html

Manufacturing electronics, such as smartphones requires a capability to assemble the final product which is already high in India. Some Indian companies have been doing electronics manufacturing at this level for upwards of 30 years but they had not reached the competitiveness level where they could export to the world or compete with the big powers in Southeast Asia and China. However, with the PLI schemes India's capabilities have improved and it is exporting mobiles to the rest of the world.

The submodule or sub-assembly level includes, for example, displays, PCBA, Camera module etc which constitute a product category by themselves. These products require a complex manufacturing process, with multiple layers and intricate electronics. While India has acquired some capability at this level for example 96% of the PCBA assembly is done in India, it's still far behind its Asian competitors.

The components are broken down into three main categories: actives, passives, and interconnects or electromechanical connectors. Of these, 60 to 80% of the cost of components is in the actives, such as microprocessors, memory, storage, GPUs, ancillary chips, power management chips, etc. None of this is manufactured in India right now. Even China is only trying to acquire this capability. Chapter 4 shows that even China has only localised to the extent of 40-45%. To build capability in producing chips would require a semiconductor fabrication plant costing $8 billion or more. A handful of companies control this space — Intel, TSMC, GlobalFoundries, Infineon Renaissance, TI — and to acquire this critical capability would mean convincing one of them to have a presence in India.

The Passives include inductors, resistors, capacitors, etc. Finally, the electro mechanicals or interconnects include motors, wire harnesses, and connectors. To some extent, these are manufactured in India, but there's still a gap due to the lack of scale of consumption of these products in sub-assemblies/components. To obtain a sustainable ecosystem, India will need to either develop the capability for their manufacture or shift their ecosystems to India.

To bridge the gap in manufacturing, India needs to keep its tariffs low till such capabilities have developed. Among the components the passives can be managed easily, processing, memory, and storage will pose a more significant challenge. It can only be done by the Lead Manufacturers or a handful of global players such as mainstream processor manufacturers — Intel, TSMC, Samsung and Global Foundries.

3.2 India vs. China and Vietnam

It's taken China more than three decades to build the capacity they now have. Further the world doesn't come to a standstill while India is working on getting its capabilities. Other attractive alternatives such as Vietnam, Thailand, Indonesia, and Cebu in the Philippines are emerging. India's population, its STEM education makes it a likely candidate for pushing up scale. The raw material is in place for India to become the secondary ecosystem for the electronics supply chain — but it will take at least three to five years to get there.

Structural challenges to India becoming a manufacturing hub

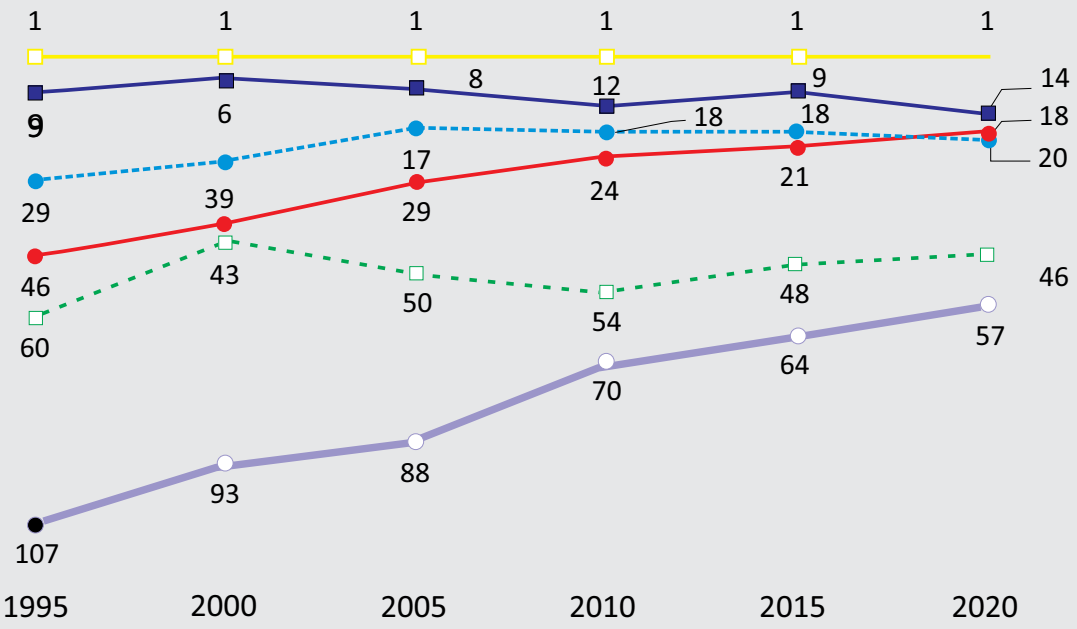
India's greatest challenge is China. The vast majority of the display sub-assembly which goes in almost all electronics hardware is made in China or Korea. While India has started assembling some displays, the biggest companies are still in China.[21] There are no semiconductor fabricators

21 https://venturebeat.com/datadecisionmakers/does-india-have-what-it-takes-to-challenge-china-in-electronics-manufacturing/

in India, and China has long had a near-monopoly on printed circuit boards – India is just starting to manufacture these. The entire ecosystem for passive parts is in China and Taiwan. Estimates suggest that 60% of sub-assemblies worldwide come from China.[22] While this capability is easier to acquire for India, the raw components will be the hardest of all to relocate – even if the design is done in Taiwan or Japan, most raw component manufacturing comes from China. China is vacating the lower end of the supply chain and moving upstream in terms of manufacture, but its capabilities versus India is reflected in the complexity of its supply chain.

"Economic development requires the accumulation of productive knowledge and its use in a wider range of more complex industries. The Harvard Growth Lab's Economic Complexity Index (ECI) assesses the state of a country's productive knowledge. As the number and complexity of a country's exports increase, the country's ECI moves toward "1"; for example, in this data, Japan has consistently had the highest ECI of 1, whereas Vietnam currently has the lowest at 57, although its score has been improving'[23].

Figure 3.2: Harvard Economic Complexity Index rankings; "1" is the most complex



Top to bottom lines

- Japan- Yellow line
- U.S.-Blue line
- China-Dotted blue line
- Mexico-red line
- India-Dotted Green Line
- Vietnam- Light Blue line

Source - Harvard Growth Lab, RBC Wealth Management

[22] Ibid

[23] Harvard Growth Lab, RBC Wealth Management, https://growthlab.hks.harvard.edu/home

Section 3.3 What Should be India's approach to Tariffs for attracting GVCs

Of all the sub-assemblies, modules such as PCBA, Camera etc are done in India, but most of the sub-components are imported. A high tariff on components of sub-assemblies also increases the costs of the sub-assemblies thus making them less competitive than their Asian counterparts.

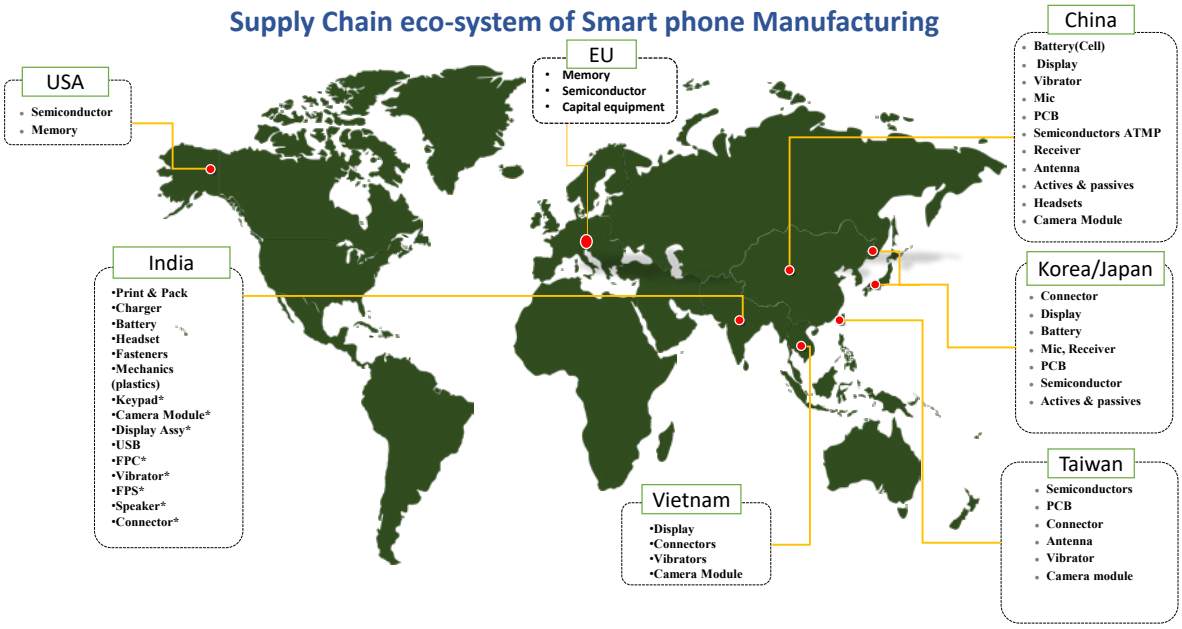
Both PMP and the PLI scheme have had an impact in generating the manufacturing of smartphones. New players have started their operations in India across the domains of complex sub-component manufacturing and casing. For example, a camera module manufacturer, a subsidiary of a China-based optical products company in Andhra Pradesh is expected to generate a revenue of nearly USD 4 billion for India.24 Indian companies are also manufacturing casings in Tamil Nadu which will generate employment opportunities for 60,000 people.[25] However if tariffs on components of sub-assemblies continue to be high, they will be expensive to produce vis-à-vis the competing countries. Fig 3.3 shows the countries where components and sub-assemblies are produced.

Tariffs are a deterrent to developing sub-assemblies as components become more expensive because of tariffs. India has started producing some sub-assemblies such as PCBA where localisation levels are nearly 96% but even now the cost of production of PCBA are around 2% higher than competitor countries on account of tariff alone. Going further upstream in the value chain, tariffs are adding costs at each sub-assembly stage and then at the component stage. The next section shows how tariffs add to costs at the sub-assembly stage.

24 https://www.pwc.in/research-and-insights-hub/india-calling-decoding-the-countrys-electronics-manufacturing-journey-and-the-way-forward.html

25 Ibid.

Figure 3.3 Manufacturing origins of phone components



Source: ICEA

3.4 Competitiveness effects of tariffs on Sub-Assemblies

The exercise conducted in this section uses the counterfactual of how much would be the cost reduction of the BoM if Vietnamese or Chinese tariffs were applied in India. In the case of Vietnam FTA tariffs have been used, whereas in the case of China the MFN tariff has been used. Table 3.1 shows the competitiveness effects of higher tariffs in China vis-vis India. Comparison has been conducted at two levels. One is with the MFN tariffs of China and the second is the bonded-zone tariff which applies to exports and to an extent to the domestic market too.

Table 3.1 Competitiveness effects of Tariffs on sub-assemblies in India vis-à-vis China (all figures are in percentages)

			MFN Tariff of:		India's Competitiveness Compared to China	
HS Code	Item	%age Share in Cost	India (%)	China (%)	At MFN Tariff of China	At Zero Tariff for China
85044030, 85044090	Battery Charger/ Adaptor	2.5	22	0	-0.55	-0.55
85177900, 85258900	Camera Module	10	11	0	-1.10	-1.10

			MFN Tariff of:		India's Competitiveness Compared to China	
HS Code	Item	%age Share in Cost	India (%)	China (%)	At MFN Tariff of China	At Zero Tariff for China
85177990	Mechanics	8	16.5	0	-1.32	-1.32
85177990, 85369090	Connector for Smartphones	1.5	11	0	-0.165	-0.165
85177990, 85249120, 85249220	Display Assembly	13.5	11	0	-1.9	-1.9
85076000	Battery Pack	6	16.5	10	-0.39	-0.99
85177990, 85182990	Mike, Receiver and Speaker	1	16.5	0	-0.17	-0.17
85444299	USB Cable	0.75	16.5	0	-0.12	-0.12
85177990	Vibrator Motor	1	11	0	-0.11	-0.11
85177990	Other Parts of Mobiles	3.6	16.5	0	-0.60	-0.60
	Total	**47.85**			**-6.425**	**-7.025**

Source: Calculations based on Tariff and cost percentage data from ICEA.

An additional 45% of the total cost of the smartphone is from the PCBA (see below). So this study accounts for nearly 93% of the total cost of the smartphone. The cost difference between a Smartphone produced in China vis-à-vis a Smartphone produced in India ranges from 6-7% due to tariffs alone. This does not include the other disabilities that Indian producers face in terms of other costs. Also when the cost of components are added, the cost difference goes up. Table 3.2 shows the competitiveness effects of tariffs on India vis -a-vis Vietnam at FTA tariff levels shown by a comparison of trade weighted tariffs. Vietnam is more competitive than India to the tune of 5-6% in terms of BOM costs due to tariffs alone.

Table 3.2 Competitiveness effects of tariffs on sub-assemblies of India vis-à-vis Vietnam (all figures are in percentages)

			Weighted Average Tariff of:		India's Competitiveness Compared to Vietnam
HS Code	Item	%age Share in Cost	India (%)	Vietnam (%)	At MFN Tariff of Vietnam
85044030, 85044090	Battery Charger/ Adaptor	2.5	22	0 0	0.55
85177900, 85258900	Camera Module	10	**9.8**	**0**	-0.98
85177990	Mechanics	8	15.7	0	-1.26
85177990, 85369090	Connector for Smartphones	1.5	9.3	0 0.8	-0.13

			Weighted Average Tariff of:		India's Competitiveness Compared to Vietnam
HS Code	Item	%age Share in Cost	India (%)	Vietnam (%)	At MFN Tariff of Vietnam
85177990, 85249120, 85249220	Display Assembly	13.5	10.4 11 3.9	0 0 0	-1.12
85076000	Battery Pack	6	14.6	0	-0.88
85177990, 85182990	Mike, Receiver and Speaker	1	15.7 11.3	0 1	-0.13
85444299	USB Cable	0.75	12.7	0	-0.06
85177990	Vibrator Motor	1	10.4	0	-0.10
85177990	Other Parts of Mobiles	3.6	15.7	0	-0.57
	Total	**47.85**			**-5.78**

Source: Authors calculations based on ICEA data

3.5 Competitiveness effects due to Components of the Sub-Assembly PCBA

The cost effects given above do not include the PCBA which accounts for 45-50 percent of the BoM. The reason why PCBA was excluded was because of all the sub-assemblies, PCBA is mostly assembled in India. However tariffs on components increase the cost of assembly of PCBA. The tariffs in Vietnam and China on the PCBA components are near zero. On account of almost complete localization of assembly of PCBA, the effects have been calculated by the ICEA as follows:

(1) PCBA inputs on which duty was increased in April 2022 was about 3% of total costs. Impact of duty on small inputs in the PCBA work out to -0.17-0.2% vs China of the PCBA. The same for India vs Vietnam using FTA tariffs works out 0.14%. See tables 3.3a and 3.3b.

Table 3.3a. Adverse Competitiveness Impact of India's Higher Tariffs Compared to China for PCBA (all figures are in percentages)

			MFN Tariffs:		Competitiveness Impact With:	
India HSN	Description	Cost Share	India	China	China MFN Tariffs	China Zero Tariffs
39269099	MIC Mesh	0.011	2.75	10	-0.0007975	-0.0003025
73269099	Shield cover	0.427	**16.5**	**8**	-0.036295	-0.070455
85045090	inductor	0.898	2.75	0	-0.024695	-0.024695
85182990	MIC	0.255	16.5	0	-0.042075	-0.042075
85369090	Connector	0.618	11	0	-0.06798	-0.06798
	Total	**2.21**			**-0.17**	**-0.20**

Source: Authors calculations based on ICEA data

Table 3.3b. Adverse Competitiveness Impact of India's Higher Tariffs Compared to Vietnam for PCBA[26] (all figures are in percentages)

India HSN	Description	Cost Share	Weighted Average Tariffs:		Competitiveness Impact with Vietnam
			India	Vietnam	
39269099	MIC Mesh	0.011	2.75	0.7	-0.0002255
73269099	Shield cover	0.427	**11.5**	**1.2**	-0.043981
85045090	inductor	0.898	2	0	-0.01796
85182990	MIC	0.255	11.3	1	-0.026265
85369090	Connector	0.618	9.3	0.8	-0.05253
	Total	**2.21**			**-0.14**

Source: Authors calculations based on ICEA data

(2) The total import of PCBA for the production of smartphones in India was USD 600 million in 2022-23, against a domestic requirement of PCBA of USD 14 billion. This works out to around 4% of total PCBA imported in India. On these a duty of 22% was paid in 2022 so the total duty as a proportion of total cost was about 1.1% of BoM.[27]

Adding the two together the total tariff cost of PCBA in India would be around 1.3% vs China and 1.2% vs Vietnam. Adding this to the total c**ost competitiveness effects on the BOM vis-à-vis Vietnam goes up to about -7% (1.1+0.14*0.45 +5.78=6.95)%.** The competitiveness disadvantage vis-à-vis China goes up to 8.2-8.8% using the same formula.

3.6 Competitiveness effects due to Tariffs on Charger Components

While there are several components to a battery charger, tariffs are imposed on only some of the components. Table 3.4 has taken the tariffs on the components on which tariffs are non-zero for India. Table 3.4a shows the competitiveness effects due to tariffs on components of Smartphone chargers vis-à-vis China. Two levels of comparisons are shown in the Chinese case. One is with the MFN tariff and the other is with the bonded warehouse tariffs.

26 This refers to FTA weighted average tariff for both India and Vietnam

27 ICEA data

Table 3.4a Competitiveness effects of Chargers vis-à-vis China (all figures are in percentages)

			MFN Tariff of:		India's Competitiveness Compared to China	
HS Code	Item	Average %age Share in Cost	India (%)	China (%)	At MFN Tariff of China	At Zero Tariff for China
85049090	Colour Circle Coils	2.6	11	0	-0.286	-0.286
85049090	High-Frequency Transformer	6.65	11	0	-0.732	-0.732
85366910	DC Terminal needle base	0.27	11	0	-0.03	-0.03
85366910	Metal Clamping pieces	0.73	11	0	-0.08	-0.08
85441990	DC Cable	18.4	11	10	-0.184	-2.024
85369090	AC CONNECTOR	4.3	11	0	-0.473	-0.473
	Total	**32.95%**			**-1.785**	**-3.625**

Source: Authors calculations based on ICEA data

China imports the final product mobile chargers at Zero duty mostly from Germany, Vietnam and India. Smartphones **are produced in duty free zones which implies that inputs pay Zero duties irrespective of their MFN tariffs. So if with 0 tariffs on inputs the cost disadvantage due to tariffs alone in producing chargers is India vs China would be -3.62%. This amounts to -0.1%(3.62*2.5) of the overall BOM costs. At the lower end of the spectrum the costs increase by 0.04%(2.5*1.785). Hence the cumulative cost increase in India vis-à-vis China will range between -8.24 to -8.9%.**

It is to be noted that though tariff on battery chargers in China is Zero, non-tariff barriers especially that of standardization continues to be high in China. China produces most of the inputs for battery chargers but the cost of assembly for some battery charger is higher than that in India or Vietnam. Hence, China both imports and exports battery chargers depending on the quality.

Vietnam on the other hand is one of the main competitors of India for battery chargers. Comparing India's import weighted tariffs with Vietnam's trade weighted ones gives an accurate picture of the cost effects. Table 3.4b shows the competitiveness effects on chargers of smartphones in India vis-à-vis Vietnam.

Table 3.4b Competitiveness effects of Chargers vis-à-vis Vietnam[28] (all tariffs and cost figures are in percentages)

			Weighted Average Tariff of:		India's Competitiveness
HS Code	Item	Average %age Share in Cost	India (%)	Vietnam (%)	Compared to Vietnam
85049090	Colour Circle Coils	2.6	8.7	0	-0.23
85049090	High-Frequency Transformer	6.65	8.7	0	-0.58
85366910	DC Terminal needle base	0.27	9.3	4.6	-0.01
85366910	Metal Clamping pieces	0.73	9.3	4.6	-0.03
85441990	DC Cable	18.4	10.7	0.8	-1.82
85369090	AC CONNECTOR	4.3	9.3	0.8	-0.37
	Total	**32.95%**			**-3.27**

Source: Authors calculations based on data from ICEA

The impact on BOM costs because of tariffs on components on chargers works out to -0.08 (-0.0327*2.5). Hence the cumulative disadvantage to India in BOM costs vis-à-vis Vietnam works out to **-7.03%.**

3.7 Competitiveness effects due to tariffs on Components of Batteries

It is to be noted however that China has localised most of its production of cells, hence the cost of production for China will not be affected by its tariffs. The reason it kept its MFN tariff high is because the raw materials for the cell are imported duty free from Chile and Congo and almost all the cells that go into batteries of smartphones are made in China. Further, the inputs are obtained at Zero duty in industrial zones. Hence as in the other cases a comparison is made both with MFN tariffs and 0 tariffs which apply to industrial zones. Table 3.5a shows the range of competitiveness effects on India vis a vis China.

28 The tariffs used for both India and Vietnam are the FTA weighted tariffs.

Table 3.5a Competitiveness effects of Batteries vis a vis China (all figures are in percentages)

			MFN Tariff of:		India's Competitiveness Compared to China	
HS Code	Item	Average %age Share in Cost	India (%)	China (%)	At MFN Tariff of China	At Zero Tariff for China
85076000	Cell	62.5	5.5	10	+2.813	-3.438
85079090	PCBA	31.5	2.75	8	+1.654	-0.866
85079090	Mechanical Parts	6	2.75	8	+0.315	-0.165
	Total	**94%**			**+4.782**	**-4.469**

Source: Authors calculations based on ICEA data

At MFN tariff rates India appears to have lower tariffs than China. However, when the comparison is made for production in the industrial zones than India is less competitive than China. Bearing in mind that most of China's production is in the industrial zone a range as earlier is derived for the competitiveness effects of tariffs on components of batteries. Adjusting for higher tariffs of China the cumulative cost of BOM of India vs China ranges **from -8% (6*0.048-8.24) to -9.17% (-6*0.045-8.9).**

Table 3.5b shows the competitiveness effects on India vs Vietnam due to tariffs on components of batteries using trade weighted average tariffs.

Table 3.5b Competitiveness effects of Batteries vis a vis Vietnam[29]

			Weighted Average Tariff of:		India's Competitiveness
HS Code	Item	Average %age Share in Cost	India (%)	Vietnam (%)	Compared to Vietnam
85076000	Cell	62.5	4.9	0	-3.06
85079090	PCBA	31.5	2.1	0.2	-0.6
85079090	Mechanical Parts	6	2.1	0.2	-0.11
	Total	**94%**			**-3.67**

Source: Authors calculations based on data from ICEA

29 The tariffs used refer to FTA weighted tariffs for both India and Vietnam.

The cost disadvantage to India on account of tariffs on components of the battery is roughly -0.22% (-6*0.0327) vs Vietnam. Adding this to India's overall cost disadvantage due to tariffs alone is about -7.25% (-7.03-0.22) vs Vietnam. Hence while the cumulative cost disadvantage with China is 8-9%, that with Vietnam is approximately -7%.

3.7 Competitiveness Effects due to Tariffs on Camera Modules

On the basis of the components of the Camera Module on which tariffs were available (97% of the total costs) the competitiveness disadvantage has been calculated for India vs China and Vietnam.

Table 3.6a shows the competitiveness effects on India of tariffs on components of the camera module. As earlier China's tariffs are taken at both the MFN level and 0 tariffs at the bonded warehouse level.

Table 3.6a Competitiveness effects on Camera Modules vis-à-vis China (All figures are in percentages)

			MFN Tariff of:		India's Competitiveness Compared to China	
HS Code	Item	Average %age Share in Cost	India (%)	China (%)	At MFN Tariff of China	At Zero Tariff for China
85366990	Connector	1.50	11	0	-0.165	-0.165
90318000	Sensor	32.5	2.75	0	-0.893	-0.893
38109090	Solder paste	0.10	8.25	6.5	-0.002	-0.008
85444999	Golden wire	1.00	2.75	0	-0.0275	-0.0275
35069999	Glue	1.00	11	10	-0.11	-0.11
85177990	Holder+IR	6.00	2.75	0	-0.165	-0.165
85177990	VCM	10.00	2.75	0	-0.275	-0.275
39209999	Lens	32.5	0	6.5	+2.11	0
	Total	**84.6**			**+0.4725**	**-1.6435**

Source: Authors calculations based on ICEA

The cost disadvantage to India vs China due to tariffs on components of camera modules ranges from -1.6% to +0.4%. This cumulates to a cost disadvantage on the BOM for India of -7.95% (-8+10*0.005) to -9.33% (-9.17-10*0.016435) vs China.

As earlier regarding Vietnam the import weighted tariff is compared to that of India. Table 3.6b shows the competitiveness effects on India due to tariffs on components of Camera module vs Vietnam.

Table 3.6b Competitiveness effects on Camera Modules vis-à-vis Vietnam[30] (all figures are in percentages)

			Weighted Average Tariff of:		India's Competitiveness
HS Code	Item	Average %age Share in Cost	India (%)	Vietnam (%)	Compared to Vietnam
85366990	Connector	1.50	8.4	5.6	-0.042
90318000	Sensor	32.5	2.1	0	-0.68
38109090	Solder paste	0.10	8	0.2	-0.0002
85444999	Golden wire	1.00	8	4.7	-0.033
35069999	Glue	1.00	8.7	3.3	-0.054
85177990	Holder+IR	6.00	(2.6)	0	-0.156
85177990	VCM	10.00	(2.6)	0	-0.26
39209999	Lens	32.5	0	1.1	+0.36
	Total	**84.6**			**-0.86%**

Source: Authors calculations based on ICEA data

The competitiveness effects of tariffs on components of camera module cumulates **to -0.86%. On the BOM the cost for Vietnam cumulates tor -7.35% (-7.25-10*0.0086) vs India.**

3.8 Competitiveness effects due to tariff on Components of Mechanics

While the percentage share of the components of Mechanics was not available at the time of writing an approximate calculation has been attempted based on tariff differences. Table 3.7a shows the tariffs both at the MFN level and at 0 tariffs at the bonded warehouse level.

Table 3.7a Competitiveness effects on Mechanics vis-à-vis China (all figures are in percentages)

		MFN Tariffs		At Zero Tariff for China
Product	India HS Category	India	China	China
Mechanics	85177990	16.5	0	0
Resin	39074000	8.25	6.5	0
Mesh	39199090	16.5	6.5	0
Adhesive	35069999	11	10	0
Sponge	39199090	16.5	6.5	0
Film	39199090	16.5	6.5	0
Gasket	39199090	16.5	6.5	0

30 The tariffs used here refer to the FTA weighted tariffs for both India and Vietnam.

		MFN Tariffs		At Zero Tariff for China
Product	**India HS Category**	**India**	**China**	**China**
Logo	39199090	16.5	6.5	0
Steel Sheet	73269099	16.5	8	0
Cover Tape	39199090	16.5	6.5	0
Adhesive Tape	39199090	16.5	6.5	0
Average tariffs		13.75	6.95	0
Difference			**-6.8**	**-13.75**

Source : Authors calculations based on ICEA data

Assuming all components have equal weightage, the competitiveness effects on India vs China on account of higher tariffs would range **between -0.54%(8*-0.068) and -1.1%(8*-0.1375). Hence the cumulative cost of BOM in China would be -8.5% (-7.95-0.54) to -10.43% (-9.33-1.1) cheaper than India. In other words India would be uncompetitive to the tune of nearly 8.5-10.4% vs China due to tariffs alone.**

The costs vs Vietnam would once again depend on the FTA tariffs. Table 3.7b below shows the difference between India and Vietnamese tariffs on the components of Mechanics. Again the assumption made is that all components have equal weightage in the Mechanics of a smartphone.

Table 3.7b Competitiveness effects on Mechanics vis-à-vis Vietnam[31]
(all figures are in percentages)

		Weighted Average Tariffs		
Product	**India HS Category**	**India**	**Vietnam**	**Difference**
Mechanics	85177990	15.7%	0	-15.7
Resin	39074000	2.9%	0	-2.9
Mesh	39199090	11.4%	0.6%	-10.8
Adhesive	35069999	8.7%	3.3%	-5.4
Sponge	39199090	11.4%	0.6%	-10.8
Film	39199090	11.4%	0.6%	-10.8
Gasket	39199090	11.4%	0.6%	-10.8
Logo	39199090	11.4%	0.6%	-10.8
Steel Sheet	73269099	7.9%	1.2%	-6.7
Cover Tape	39199090	11.4%	0.6%	-10.8
Adhesive Tape	39199090	11.4%	0.6%	-10.8
Total				**-9.6**

Source: Authors calculations based on ICEA data

31 The tariffs used here are FTA weighted for both India and Vietnam

The overall cost effects on the BOM due to tariffs alone would be around **-0.8% (8*0.096) on mechanics. Hence Vietnam's BOM costs would cumulate to -8.15% (-7.35-0.8) lower than India.**

3.9 Localisation and Tariff effects on BoM of Smartphones

One of the arguments made for tariffs is that it permits localisation and hence tariff effects on the BoM of smartphones may be considerably diluted. While this issue has been explored in Chapter 4, the dilution of cost effects due to localisation are examined here. It is to be noted that all the effects are approximate and while local inputs may be used for domestic production they need not be used for exports. As said earlier production for exports may be biased towards imported inputs unless the scale of domestic production of components of sub-assemblies rises to make domestic production more economic. With these limitations table 3.8 below examines the cost effects of tariffs adjusting for the localisation of the sub-assemblies in India vs China and Vietnam. For ease of analysis the lower end of Chinese tariffs has been used. Thus, for example, the calculation for camera module is 0.4(cost effect of tariffs on components)-1.1(cost effects of tariffs on sub-assemblies) *0.75 (extent of imports) =-0.35% for China. Table 3.8 provides the competitiveness effects on the BoM adjusting for localisation.

While not comprehensive, this chapter includes nearly 93% of the sub-assemblies and 80-90% of the key components of the sub-assemblies such as the PCBA, Camera Module, batteries etc. Hence it is fairly representative of the cost distortions caused by tariffs.

Table 3.8 Competitiveness Effects on BoM after adjusting for Localisation (all figures are in percentages)

Sl. no	Description	Localization	Competitiveness VS China	Competitiveness vs Vietnam
1	PCBA[32]	96	-1.3	-1.2
2	Display Assembly	25	-1.43	-0.9
3	Camera module	25	-0.35	-0.74
4	Mechanics	20	-1.5	-1.6
5	Battery Pack	95	-0.03	-0.06
6	Charger Adapter	95	-0.03	-0.03
8	Connectors	20	-0.13	-0.1
9	Die Cut Parts	15	-0.50	-0.48
10	Mic and receiver	2	-0.17	-0.13
11	Vibration Motor	0	-0.11	-0.10
12	USB Cable	80	-0.11	-0.06
13	Wired Headset	60	-0.23	-0.22
	Total		**-5.89**	**-5.62**

Source: ICEA

32 The cost difference with Chia and Vietnam was derived above after adjusting for Localisation.

The cost effects on India vs China would be higher if the bonded warehouse tariffs had been considered. It is striking that the cost effects even taking account of localisation on the BoM is nearly 6% vs Vietnam and China. If the 20% localisation of the sale price is considered than the competitiveness of India vs China would be **around -7 to-9% whereas that for Vietnam would be well over -6.5%.**

While these costs effects are by themselves significant, what is even more important is the dampening effect on FDI and the negative perception for moving value chains. These two together would inhibit a higher scale of operation which in turn increases costs of domestically produced inputs.

Conclusion

India could become a global smartphone manufacturing hub. **The cost disadvantage due to tariffs alone to India vs Vietnam and China is between 8-10% of BoM, or 5-7% of the total cost thus outweighing the benefits of PLI.** Adjusting for Localisation, the cost disadvantage to India is still about 6% of BoM costs vs China and Vietnam. To become a global manufacturing hub, India should not aim to produce all the 1,500 to 2,000 p**arts** that go towards manufacturing a smartphone. Starting from downstream production (final product) India must work its way upstream towards the production of sub-assemblies and some components.

Inputs procured domestically from manufacturers carry a margin due to price protection that import tariff enables for them. This results in a globally inefficient pricing of inputs especially for export production of smartphones. Further, this also leads to price margin topping up of inputs by global suppliers considering the comparative price of inputs in the domestic markets (which is tariff protected). This price of inputs from domestic suppliers or global suppliers acts as an inefficient floor price of inputs, rendering the export pricing uncompetitive vis-a-vis competing manufacturing destinations especially China and Vietnam. Since the scale of production in India is still small compared with manufacturers in China or Vietnam, the global input suppliers have a strong bargaining position because of the comparatively lower value of smartphone production in India. As a result, they tend to offer higher prices of inputs.

The tariff imposed on the parts and components could erode all the benefits of assembling smartphones in India for the global market. Tariffs would discourage foreign smartphone makers to relocate assembly task to India. Zero tariffs on parts and components of smartphones helped China become the No. 1 smartphone exporter in the world. Even where it has high MFN tariffs it produces in export zones where tariffs are kept at Zero.

When China started to assemble Smartphones 15 years ago, Chinese firms' only contribution was labour-intensive task-assembly, about 3.6 per cent of the total manufacturing value added. But, today, Chinese firms have captured about 25 per cent of the manufacturing value added by providing battery, camera filter, glass back-cover, stainless frame, printed circuit board assembly, and other parts, which are technology intensive and offer higher value added than pure assembly service.[33] If Indian companies such as Micromax and Lava want their phone to be competitive in the

33 https://edition.cnn.com/2022/12/09/tech/apple-china/index.html

global market, they should not think of import substitution when selecting parts and components. They should use the best available technologies to make their phones, regardless of the fact the technologies are made in India or not.

To summarise there is a need to scale up production of smartphones. At this stage this can only be done by increasing exports. To increase exports, smartphones have to be competitive vs China and Vietnam. This would require reducing tariffs and most importantly maintaining a stability in the tariff regime. Shifting GVCs will not be possible without a reduction and rationalisation of the tariff regime.

04

Tariffs and Localisation

Introduction

Participation in GVCs would make it easier for India to move away from reliance on exports of finished smartphones to becoming exporters of sub-assemblies and components. As was said earlier India cannot produce competitively all the 1600 components required for a mobile or Smartphone. In fact no country produces all parts of the smartphone. Hence it will have to import several parts at least initially. Tariffs make it expensive to import necessary parts. As was shown in the last chapter, costs escalate because of tariffs on different components and sub-assemblies which makes it harder for India to participate in GVCs. Further it may seem like simple math that a higher domestic value-added share means more total value added exported and hence more GDP. But that simple idea ignores the reality that imported goods and services are a key support to a country's competitiveness.

If India artificially replaces key inputs with non-global quality versions, the result is likely to be fewer gross exports and less, not more, total value-added exports. Hence the focus should be on aggregate value added through increased scale of production rather than value added ratio for mobile or smartphones. Nations such as Vietnam, Malaysia, Thailand and Mexico are in high demand as companies look to diversify their base of production under the China+1 strategy. **This is largely because the tariffs on inputs were kept low as was shown in the earlier chapters.** They participate in GVCs by specializing in a particular activity and joining global production networks for other components and sub-assemblies. For example, well established companies have been able to move manufacturing of PCBAs in as little as 3-6 months to countries where tariffs on components have been kept low.

Studies have shown that the success of an export-led growth strategy will be reduced if India only focuses on exports promotion and ignores barriers to imports. There is abundant evidence that imports foster productivity. An IMF study empirically examines the impact of tariffs when production is organized in global value chains. Using global input-output matrices, the study captures the direct and indirect exposure to tariffs at different stages of the production chain for a broad set of countries and industries. The results suggest that tariffs have significant effects on economic outcomes, including on countries and sectors not directly targeted. The study shows that tariffs higher up and further down in the value chain **depress value added**, employment, labour productivity and total factor productivity to varying degrees.[29]

The main purpose of tariffs in countries like India is to promote local industries. In electronics, tariffs were meant to incrementally increase local production through the Phased manufacturing programme (PMP). In this exercise tariffs were progressively increased as India became competitive in the production of sub-assemblies and products. However, did tariffs really help in making electronic products competitive? This chapter examines this question by first looking at how much localisation of Smartphones and its components has occurred. It is to be noted that electronics manufacturing is actually the assembly of different components at different stages. So, for example mobile manufacturing is the assembly of nearly 14 sub-assemblies. Each of these sub-assemblies in itself is the assembly of different components. These components may themselves be assemblies of further disaggregated components. Thus, a nation first builds competitiveness at the Tier 1 stage of assembly and then chooses those sub-assemblies that it can competitively assemble. It does not have to build everything. The supplier ecosystem is already in place or is in the process of being

[29] https://www.elibrary.imf.org/view/journals/001/2022/040/article-A001-en.xml

set-up in India for leading global and Indian smartphone brands such as Samsung, Apple, Lava, Motorola, Oppo, Vivo etc.

In the process of building eco-systems, tariffs on components only ratchet up costs. Against this background, Section 4.1 of this Chapter examines whether tariffs have led to localisation in India. Section 4.2 analyses the obverse, i.e., whether lower tariffs have led to greater localisation in China. Finally, Section 4.3 concludes with the observation that building scale leads to greater localisation for which lowering tariffs are essential.

4.1 Have tariffs led to localisation in India

4.1.1 Tariffs and Localisation: The Significance of Technical and Commercial Factors

There is one important caveat to consider. Tariffs on inputs have increased in India to encourage domestic production of those products. If the extent of localisation is relatively low despite prolonged tariff protection, then the outcomes are likely influenced by either technical or business-related reasons.

Addressing **technical gaps** requires skills and technological capability because relatively low level of localisation could be due to the prevailing technological gaps. In certain cases, for example, the level of localisation for certain inputs is low even for a country such as China which has had a long experience in the sector. In this case, it is likely that India too would not easily have the technological ability to locally produce the product in question. In such a situation, high tariffs would only increase the costs of production and reduce competitiveness.

Business reasons are relevant because a certain minimum domestic demand is required for the domestic investor to produce the relevant input at a commercially profitable scale. If domestic demand falls short of a commercially viable scale, then tariff would not promote a high level of localisation. Instead, producing the item below a commercially profitable scale will result in a rise in cost, lower competitiveness, and a reduction in potential exports, which in turn would likely reduce domestic production or would make it further uneconomic.

Scale is key. Scale needs exports. Exports need Competitiveness via low tariffs.

An increase in the domestic scale of production is key to addressing both the above issues. Ipso facto it raises the scale of domestic demand for inputs and creates a better business case for investment in the domestic production of components and sub-assemblies. The supporting systems that are established for working with a larger scale of production also creates the externalities and momentum for additional training and upgrading skills. Higher scale of production for mobile phones requires additional exports, which in turn need policies such as reduced tariffs for improving competitiveness.

4.1.2 Did Localisation in India result from Tariff reduction

While sub-assemblies or modules have been localised in India, components of these sub-assemblies are still imported. Indian imports of modules or sub-assemblies **are only 37% of the mobile value chain, that of components is 63%.**[30] Table 4.1 shows the levels of localisation of the different levels of sub-assemblies and the tariff increase in percentage points between 2016 and 2021. So, if tariffs in 2016 on PCBA for example were 0, it would be 22% in 2021 for 22 percentage point increase. Tariff changes in 2022 were minimal though some component tariffs, especially those of lens were brought down to zero.

Table 4.1. Localisation and Tariff increase in the Mobile Component Sector

Sr. no	Description	Localization	Tariff increase in percentage points between 2016-2021
1	PCBA	96%	22
2	Display Assembly	25%	11
3	Camera module	25%	11
4	Mechanics	20%	6.2
5	Battery Pack	95%	11.7
6	Charger Adapter	95%	11.7
7	Connectors	20%	11
8	Die Cut Parts	15%	6.2
9	Mic and receiver	2%	6.2
10	Vibration Motor	0%	11
12	USB Cable	80%	8.8
13	Wired Headset	60%	11.7

Source: ICEA

At first glance there appears to be little effect of tariffs on Localisation of sub-assemblies. This implies that higher tariffs need not lead to localisation. For example, some of the highest tariff increases were in PCBA and Camera Modules. However, while PCBA's have been 96% localised, camera modules show only 25% localisation. The reason for this could be, that while the cost effects due to tariffs on components of PCBA was about 0.2%, that for camera modules varied between 2-2.5%. Hence cost effects of tariffs in the case of camera modules may have been a hindrance to GVCs locating in India.

Table 4.2 shows the evolution of tariffs on mobile phone sub-assemblies. It shows that apart from mobile handsets tariffs for chargers and Battery Packs have also increased to 22%. However, localisation of these products is high because of domestic manufacturing capability and low intensity of technology. For many other products which have had high tariffs for over four years such as die cut parts or mechanics localisation is below 25%. All this evidence points to the fact that tariffs may not encourage localisation.

[30] ICEA

Table 4.2. Evolution of Tariff Rates of Sub-Assemblies

Description	Old HS Code in India	New HS Code in India	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Mobile handsets	851712	85171300, 85171400	0	10 15	22.0	22.0	22.0	22.0	22
Charger/ Adapter	85044030	85044030 85044090	10.3	10.3	16.5	16.5	16.5	22.0	22
Battery Pack*	8507 60 00 3920 99 99	85076000	10.3	10.3	22.0	22.0	22.0	22.0	16.50
Wired Headset	8518 30 00	85183000, 85183020	10.3	10.3	16.5	16.5	16.5	16.50	22
Mechanics*	7318 15 00 7326 90 99 8538 90 00	73181500, 73269099, 39209999	10.3	10.3	16.5	16.5	16.5	16.5	16.5
Die Cut Parts*	3926 90 99 3926 90 91 8504 90 90	3926 90 99 3926 90 91 85177990	10.3	10.3	16.5	16.5	16.5	16.5	16.5
Microphone and Receiver*	8518 10 00 8518 29 00 8518 40 00	8518 2990 8517 7990	10.3	10.3	16.5	16.5	16.5	16.5	16.50
USB Cable*	854419 854442 854449	85444299, 85369090, 85444999	7.725	7.725	16.5	16.5	16.5	16.5	16.50
Printed Circuit Board Assembly (PCBA)	8517 70 10	85177910	0	0	11.0	11.0	11.0	22	22
Camera Module*	8517 70 90, 8525 80 20, 8525 80 90, 8529 90 90	8525 8900 8517 7990, 8529 9090	0, 10, 10.3, 10.3	0	11.0	11.0	11.0	11	11
Connectors	8517 70 90	8517 79 90	0	0	11.0	11.0	11.0	11	11

Description	Old HS Code in India	New HS Code in India	2016-17	2017-18	2018-19	2019-20	2020-21	2021-22	2022-23
Display Assembly	8517 70 90	8524 1120 / 8524 1220 / 8524 1920 / 8524 9120 / 8524 9220 / 8524 9920/ 8517 7990	0	0	0	0	11.0	11.0	11
Touch Panel/ Cover Glass Assembly	8517 70 90	8517 79 90	0	0	0	0	11.0	11.0	11
Vibrator Motor/ Ringer	8517 70 90	8517 7990	0	0	0	0	11.0	11.0	11
Fingerprint sensors	8517 70 90	8517 79 90	0	0	15.0	16.5	16.5	16.5	16.5

Source: Government of India and ICEA

Hence, if tariffs are imposed to promote local industries and not for revenue purposes, this outcome is not supported by empirical evidence from India. The important policy objective should be to build scale of production which will draw in suppliers and lead to localisation. To build scale of production integrating in GVCs is essential. This requires low tariffs on components and sub-assemblies currently not being built in India or not at an appropriate scale.

The government launched the PLI scheme in March 2020 to encourage manufacturing of smartphones and some sub-assemblies and more importantly to create jobs. As of November 2022, the scheme has helped the development of 62,000 jobs as of March 2023, according to data from the Ministry of Electronics and IT. The levels of localisation shown above are a direct consequence of the PLI scheme and existing domestic capabilities.

India is an attractive destination for investment in manufacturing electronics primarily due to the wealth of **low-cost labour** and government incentives through the PLI initiative. However, the lack of formal training – only around three percent of the workforce have formal training of any kind and widespread female unemployment due to social factors, mobility issues, and health challenges may deter the expansion of electronics.

Other nations, particularly in the ASEAN region, offer attractive alternative bases for the production of electronics and hardware. Vietnam offers many of the same benefits that manufacturing in India does. With a population of nearly 100 million people, Vietnam has an abundant and cheap labour force. Further the added benefit of locating to Vietnam are the low tariffs on components. Because of Vietnam's near 0 tariffs on components on account of its FTAs especially with China the costs are lower by around 8% making it an attractive investment destination.

4.2 Comparing India and China's Localisation with their tariffs

As was shown in Chapter 3, India's competitiveness due to tariffs alone vis-à-vis China was to the tune of 8-9% in the production of smartphones and its sub-assemblies. However, China's localisation is much greater than India's despite its lower tariffs. Further over the last five years India's tariffs on sub-assemblies, parts and components have been rising while that of China has been falling.

Table 4.3 shows a comparison of Indian and Chinese levels of Localisation for the different sub-assemblies of the mobile phone. The figures in the second column indicate when localisation began in India. China has achieved much higher levels of localisation despite the fact that tariffs have been falling consistently in China for most of these sub-assemblies. Even if MFN tariffs, for example for battery packs are higher than India's with 100% localisation there is little effect of tariffs on the cost of production. Further as pointed earlier China's production especially for exports takes place in bonded export zones where all inputs pay Zero tariffs. The cost of production is therefore kept low. **Hence tariff walls were not used by China to achieve higher levels of localisation.** It was low tariffs on components and sub-assemblies, incentives and scale of operation that led to the production of sub-assemblies. Hence for India as well policies for indigenisation should focus on expanding the scale of production rather than raising tariffs. The latter can result in inefficient import substitution but not in export promotion.

Table 4.3. Indian and Chinese Localisation of Sub-Assemblies

Sr. no	Description	India	China
1	PCBA	96%	100%
2	Display Assembly	25%	75%
3	Camera module	25%	95%
4	Mechanics	20%	100%
5	Battery Pack	95%	100%
6	Charger Adapter	95%	100%
8	Connectors	5%	100%
9	Die Cut Parts	15%	100%
12	Gift Box	100%	100%
13	USB Cable	80%	100%
14	Wired Headset	60%	100%
15	Active	0%	20%
16	Passive	0%	60%
17	Memory and Storage	0%	20%

Source: ICEA

4.3 Conclusion

Export promotion requires competitive and large-scale production. It is important to use GVCs to become competitive in the market place. Import restrictions such as tariffs make the final product in this case smartphones uncompetitive in international markets. The focus has to be on building scale which will require assembling final products and sub-assemblies on a large scale. Only scale economies for the final product will generate a demand for sub-assemblies and components. Tariffs at early stages of production can impede competitiveness as was shown in Chapter 3. Hence from import substitution the focus has to shift to building scale for exports or export promotion activities.

05

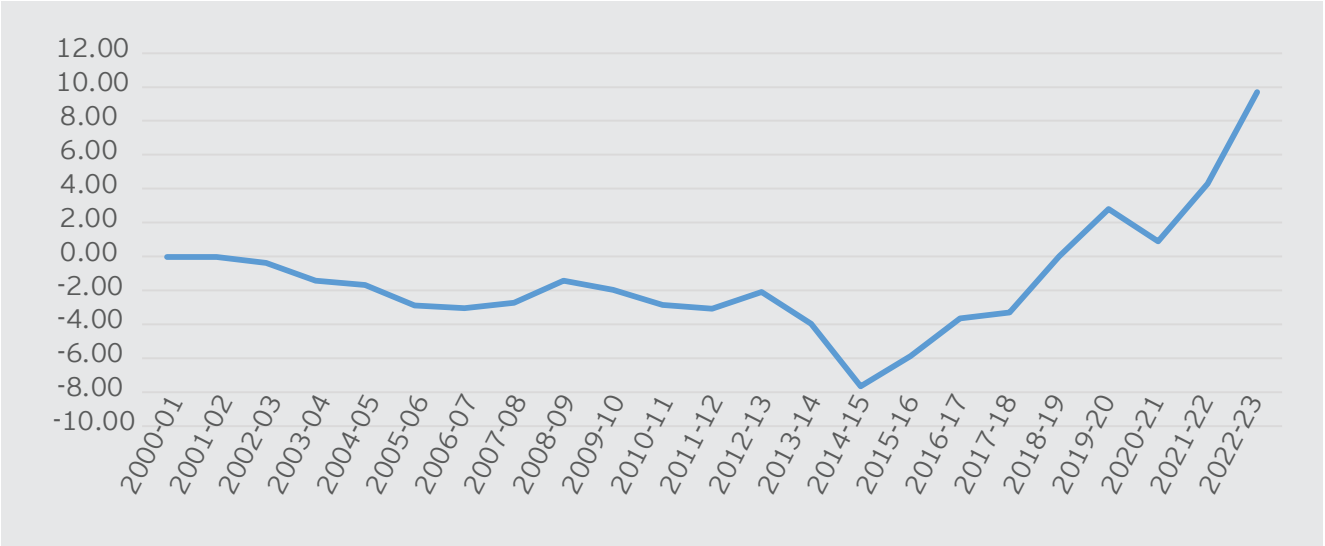
Conclusions and Recommendations for Union Budget 2024-25

5.1 Conclusions

In the early part of the last decade, domestic production of the Indian mobile phone industry fell sharply. With an increase in domestic demand, there was a rapid rise in imports reaching a historically high level by 2014-15. In 2008-09, India emerged as a significant exporter of mobile phones in the world, but its imports exceeded the level of exports (see Figure 5.1 below). Further, India lost its export prominence within a few years. Both domestic production and exports plummeted by the year 2014-15 as Nokia stopped its production in India

The Government emphasised an import substitution approach in 2014-15, focused on meeting domestic demand. With a sustained increase in production with the help of supportive policies, including the PLI, India now has entered a phase when the growth of the mobile phone sector depends not on domestic demand but on demand in the global market. Similarly, now for the first time in history, India's exports of mobile phones are larger than imports of mobile phones (Figure 5.1).

Figure 5.1. India: Export Minus Imports of Mobile Phones, 2000-01 to 2022-23



Source: ICEA

Thus, global competitiveness of the sector is now a key factor determining the growth potential of the industry. In this context, it is important to examine and lower tariffs on inputs, to reduce costs and improve competitiveness and export opportunities.

This report has analysed the competitiveness effects of tariffs on inputs for smartphones, namely the sub-assemblies and components of India in comparison to Vietnam and China. The tariff comparison with Vietnam has taken account of the fact that about 80% of Vietnam's imports come from countries with which it has free trade agreements (FTA). Therefore, the comparison is conducted at weighted average tariff levels for both India and Vietnam, taking account of the import shares at FTA tariffs and MFN tariffs.

The comparison with China takes account of two important operational conditions created by Chinese export policies. China's Bonded zones have tariff free treatment for inputs. A very large portion of smartphone production in China takes place in Bonded zones, and the relevant tariff for

that production (and exports) is Zero. As a result, tariffs on imported inputs are relevant only for the exports of mobile phones produced in the domestic geographical areas which are not covered by Bonded zones. Hence calculations of tariff effects have been conducted at two levels: One for most favoured nation (MFN) tariff and another for Zero tariffs in bonded zones.

Tariff Comparison: India has the highest average MFN tariff compared to the competing economies such as China, Malaysia, Mexico, Thailand and Vietnam. Further, China and Vietnam have many more lines with zero tariffs, showing the impact of ITA and the importance they give to inputs in the global supply chain, easier procedures and lower costs due to zero tariffs.

Indian MFN tariffs are higher than those of China for 85% of the non-zero tariff lines of India. An important feature of the tariff comparison with China is that a large portion (up to about 80%) of China's exported smartphones are produced in Bonded zones which provide duty-free treatment for imported inputs.

The comparison of India and Vietnam shows that **Vietnam's tariffs are lower than those of India for 100% of the non-zero tariff lines of India.** Furthermore, 97% of the tariff lines of Vietnam have weighted average tariffs within the range of zero to 5%. In contrast, only 36% of India's tariff lines have a weighted average tariff between zero and 5%.

Impact of tariffs of costs: India's higher tariffs on inputs (components and sub-assemblies) cumulate to a substantive amount accounting for over 8% increase in Bill of Materials (BOM) cost vis a vis Vietnam as well as China. In fact, the cost difference goes up to over 10% with respect to China where the export of smartphones largely occurs from bonded zones. Even when adjusted for localisation, Indian tariffs increase cost of BoM by nearly 6%.

The differences in the cost of production due to high Indian tariffs makes India's participation in global value chains (GVC) more difficult than its South-east Asian counterparts. India's higher tariffs thus also delay large scale of production, which in turn inhibits the growth of smartphone eco-system and localisation.

A reduction in Indian tariffs on inputs in the current phase when India's domestic production exceeds domestic demand, will improve competitiveness, and increase exports and scale of production, thus creating conditions for a stronger domestic eco-system and further growth.

The analysis in the Report also shows several different types of effects of tariffs on inputs. One is the knock-on impact of tariffs on components that go into sub-assemblies which in turn are put together to produce the mobile phone. Tariffs on inputs at each stage of production, raise costs for the next stage of production to the tune of 2% of BoM. In addition to the input tariffs, sub-assemblies are themselves subject to tariffs raising the costs by 6-8% . This leads to a knock-on or cumulative impact of tariffs on costs of the mobile phone. (See Chapter 3).

Another important aspect is linked to the relatively frequent technological changes in the mobile phone sector. This leads to a change in the technological content of important components, making it difficult to increase their localisation. Higher tariffs on such components essentially adds to costs, and do not substantially increase their local production.[31] These "top-of-the-line" components

[31] This is also because an increase in tariffs results in the domestic suppliers raising their process close to imported items, both because the domestic cost of production is higher and the domestic producers seek a higher profit margin in a protected market.

are important for building export competitiveness of mobile phones. Further, there are some components which even countries such as China that have had considerable lead time in producing mobile phones, have not been able to localise. (See Chapter 4). Thus, like China and Vietnam, it is important to keep tariffs on the important inputs at zero.

Localisation: This report has examined the growth of localisation of inputs in India. This depends on a combination of factors, including facilitation policies, incentives such as PLI, availability of components at low cost, and lower labour and logistics costs. Based on the information of tariff changes and extent of localisation, the report shows that high tariffs of India may have had little or at best random rather than systemic effects on localisation. In any case, tariffs provide a protected market only for production that meets domestic demand, and not export markets. They reduce competitiveness and export potential due to higher domestic costs. Even this potentially positive impact of tariffs on localisation is reduced on account of technological and business (scale) related shortcomings as discussed in Chapter 4.

It is also important to note that all the 1,600-2,000 odd components of a mobile phone cannot be built in India. Hence, India must have a policy of rationalisation of tariffs both because of the impact of tariffs on costs as well as the technological inability of substantially producing many of the inputs in India. In addition to the technological factors, there are also commercial or business-related factors which affect the possibility of localisation of inputs. These factors are connected to the scale of production in India.

The suppliers of inputs, both domestic and global, raise their prices in protected markets. The final price in the domestic market depends on:

1. The level of tariff.
2. The extent of price increase by the global supplier.
3. The extent of rent seeking and price increase by domestic suppliers.

The extent of price increase for imported inputs for exports depends on:

1. The price charged by global suppliers.
2. The negotiating power of the purchasers of inputs vis a vis the global suppliers.

Inputs procured domestically from manufacturers carry a margin due to price protection that import tariff enables for them. This results in a globally inefficient pricing of inputs especially for export production of smartphones. Further, this also leads to price margin topping up of inputs by global suppliers considering the comparative price of inputs in the domestic markets (which is tariff protected). This price of inputs from domestic suppliers or global suppliers acts as an inefficient floor price of inputs, rendering the export pricing uncompetitive vis-a-vis competing manufacturing destinations especially China and Vietnam. Since the scale of production in India is still small compared with manufacturers in China or Vietnam, the global input suppliers have a strong bargaining position because of the comparatively lower value of smartphone production in India. As a result, they tend to offer higher prices of inputs.

5.2 Budget Recommendations

It is important to bear in mind that a mobile phone is built by assembling the sub-assemblies or modules which in turn are built by the assembly of the components of a module. Only some components and some sub-assemblies are localised. There needs to be a threshold level of production of sub-assemblies and components in India so that the demand from a growing mobile phone assembly process can be met. So, for example, if 60% or more of the sub-assembly or component is not localised tariffs could be kept at zero. Further, as technologies change inputs would change and there may be a lag in the catching up process for India. Maintaining competitiveness would also require that the best available inputs be used. Hence, even if a sub-assembly is completely localised there will be demand for imports when technology changes. Thus, the tariff policy should take account of both technological factors and scale-related factors.

In view of these aspects and taking account of the knock-on impact of tariffs, **a first step could be to reduce tariffs on all components of the key sub-assemblies to zero. Secondly, tariffs on those sub-assemblies which are not significantly localised should also be reduced.** Threshold levels for important inputs could be determined by Government and industry based on an objective evaluation and discussion. That discussion may indicate that, for example, if less than 60% of the sub-assembly or components can be procured locally, tariffs would need to be liberalised. Likewise, tariffs should not lead to the locking-in of technologies. The important issue of technological development should be integrated as a part of the consideration of the tariff policy. Thus, for example, in the design of a phone if key inputs are needed at an experimental stage, then they should enter duty free. Importantly, there should be a rethink on using tariffs to promote localisation, as empirical evidence suggests that localisation is influenced by other factors and not necessarily tariffs. Finally, in this phase when growth of the mobile phone sector depends on getting an increasing portion of the global market, competitiveness is the key to growth of exports and scale of production. **In that regard, a change in India's tariff regime for the mobile phone sector is of paramount importance.**

Specifically:

1. The level of tariff.
2. The extent of price increase by the global supplier.
3. The extent of rent seeking and price increase by domestic suppliers.

The extent of price increase for imported inputs for exports depends on:

1. The price charged by global suppliers.
2. The negotiating power of the purchasers of inputs vis a vis the global suppliers.

Table 5.1 Glide Path for Tariffs on Inputs

Sr. No.	Description	HSN	Existing	Proposed
			2023-24	2024-25
A. Finished Goods				
1	Mobile Phone	85171300 / 85171400	20	15
B. Duty Reduction From 20%				
2	Charger/ Adapter	85044030 / 85044090	20	15
3	Printed Circuit Board Assembly (PCBA)	85177910	20	15
C. Duty Reduction From 15%				
4	Others	85177990	15	10
5	Mechanics	8517 7990 / 73269099 / 73181500	15	10
6	Inputs of Mechanics	Any Chapter	15	0
7	Mic and receiver and Speaker	85177990 / 85182990	15	10
D. Duty Reduction From 5%				
8	Cell	85076000	5	0
E. Duty Reduction From 2.5%				
9	Ferrite inductor	85045090	2.5	0
10	Other parts of Battery charger/Adapter	Any Chapter	2.5	0
11	Parts of PCBA	Any Chapter	2.5	0
12	Parts of Camera Module	Any Chapter	2.5	0
13	Parts of Connector	Any Chapter	2.5	0

Source: ICEA

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