WPS No. EC-25-79

INDIAN INSTITUTE OF FOREIGN TRADE

WORKING PAPER

Navigating US Reciprocal Tariffs: Options For India

Sunitha Raju

Charulika Sharma

Ninad Shah

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Printed and published by
Indian Institute of Foreign Trade
Delhi Centre: IIFT Bhawan, B-21, Qutab Institutional Area, New Delhi – 110016
Kolkata Centre: 1583 Madurdaha, Chowbagha Road,Ward No 108, Borough XII, Kolkata 700107
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Navigating US Reciprocal Tariffs: Options For India

Sunitha Raju[1], Charulika Sharma[2] and Ninad Shah[3]

ABSTRACT

The stacking of US tariffs, i.e., MFN +10% Baseline tariff (Reciprocal)+ 50% Section 232 for steel and aluminium derivatives implies varying tariff costs across export products. Textiles & Apparels, Iron &Steel and Vehicles face significantly higher tariff than other products exported by India. We analyse the costs of tariffs in terms of *Direct* and *Indirect risks* wherein demand composition of exports and input sourcing issues are defined. Given India's limited presence in the global markets, the relatively high share of India's exports of Final goods to US across product categories resulted in high dependence on US market. The decrease in India's export share of intermediates when seen against the significant increase in US's world imports suggests that India has not positioned as an input supplier. Sourcing of inputs, both foreign and domestic underline shifting of tariff cost incidence on India. Given the critical role of upstream industries, any reduction in exports will lead to wide sectoral effects. Therefore, India should strategically use FTAs to safeguard its position in input sourcing and expand product base to diversify global markets. For mitigating tariff increase, India should press for concessions on US sourced inputs as being done for Canda and Mexico. For expanding the exports of intermediate goods to the US, India should explore avenues for technology tie ups and open channels for enhanced business services trade with US.

Keyword: Value-added, India-US Trade, Reciprocal Tariffs, Trade Policy, Bilateral Trade, Export Dependency

[1] Professor, Indian Institute of Foreign Trade, New Delhi. sraju@iift.edu
[2] Ph.D. Scholar, Indian Institute of Foreign Trade, New Delhi. charulika_phd2022@iift.edu
[3] Research Associate, Indian Institute of Foreign Trade, New Delhi. ninadshah@iift.edu

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Acknowledgement s/Disclaimers

The arguments are authors' personal views and do not reflect those of IIFT.

Navigating US Reciprocal Tariffs: Options For India

1. Introduction

The "Liberation day tariffs" announced by the US on April 2, 2025 include a 10% baseline tariff on all imports and a country-specific reciprocal tariff adjusted against the observed trade surplus with the US against some exceptions. In the case of India, this reciprocal tariff was set at 26%, which is currently paused for 90 days to enable negotiations on trade agreement. The stated objectives of these tariffs are : reducing trade deficit, tariff revenue to set against income tax cuts, manufacture renaissance and increasing manufacturing jobs.

With the objective of reducing trade deficit with partner countries, the calculation of the Reciprocal tariff that varies across countries, is based on the following formula:

$$\Delta\tau_i = \frac{\chi_i - m_i}{\varepsilon * \varphi * m_i}$$

where $\Delta\tau_i$ reflects the change in the tariff rate of country i, $\varepsilon < 0$ represents the price elasticity of import demand, $\varphi > 0$ represents the elasticity of import prices with respect to tariffs or passthrough from tariffs to import price, $m_i > 0$ represents total imports from country i, and $\chi_i > 0$ represents total exports. ε, was set at 4 and, φ, is 0.25. Assuming the offsetting exchange rate and general equilibrium effects to be small, the Reciprocal tariff will result in a bilateral trade balance of zero (USTR, 2025).

From the US perspective, the implication of assuming high elasticity($\varepsilon = 4$) is that the more than proportionate fall in import demand will lead to fall in world prices that entails exporters reducing prices thereby benefitting the US with lower import prices. It is expected that the exporters will reduce the price as the options for diverting the supply are limited. For this reason, the tariff pass through is kept low at $\varphi = 0.25$.

This framework was contested by many both on parameter value and the possibility of retaliation. Empirical studies on 2018 trade war between US-China has shown that the pass through is closer to one implying high price effect of tariffs mainly borne by US consumers (Amiti et al., 2019; Fajgelbaum & Khandelwal, 2020). The explanation for this unexpected result is because China was able to shift markets without reducing the export prices (Chang et al., 2020), rerouting through Vietnam (Iyoha et al., 2024) and stockpiling inventories. It was only in the case of steel that export prices were reduced following tariff change (Amiti et al., 2020). Even on the demand elasticity (ε) it has been argued that the tariff effect on demand

was low as retailers have absorbed cost increases by reducing their margins or maintaining high inventories leading to minimal increase in prices to the consumer (Cavallo et al., 2021).

Given the possibility of these diverse outcomes, the channels of tariff effects for India would analyse: (i) India's dependency on the US market; (ii) India's dependency on foreign suppliers; and (iiii) Market consolidation vs Market diversification conundrum. Together, these issues provide the framework for assessing the direct and indirect risks of reciprocal tariffs and India's possible policy responses.

2. India's Dependency on US Market

India's dependency on US market is analysed from export and import perspectives wherein major exports/imports are identified based on HS 2 Digit, HS 4 Digit and HS 6 Digit product categories[4]. Of the 223 products (HS 6 Digit) identified as major exports to US, 47 products have a high dependency, with share ranging between 46% to 98%. These exports amounted to US$ 51 billion in 2024 and account for a share of 63% in the total exports to the US in 2024 (Table 1). In terms of export value, the important products are Electricals (HS85), Pearls &precious metals (HS71), Pharmaceuticals (HS30) and Machinery (HS 84). Except for HS30, all the other product groups have high dependency on US market. Amongst the identified product groups, large number of products (at HS 6 Digit) with high dependency on US market are concentrated in Machinery (HS84), Iron &Steel (HS73), Textiles & Apparel (HS 61,63) and Chemicals (HS 29). For these products, India's main competitors in the US market are China, Mexico, Vietnam, Japan each having a high market share in the US. For some of the products, China has a market share ranging from 19% to 92% (Table 1).

The average tariff imposed by US on these products ranges between 0-8% except for Textiles and Apparels (HS61-63) where the tariff ranges between 3-28%. As the Baseline tariff of 10% will be stacked on the existing tariffs, the tariff incidence will be even higher if Reciprocal tariff is implemented. Further, Section 232 tariffs on Steel & Aluminium will apply to Iron and Steel (HS 73) at 25% and Vehicles (HS 87) at 25% on the steel content. These developments on tariff incidence have two important implications: *one*, Textiles & Apparels (HS 61-63), Iron &Steel (HS73) and Vehicles (HS 87) face significantly higher tariff than other products exported by India; *two*, with China's exports to US declining under the on-going trade war, the possibility of India capturing this market share would require significant increase in

[4] Major exports from India to the US at 2-digit HS codes were identified by taking average export value for the triennium ending 2024. Together, their contribution was 72% of total exports. For each identified 2-digit HS chapter, major HS 4 digit products were identified by taking average export value for the triennium ending 2024. Similar method was followed for identifying HS6 digit products. A total of 223 6-digit products were selected , accounting for 63.09% share of India's total exports to US in 2024.

competitiveness. This is because, tariff differential between India and other competing countries is only one of the determinants and the other being production cost differentials. Therefore, to sustain the current market share, the cost advantage for India has to increase significantly. Alternatively, India can explore to diversify markets or increase differentiated products to mitigate the tariff incidence.

Table 1: India's Export Dependency and Competitors in US Market

HS 2-digit Description	HS 4-digit	HS 6-digit	Export Dependency (2024) (%)	India's share in US imports (2024)	Competitors in US market (2024)
Electrical machinery and equipment and parts thereof (HS 85)	8541	854143	97.78	India (10.54%)	Vietnam (36.40%), Thailand (20.33%), Malaysia (13.56%)
	8536	853641	66.77	India (3.96%)	China (24.12%), Mexico (17.41%), Japan (13.74%)
	8501	850140	78.43	India (5.21%)	Mexico (47.68%), China (18.45%), Vietnam (13.82%)
Precious or semi-precious stones and metals (HS 71)	7104	710491	54.14	India (92.37%)	Thailand (2.62%), Israel (1.55%), Belgium (1.02%)
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	8483	848340	62.17	India (17.25%)	Italy (13.57%), Germany (12.28%), Japan (8.55%)
	8411	841191	79.75	India (1.04%)	France (22.16%), Japan (10.90%), Mexico (8.74%)
	8431	843120	68.01	India (6.08%)	China (26.09%), Mexico (21.18%), Canada (10.86%)
	8427	842720	63.77	India (1.37%)	United Kingdom (20.74%), Japan (19.19%), Mexico (15.36%)
		842710	64.17	India (3.27%)	China (19.23%), Mexico (18.83%), Canada (14.55%)
	8467	846721	45.93	India (0.08%)	China (58.02%), Mexico (17.13%), Vietnam (16.08%)
		846799	66.07	India (2.32%)	China (27.21%), Germany (10.29%), Other Asia, nes (9.62%)
Articles of iron or steel. (HS 73)	7308	730890	57.96	India (7.57%)	Mexico (22.03%), Canada (16.83%), China (8.96%)
	7307	730791	69.25	India (41.56%)	China (14.64%), Rep. of Korea (10.88%), Italy (8.27%)
		730711	59.16	India (24.82%)	China (29.20%), Japan (8.50%), Rep. of Korea (6.45%)
		730792	78.21	India (12.78%)	Mexico (23.61%), Colombia (22.75%), China (20.39%)
		730719	76.78	India (21.95%)	China (36.78%), Thailand (11.08%), Mexico (7.76%)
	7306	730640	52.41	India (16.36%)	Canada (22.00%), Other Asia, nes (19.49%),Rep. of Korea (12.64%)
	7323	732391	67.87	India (1.32%)	China (92.03%), Colombia (3.05%), Vietnam (1.44%)
	7317	731700	88.92	India (8.40%)	China (23.77%), Thailand (8.97%), Oman (6.73%)
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)	6302	630260	61.6	India (40.61%)	Pakistan (24.31%), China (19.68%), Turkiye (6.97%)
		630231	72.96	India (59.37%)	Pakistan (17.73%), China (12.02%), Bahrain (3.17%)
		630221	85.83	India (46.70%)	Pakistan (33.59%), China (6.93%), Turkiye (3.93%)
	6304	630419	66.74	India (37.65%)	China (33.72%), Pakistan (18.23%), Portugal (6.78%)
		630499	59.54	India (35.70%)	China (19.02%), United Kingdom (11.94%), Italy (5.00%)
	6301	630130	75.34	India (44.16%)	Pakistan (20.94%), China (16.95%), Portugal (8.72%)
		630190	78.42	India (10.44%)	China (81.76%), Other Asia, nes (0.87%), Italy (0.86%)
	6303	630399	61.7	India (34.10%)	China (27.32%), Vietnam (13.81%), Mexico (5.73%)
		630391	50.41	India (47.48%)	Pakistan (23.30%), China (20.56%), Turkiye (2.31%)
Vehicles other than railway or tramway rolling-stock, and parts and accessories (HS 87)	8701	870194	66.99	India (7.36%)	Germany (50.55%), Mexico (10.04%), United Kingdom (8.85%)
Organic chemicals (HS 29)	2914	291450	53.29	India (24.29%)	China (53.27%), Mexico (8.67%), Germany (6.73%)
	2922	292239	63.67	India (58.33%)	Germany (15.31%), China (14.22%), Italy (9.72%)
	2918	291813	66.16	India (0.99%)	Spain (62.15%), Malaysia (16.25%), Belgium (9.67%)
		291815	46.27	India (13.82%)	Israel (39.28%), Germany (13.18%), China (10.55%)

	2903	290345	55.77	India (49.14%)	Mexico (23.73%), United Kingdom (14.06%), China (11.73%)
		290344	91.25	India (59.08%)	China (38.45%), Mexico (2.44%), Canada (0.03%)
		290342	62.6	India (46.23%)	United Arab Emirates (49.2%), China (4.5%), Canada (0.04%)
	2917	291739	46.59	India (17.96%)	Rep. of Korea (20.26%), China (19.41%), Spain (12.88%)
	2905	290545	67.17	India (9.05%)	Indonesia (49.50%), Malaysia (21.54%), Germany (11.19%)
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)	6203	620332	64.29	India (5.77%)	China (28.15%), Italy (18.31%), Viet Nam (15.64%)
		620339	46.4	India (7.31%)	Italy (35.25%), China (14.84%), Viet Nam (14.66%)
	6212	621210	48.31	India (1.31%)	China (27.34%), Viet Nam (24.98%), Indonesia (12.81%)
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	6107	610712	78.52	India (11.53%)	China (34.47%), Viet Nam (25.79%), Sri Lanka (7.63%)
		610719	58.41	India (3.72%)	China (53.35%), Viet Nam (29.35%), Bangladesh (4.62%)
	6114	611420	53.43	India (7.66%)	China (22.76%), Viet Nam (20.42%), Indonesia (11.66%)
		611490	55.04	India (1.67%)	China (87.60%), Italy (3.60%), Viet Nam (1.91%)
	6108	610821	59.13	India (9.24%)	Bangladesh (21.04%), Thailand (14.22%), Sri Lanka (13.60%)
	6115	611596	94.43	India (2.47%)	China (71.46%), El Salvador (7.05%), Viet Nam (5.94%)

Source: Authors' calculations using data from ITC TradeMap and UN Comtrade

Note: $Export\ Dependency = \frac{India's\ Exports\ to\ US}{India's\ Exports\ to\ World}$

From the import perspective, India's dependency on the US market is limited, both in number and value. There are 106 major import products (at HS 6 Digit) largely accounted by Machinery (HS 84) and Electricals (HS85). Amongst these, high import dependency (>50%) is evident for 4 products, namely, Semiconductor media (Other) (852380) and Diamonds (710239), Saturated Hydrocarbons and heir Hologeneted (290110) and Halogenated derivatives of hydrocarbons (290369). For the other products, the market share ranges between 0.05% to 36%. As most of these products are not in direct competition with India's exports, India can work strategically towards reducing the tariffs for products of US interest.

3. Direct and Indirect Risks of Tariffs on India's Exports

The stacking of US tariffs, i.e., MFN +10% Baseline tariff (Reciprocal)+ 50% Section 232 for steel and aluminium derivatives[5] imply varying tariff costs across export products. Given this tariff regime, we differentiate between **Direct** and **Indirect** risks. **Direct risks** arise when the import demand falls following a rise in tariffs. These costs of tariff will differ depending on whether the exports are used as final/consumer or intermediate use. This differentiation in demand composition is important as the price sensitivity of final goods is relatively higher than intermediate goods. As such, the tariff effects on final goods is through higher consumer prices while for intermediates it is through higher input cost for firms that has differential impact on domestic and export markets (Fajgelbaum & Khandelwal, 2022).

Indirect risks of tariffs operate through two channels, namely, *Production effect* and *Price effect.* When exports fall, the input suppliers (domestic and foreign) face reduced demand and therefore a fall in their output. This is particularly the case for the domestic upstream industries.

[5] Following the EO order 14289 in April 2025 and the guidance issued on 3 June 2025 introduced updates affecting Steel and Aluminium derivative products wherein Section 232 and Reciprocal tariffs apply proportionately to metal and non-metal content.

The foreign suppliers can mitigate this effect by diversifying their export markets. The *Price effect*, on the other hand, depends on the structure of the market faced by domestic and foreign suppliers. In a competitive market, the suppliers absorb the risks of falling demand through price cuts. But in an Oligopolistic framework, reduced demand can affect the output but not prices. We will be focussing on the *Production effect* in this analysis.

To capture these dimensions of tariff costs, Value-added data is used to provide insights into the sources of inputs used (both domestic and foreign) and the composition of intermediate inputs in terms of manufacturing and services at the sectoral level. These dimensions provide a new perspective to the India-US trade relationship by detailing the linkages of India's Domestic Value-added (DVA) with US's production, consumption and exports.

(i) India's Exposure to US Demand Conditions

For relating tariff costs to US demand conditions, two variables are defined: India's Domestic Value Added (DVA) in US's final demand and India's DVA in US's gross exports, both taken as a share of India's gross exports. These variables define the demand for India's exports in two market segments, namely, Final and Intermediate goods.

US's world imports of Final and Intermediate goods across product categories provides interesting insights. Between 2008 and 2020, imports of Final and Intermediate goods increased significantly for Electricals (HS 85), Machinery (HS 84), Vehicles (HS 87) and Textiles & Apparel (HS 61-63). For these products, India's share is low but increased marginally during the reference period. In the case of Inorganic chemicals (HS 29), US's world imports of Final and Intermediates decreased significantly while India's share has increased. The same is evident for Iron & Steel (HS73) Intermediates (Table 2). Seen against these trends, the share of Final goods in India's exports to US increased while the share of Intermediate goods has fallen across all product categories. This is particularly significant for Iron & Steel (HS 73) and Inorganic Chemicals (HS 29). This trend is also evident for other products but is muted (Table 3).

Table 2: US' Imports of Final and Intermediate Goods from India and World

HS 2-digit Description	TiVA Codes	US Imports of Final Goods				US Imports of Intermediate Goods			
		World (US$ billion)		India (%)		World (US$ billion)		India (%)	
		2008	2020	2008	2020	2008	2020	2008	2020
Electrical machinery and equipment and parts thereof (HS 85)	C26, C27, C28, C31T33	161.18	199.75	0.99	1.54	95.14	128.35	0.96	1.2
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with	C31T33	11.02	17.69	8.89	10.8	4.40	5.38	7.99	9.75

precious metal and articles thereof (HS 71)									
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	C27, C28, C30, C31T33	58.42	71.99	2.65	3.8	42.35	56.16	2.02	2.29
Articles of iron or steel. (HS 73)	C24, C25, C28, C31T33	37.07	51.26	5.35	7.93	135.57	103.65	2.35	2.6
Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof (HS 87)	C28	12.93	17.41	1.4	1.97	9.12	11.69	1.58	2.19
Organic chemicals (HS 29)	C19, C20	58.57	35.81	1.43	7	125.82	64.88	1.43	5.77
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	C13T15, C31T33	101.41	131.59	5.09	7.61	21.83	29.33	8.4	12.23
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)									
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)									

Source: Authors' calculations using OECD TiVA (2023) database.

Together these trends imply that in the products where US's imports are expanding, India has not made significant inroads both in Final and Intermediate goods (Table 2). Therefore, the relatively high share of India's exports of Final goods to US across product categories (Table 3) implies India's limited presence in the global markets of these product categories and thereby a high dependence on US market. In the case of India's exports of Intermediate goods, the declining share across product categories point to a shift from manufacturing to assembling. Considering the significant increase in US's imports of intermediates for HS 84, HS 85, HS 87 and HS 61-63 (Table 2), China's share is not only high in these product categories but also increased in 2020 despite the tariffs under Trump 1.0 (Table 4).

Table 3: Composition of India's Major Exports to US

HS 2-digit Description	TiVA Codes	India's Exports to US			
		Share of Intermediate Goods Exports in Gross Exports (%)		Share of Final Goods Exports in Gross Exports (%)	
		2008	2020	2008	2020
Electrical machinery and equipment and parts thereof (HS 85)	C26, C27, C28, C31T33	36.54 (19.15)	33.36 (20.72)	63.46 (24.79)	66.64 (33.25)
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof (HS 71)	C31T33	26.38 (32.14)	21.55 (27.92)	73.62 (42.08)	78.45 (51.95)
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	C27, C28, C30, C31T33	35.61 (18.59)	31.99 (19.02)	64.39 (21.69)	68 (20.3)
Articles of iron or steel. (HS 73)	C24, C25, C28, C31T33	61.7 (20.12)	39.83 (11.59)	38.3 (26.69)	60.17 (38.43)
Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof (HS 87)	C28	44.36 (15.84)	42.67 (18.55)	55.64 (14.57)	57.33 (20.03)
Organic chemicals (HS 29)	C19, C20	68.28 (6.76)	59.9 (8.55)	31.72 (10.77)	40.1 (14.8)
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	C13T15, C31T33	26.2 (19.2)	26.38 (23.11)	73.8 (31.91)	73.62 (40.65)
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)					
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)					

Source: Authors' calculation using OECD TiVA database
Note: Figures in parentheses show exports to US as a share of exports to the world.

HS 2-digit Description	TiVA Codes	Share of Gross Imports in Production (%)		Share of Intermediate Goods in Gross Imports (%)		Share of Final Goods in Gross Imports (%)	
		2008	2020	2008	2020	2008	2020
Electrical machinery and equipment and parts thereof (HS 85)	C26, C27, C28, C31T33	14.51	21.99	36.09	38.92	63.91	61.08
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof (HS 71)	C31T33	11.27	16.02	26.03	20.92	73.97	79.08
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	C27, C28, C30, C31T33	4.32	7.59	41.46	42.89	58.54	57.11
Articles of iron or steel. (HS 73)	C24, C25, C28, C31T33	3.72	4.32	72.00	57.40	28.00	42.60
Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof (HS 87)	C28	4.12	6.75	40.73	39.72	59.27	60.28
Organic chemicals (HS 29)	C19, C20	0.99	1.46	73.82	71.19	26.18	28.81
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	C13T15, C31T33	40.89	58.46	18.03	22.53	81.97	77.47
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)							
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)							

Table 4: Composition of US' Imports from China

Source: Authors' calculations using OECD TiVA (2023) database.

Therefore, if India has to position as an input supplier for the US especially in the expanding industries, India's contribution to US's exports needs to increase. However, India's DVA in US's gross exports is below 0.2% implying that India is an insignificant supplier of intermediate goods to US (Table 5). Thus, from the above analysis it is clear that US is an important market for intermediate goods and provides an opportunity for India to expand and consolidate its market share in this segment.

Table 5: India's DVA embodied in US' Final Demand and Gross Exports

HS 2-digit Description	TiVA Codes	DVA in Foreign Final Demand as a share of Gross Exports (%)		DVA in Foreign Exports as a share of Gross Exports (%)	
		2008	2020	2008	2020
Electrical machinery and equipment and parts thereof (HS 85)	C26, C27, C28, C31T33	7.87	10.20	0.17	0.16
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof (HS 71)	C31T33	9.71	13.95	0.13	0.14
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	C27, C28, C30, C31T33	7.01	8.24	0.10	0.09
Articles of iron or steel. (HS 73)	C24, C25, C28, C31T33	10.92	11.84	0.17	0.07
Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof (HS 87)	C28	7.34	9.47	0.16	0.15
Organic chemicals (HS 29)	C19, C20	5.61	6.29	0.06	0.05
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	C13T15, C31T33	9.17	13.70	0.19	0.18
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)					
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)					

Source: Authors' calculations using OECD TiVA (2023) database.
Note: Data for India's DVA in foreign gross exports to world is available in percentage terms, from which we derived the absolute values. Then, we obtained the DVA embodied in the US exports, by multiplying it with the share of India's intermediate goods exports to US in the world.

(ii) Analysis of India's Input Sourcing

Decomposing the *Production effect* of US's tariff on India, requires identifying input suppliers of products exported to US. The domestic and foreign input suppliers of goods are captured in DVA and FVA (Foreign value added) detailed in Table 6 which also provides the details of the supplying countries against each product category. The share of domestic suppliers ranges from 58% (for Organic Chemicals) to 82% (Textiles &Apparel) in 2020. Compared to 2008, this share increased marginally across all product categories except Textiles. Correspondingly, the share of foreign suppliers (or reliance on imports) ranges between 19% (for Textiles) to 43% (for Organic Chemicals) in 2020. In absolute values, however, FVA has more than doubled for all sectors between 2008 and 2020, which underlines India's growing import content of exports to US. For all the product categories, China is the largest source of imports. Interestingly, US is the second largest source of imports for HS 71, HS 84 and HS 61-63 with a share ranging from 8% to 18%. For the remaining products, the share of US as an input supplier ranges from 5.4%to 7.2%. In the context of Reciprocal tariffs, this would imply that US tariffs are indirectly taxing their suppliers. This becomes even more significant when the services FVA in gross exports is included.

Table 7 details the Domestic and Foreign services inputs for India's major exports to US. Between 2008 and 2020, across the product categories, total services in manufacturing increased by more than 5 percentage points for HS85, HS87, HS61-63, HS 73 and HS71. While the domestic services content increased for all product categories, foreign service content increased for HS61-63, HS85 and HS71. A closer look at the sourcing of foreign services shows that US has the highest share (14.8%) followed by Germany (6.6%), UK (6%) and China (5.7%)[6].

Table 6: Share of DVA and FVA in India's Major Goods Exports to US

HS 2-digit Description	TiVA Code	India-US (Goods Exports)				Sources of FVA (%)
		Share of DVA in Gross Exports (%)		Share of FVA in Gross Exports (%)		
		2008	2020	2008	2020	
Electrical machinery and equipment and parts thereof (HS 85)	C26, C27, C28, C31T33	69.31	71.40	30.69	28.60	China (44.36%), Singapore (9.04%), Korea (5.87%), Germany (5.81%), United States (5.44%)
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof (HS 71)	C31T33	67.27	67.92	32.73	32.08	China (27.38%), United States (17.72%)
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	C27, C28, C30, C31T33	68.15	71.56	31.85	28.44	China (31.28%), United States (12.06%)
Articles of iron or steel. (HS 73)	C24, C25, C28, C31T33	70.82	72.65	29.18	27.35	China (22.56%), Korea (15.51%), Japan (8.55%), United States (5.39%)
Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof (HS 87)	C28	72.72	78.25	27.28	21.75	China (31.33%), Germany (13.91%), Japan (9.49%)
Organic chemicals (HS 29)	C19, C20	56.62	57.56	43.38	42.44	China (21.80%), Saudi Arabia (10.94%), United States (7.19%)
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	C13T15, C31T33	82.11	81.22	17.89	18.78	China (43.59%), United States (8.40%)
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)						
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)						

Source: Authors' calculations using OECD TiVA (2023) database.
Note: 1) DVA= Domestic Value Added; FVA= Foreign Value Added

[6] To identify the top global suppliers of services we utilized the gross exports of services data. For our analysis, services within the business economy (covering ISIC sections G to N) is considered from each country to the rest of the world. Using the average figures for the period 2018 to 2020 we determined the top six exporting countries which together accounted for 42% of total global services exports.

2) Sources of FVA have been identified by considering top countries supplying intermediate goods to India, based on India's average intermediate imports during 2018-20.

Table 7: Domestic and Foreign Service Content: India to World

HS 2-digit Description	TIVA Code	India-World (Services)				Sources of Foreign Service Content in Gross Exports
		Share of Domestic services content in gross exports (%)		Share of Foreign services content in gross exports (%)		
		2008	2020	2008	2020	
Electrical machinery and equipment and parts thereof (HS 85)	C26, C27, C28, C31T33	14.14	20.49	11.39	12.21	US (14.77%), Germany (6.55%), UK (6.02%), China (5.72%), France (4.90%), Japan (4.06%)
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof (HS 71)	C31T33	13.40	16.20	13.70	14.80	
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	C27, C28, C30, C31T33	13.74	16.65	11.65	10.45	
Articles of iron or steel. (HS 73)	C24, C25, C28, C31T33	17.64	21.83	9.54	9.90	
Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof (HS 87)	C28	13.50	20.50	9.70	9.10	
Organic chemicals (HS 29)	C19, C20	10.88	12.44	10.57	10.49	
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	C13T15, C31T33	17.39	21.02	6.16	7.48	
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)						
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)						

Source: Authors' calculations using OECD TiVA (2023) database.
Note: Data for domestic and foreign service content is available as a share in gross exports for each TiVA codes. To arrive at absolute values, we multiplied them with India's total gross exports and then calculated share of domestic and foreign service content in gross exports for the identified chapters.

Given the high concentration of import sourcing of goods from China and services from US, India is susceptible to supply chain shocks especially when there is a deviation from multilateral trade rules. In the current context of Reciprocal tariff, adverse production effects of tariffs will be borne by India as the large input suppliers have the flexibility to substitute between the markets (Chang et.al, 2020).

The domestic input sourcing is detailed in Table 8 which decomposes the Direct and Indirect DVA in India's major exports to US. Across the products, the share of indirect DVA is significantly higher than Direct DVA thereby implying a critical role for upstream and downstream sectors. This is particularly the case for HS 85, HS 73, HS 29, HS 61-63. The domestic input supplying industries for these product groups are detailed in Table

HS 2-digit Description	TiVA Code	India-US					
		Share of Direct DVA in Gross Exports (%)		Share of Indirect DVA in Gross Exports (%)		Share of Reimported DVA in Gross Exports (%)	
		2008	2020	2008	2020	2008	2020
Electrical machinery and equipment and parts thereof (HS 85)	C26, C27, C28, C31T33	40.69	40.80	59.14	59.01	0.17	0.19
Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal and articles thereof (HS 71)	C31T33	35.03	43.29	64.73	56.46	0.23	0.25
Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof. (HS 84)	C27, C28, C30, C31T33	42.84	49.54	56.98	50.29	0.18	0.17
Articles of iron or steel. (HS 73)	C24, C25, C28, C31T33	39.75	38.50	60.11	61.33	0.14	0.17
Vehicles other than railway or tramway rolling-stock, and parts and accessories thereof (HS 87)	C28	47.31	46.80	52.56	53.07	0.13	0.14
Organic chemicals (HS 29)	C19, C20	35.81	37.02	63.89	62.67	0.29	0.31
Articles of apparel and clothing accessories, knitted or crocheted (HS 61)	C13T15, C31T33	35.77	43.80	64.15	56.08	0.08	0.12
Articles of apparel and clothing accessories, not knitted or crocheted (HS 62)							
Other made up textile articles; sets; worn clothing and worn textile articles; rags (HS 63)							

9 which identifies the upstream industries that can be adversely affected with tariff induced risks. Basic metals (C24) is the main input supplier for HS 84, HS 85, HS 73, HS 87. Chemical products (C20) and Coke Refined Petroleum products (C19) are the main input suppliers for HS 29 and HS 61-63 even while supplying to the other export product categories (Table 9). Thus, reduction in exports can have wide sectoral effects.

Table 8: Direct, Indirect and reimported DVA in India's Major Exports to US

Source: Authors' calculations using OECD TiVA (2023) database.

India's Major Export Sectors (HS Code)	Domestic Inputs Sourced (Millions $)	
	From Manufacturing Sector	**From Services Sector**
85	Basic Metals (C24) – 14481.84 (28.32%)	Administrative and support services (N) – 5548.98 (10.85%)
	Electrical equipment (C27) – 2770.56 (5.42%)	Electricity, gas, steam and air conditioning supply (D) – 4526.32 (8.85%)
	Chemical products (C20) – 2423.67 (4.74%)	Wholesale and retail trade; repair of motor vehicles (G) – 4157.25 (8.13%)
	Rubber and plastics products (C22) – 2186.77 (4.28%)	Financial and insurance activities (K) – 1217.72 (2.38%)
	Manufacturing nec (C31T33) – 1954.82 (3.82 %)	Land transport and transport via pipelines (H49) -1200.60 (2.35%)
71	Manufacturing nec (C31T33) – 1393.71 (21.39%)	Wholesale and retail trade; repair of motor vehicles (G) – 758.26 (11.64%)
	Basic Metals (C24) – 1083.70 (16.63%)	Land transport and transport via pipelines (H49) – 173.90 (2.67%)
	Chemical products (C20) – 852.08 (13.08%)	Financial and insurance activities (K) – 149.78 (2.28%)
	Products of wood (C16) – 477.06 (7.32%)	Electricity, gas, steam and air conditioning supply (D) – 46.80 (0.72%)
	Rubber and plastics products (C22) – 229.85 (3.53%)	Warehousing (H52) – 41.53 (0.64%)
84	Basic Metals (C24) – 15719.69 (32.21%)	Wholesale and retail trade; repair of motor vehicles (G) – 4274.55 (8.76%)
	Other transport equipment (C30) – 3051.71 (6.25%)	Electricity, gas, steam and air conditioning supply (D) – 3082.73 (6.32%)
	Rubber and plastics products (C22) – 2712.76 (5.56%)	Administrative and support services (N) – 1586.70 (3.25%)
	Chemical products (C20) – 2604.50 (5.34%)	Land transport and transport via pipelines (H49) – 1325.20 (2.72%)
	Manufacturing nec (C31T33) – 1989.16 (4.08%)	Construction (F) – 1145.25 (2.35%)
73	Basic Metals (C24) – 58961.57 (32.98%)	Wholesale and retail trade; repair of motor vehicles (G) – 17748.17 (9.93%)
	Petroleum products (C19) – 9368.62 (5.24%)	Land transport and transport via pipelines (H49) – 12542.36 (7.02%)
	Fabricated metal products (C25) – 6929.84 (3.88%)	Electricity, gas, steam and air conditioning supply (D) – 8480.79 (4.74%)
	Chemical products (C20) – 4374.70 (2.45%)	Construction (F) – 5217.99 (2.92%)
	Other non-metallic mineral products (C23) – 3497.07 (1.96%)	Administrative and support services (N) – 4342.44 (2.43%)
87	Basic Metals (C24) – 3533.77 (35.28%)	Wholesale and retail trade; repair of motor vehicles (G) – 973.05 (9.71%)
	Petroleum products (C19) – 501.35 (5.01%)	Administrative and support services (N) – 836.48 (8.35%)
	Machinery and equipment, nec (C28) – 484.74 (4.84%)	Electricity, gas, steam and air conditioning supply (D) – 804.08 (8.03%)
	Fabricated metal products (C25) – 433.90 (4.33%)	Land transport and transport via pipelines (H49) – 302.06 (3.02%)
	Rubber and plastics products (C22) – 373.56 (3.73%)	Financial and insurance activities (K) – 247.40 (2.47%)
29	Chemical products (C20) – 26829.58 (20.42%)	Wholesale and retail trade; repair of motor vehicles (G) – 14423.10 (10.98%)
	Petroleum products (C19) – 12165.73 (9.26%)	Land transport and transport via pipelines (H49) – 4852.18 (3.69%)
	Food products (C10T12) – 6276.63 (4.78%)	Financial and insurance activities (K) – 2688.21 (2.05%)
	Textile products (C13T15) – 4869.24 (3.71%)	Construction (F) – 1480.80 (1.13%)
	Pharmaceuticals (C21) – 3554.88 (2.71%)	Air transport (H51) – 1415.72 (1.08%)
61, 62, 63	Textile products (C13T15) – 28530.91 (26.44%)	Wholesale and retail trade; repair of motor vehicles (G) – 18489.49 (17.14%)
	Chemical products (C20) – 13177.12 (12.21%)	Land transport and transport via pipelines (H49) – 3791.20 (3.51%)
	Petroleum products (C19) – 4036.75 (3.74%)	Financial and insurance activities (K) – 3676.05 (3.41%)
	Rubber and plastics products (C22)– 3262.46 (3.02%)	Electricity, gas, steam and air conditioning supply

		(D) – 2832.46 (2.63%)
	Food products (C10T12) – 2283.19(2.12%)	Warehousing (H52) – 908.91 (0.84%)

Table 9: Contribution of top industries to input sources as a share of total domestic inputs

Source: Authors' calculations using OECD ICIO (2023) database.
Note: Values in parenthesis show share in total domestic inputs used by export sector (HS2 code)

4. Policy Options for India

The foregoing analysis has underlined India's susceptibility to tariff shocks due to high dependency on the US market. With limited market diversification for major exports, substitution between markets for mitigating risks is limited for India. As such, the direct and indirect costs associated with tariff/geopolitical shocks will have to be borne by India. Our analysis of the linkages between India's DVA and US's production, consumption and exports has underlined the following: (i) The share of exports of Intermediates declined; (ii) The contribution of India's DVA for US's exports is low at 0.2%; and (iii) India has limited presence in the products where US's imports are expanding. Together, these trends underline the need for a structural shift in the composition of India's exports towards Intermediate goods.

Sourcing of inputs, both domestic and foreign, is critical for sustaining export growth. India's dependence imports (FVA) for major exports averages around 30% across all product categories. China and the US are the major supplying countries. With the share of services in manufacturing increasing, US emerged as a dominant supplier of foreign services. Given that India's exports are primarily Final goods to US, sourcing of inputs from foreign suppliers would imply India's limited participation in GVCs thereby being susceptible to supply shocks. On domestic sourcing, indirect DVA accounts for over 60% across product categories implying wide sectoral effect of falling exports. Considering the adverse impact of US tariff shocks, the major upstream industries that would be affected are Basic Metals (C24), Chemical products(C20), Refined Petroleum products (C19). Given these inherent exposure to supply shocks for input sourcing, India should strategically use FTAs to safeguard its position in input sourcing.

Further, efforts to diversifying global markets requires expanding product base. Studies have underlined India's potential in this regard. A tariff analysis of Indian and US markets has shown that India maintains higher tariff compared to the US and if reciprocal tariffs are administered by US, then the competitiveness of major exports like diamonds (HS 7102), jewellery (HS 7113), petroleum oils (HS 2710), auto parts (HS 8708), seafood (HS 0306) would be adversely impacted. However, higher tariff on competitors is likely to benefit products like textiles, footwear, electricals especially with India gaining market share in products dominated by China's exports to US. Based on an analysis of comparative advantage of India as against China, Canada and Mexico it was argued that India has untapped potential that needs to be tapped (Sahoo et al., 2025). As argued earlier, China's mainly exports Intermediate goods to US. Therefore, India's ability to capture China's market share in the US require gaining competitiveness in the exports of intermediate goods.

Our analysis of RCA on value added has also underlined similar opportunities for India[7]. Relative to the world, India's has competitiveness for Food products, Textiles, wood products, Refined Petroleum products, Chemical products, Pharmaceuticals, basic metals, Repair of Machinery & Equipment (Table 10). It is interesting to note that some of these competitive products are not reflected in India's major exports to US. These are Food products, wood products, Refined Petroleum products, Pharmaceutical products. The complementarity between US and India in these products is presented in Graph 1 which compares the significance of intermediates In India and US and the relative importance of Manufacturing and services. Given the high share of manufacturing in input supplies across product categories for India and US's dominance as supplier of services complement production processes thereby providing market expansion opportunities not only in the US market but also globally.

Table 10: Revealed Comparative Advantage: India's Manufacturing Sector

TiVA Code Description	Average RCA (2018-20)
Food Products, beverages and Tobacco (C10T12)	1.45
Textiles, Textile products, Leather and Footwear (C13T15)	2.21
Wood and products of wood and cork (C16)	2.25
Paper products and printing (C17T18)	0.27
Coke and refined petroleum products (C19)	2.87
Chemical and chemical products (C20)	1.02
Pharmaceuticals, medicinal chemical and botanical products (C21)	1.41
Rubber and Plastic products (C22)	0.50
Other non-metallic mineral products (C23)	0.95
Basic Metals (C24)	1.27
Fabricated metal products (C25)	0.50
Computer, electronic and optical equipment (C26)	0.09
Electrical equipment (C27)	0.43
Machinery and equipment, nec (C28)	0.53
Motor vehicles, trailers and semi-trailers (C29)	0.25
Other transport equipment (C30)	0.24
Manufacturing nec; repair and installation of machinery and equipment (C31T33)	2.85

Source: Authors' calculations using data from OECD TiVA (2023) database.

Note: $RCA = \frac{\frac{Exports\ of\ industry\ X\ from\ Country\ i\ to\ Country\ j}{Total\ manufacturing\ exports\ from\ Country\ i\ to\ Country\ j}}{\frac{World\ exports\ of\ industry\ X\ to\ Country\ j}{Total\ world\ manufacturing\ exports\ to\ Country\ j}}$

Figure 1a: Input Composition by Sector and Country

[7] RCA estimates are calculated following "*Research on Trade in Value Added-Final Research Report*," Department for International Trade, 14 May 2020, pp 86. Research on Trade in Value Added

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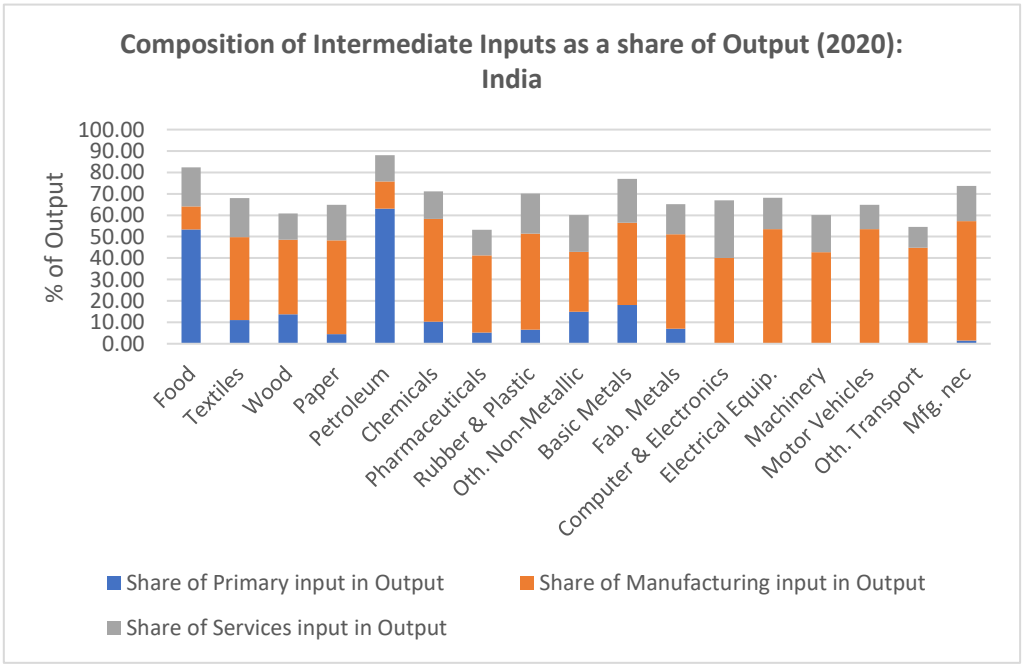

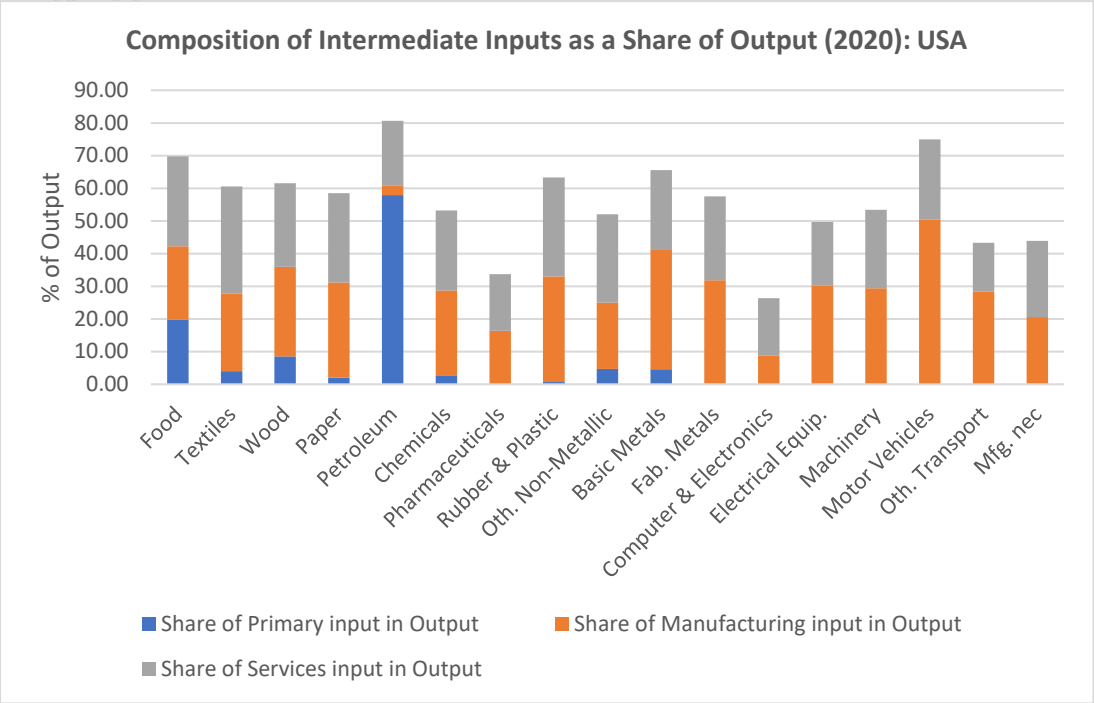

Figure 1b: Input Composition by Sector and Country

Source: Authors' calculations using OECD ICIO (2023) database.

In the light of this, India's strategic options would be to explore options for mitigating tariff increase and engage in market access strategies for potential products in the US and diversify markets. For mitigating tariff increase, India should press for concessions on US sourced inputs as being done for Canda and Mexico. The combined share of goods and services sourced from

US is more than 20% and if reduced in applied tariff, market access gains will be significant. Second, for expanding the exports of intermediate goods to the US, India should explore avenues for technology tie ups and open channels for enhanced business services trade with US. Third, India should work strategically towards reducing the tariffs for products of US interest.

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