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Trade War and Some Policy Alternatives for India

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Abstract

The trade war initiated by the US through inappropriate tariffs against its trading partners is not justified on several grounds. The President of the US has accused its trading partners several times of using higher tariffs on US products and sustaining a trade surplus with the US. In our analysis in this article, we find that though the US has a deficit in goods, it runs a surplus in services; though few trading partners apply high tariffs on US products, the US also protects its markets using excessive use of non-tariff measures. We assess the impact of the trade war, using four different sets of scenarios, on the economy of countries and the world using a global CGE model. Several policies for India have also been tested. We find that the trade war will be very detrimental to the entire world, including the US itself. The world GDP may go down by 14%. In terms of change in GDP and welfare, almost all the countries will face a loss, except India. Though India may lose in several sectors like pharmaceuticals, processed foods, and energy products like coal, oil, and gas, India's economy will boom overall due to external demand. Though no-retaliation policy will benefit India, a tariff cut may boost India's GDP more than by 2%. A significant tariff cut by India will surely generate a lot of jobs for both skilled and unskilled labor force.

Keywords: Trade War, Trade Balance, Non-tariff Measures, Tariffs cut, CGE Analysis

JEL Code: F10, F13, F14, F15

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1 Introduction

The election of Mr. Donald Trump as the President of the United States (POTUS) has sent tremors of trade war across the globe. During his presidential election campaign, Mr. Trump raised the issue of asymmetric trade relations between the US and its trading partners. He criticized the US trade partners, including Canada, Mexico, China, and India, particularly for high tariffs on US products and persistent trade surplus with the US. He did not spare even the US's long-term allies, namely, Japan, the Republic of Korea, and the European Union, for many reasons, including trade issues. His electoral rallies sparked concern about starting a global trade war, which might become a serious threat to globalization this time compared to his last term as the President.

In his second term as the POTUS, Mr. Trump adhered to his promise of imposing high tariffs on Canada, Mexico, and China, with a 25% tariff hike for the first two and a 10% raise for China. On February 1st, these tariffs were officially announced. Both Canada and Mexico negotiated these tariffs with the US, and after two days of negotiation, the US agreed to a one-month tariff halt plan on February 3rd. The threat of imposing hefty tariffs seems like a trick of the US to negotiate several things with its trading partners. In exchange for a one-month halt plan, Canada and Mexico both agreed to be more vigilant on the fentanyl trade and the migrant problem, which are one of the burning issues in US politics.

On the other hand, several Chinese products, including metal products, have been facing anti-dumping and anti-subsidy tariffs since 2018, which were imposed during President Trump's first term. In a fresh tariff wave, the US imposed a 10% tariff on all Chinese products, labeled as an 'opening salvo' by the POTUS. To counter this, China also slapped the exact quantum of tariffs on several US products, including cars, agricultural machinery, oil, etc. Earlier, the US had imposed tariffs on $300 billion of Chinese products, which forced China to make a trade deal with it. In 2020, the US and China signed a trade agreement that included a commitment by China to buy an additional $200 billion of goods and services from the US, which has not been honored by the former due to the Covid pandemic, as said by China. The fresh tariffs are an indication to bring China back again on the negotiating table and to make a more comprehensive trade deal, including substantial investments.

The European Union is also on the hit list of Mr. Trump as he wants the

EU nations to buy more American cars, gas, and farm products. In 2018, the EU counter-attacked US products, including bourbon whiskey and motorcycles, during the first term of Mr. Trump's presidency when the steel and aluminum products were imposed 25% and 10% tariffs, respectively. The POTUS has again threatened to follow the same course this time. Since there is still time to put these tariffs into action, the EU is weighing on its options, from reducing car tariffs to levying tariffs on certain products to inflict maximum pain on the US economy, to negotiate a trade deal. Though the bloc has reiterated to retaliate against the discriminatory US measures, it will be hard for the EU to negotiate as it is reeling under economic slowdown, high energy prices, timid consumer demand, ongoing war, and widening political rifts.

India, labeled as 'Tariff King' by Mr. Trump on several occasions, has already started negotiations with the US administration after a tariff threat on Indian products. The high tariffs on bikes, a much-fixated issue during the first presidency of Mr. Trump, have been recently slashed from 50% to 30% for motorcycles with engines above 1600 cc. Apart from the trade deficit with the US, there are several issues, including the issue of illegal migrants and H1-B visas for skilled Indians, which have been on the agenda of the meeting between the heads of the two nations on February 12-13, 2025. India and the US jointly agreed to reach a $500b trade goal by 2030. India also agreed to buy more oil from the US. Besides this, India slashed the import tariffs on several products in its annual budget for 2025-26. Also, India and the US may kick-start the negotiations for a trade deal soon.

The instances mentioned above point out one thing very clearly that the US wants to leverage its economic influence and domestic market in its favor. For that purpose, it uses import tariffs as a tool to get a good deal for the US. A downside to this strategy is the potential failure of trade negotiations if the US does not get what it wants and goes ahead with its tariff plan. The POTUS has already threatened to impose reciprocal tariffs against India and the EU based on their own import tariffs. Hence, this tariff threat cannot be taken lightly because, during his first presidential term in 2018, President Trump had imposed tariffs on Steel and Aluminum products using a national security provision called section 232 of the Trade Representation Act, 1962. While several major suppliers were exempted back then, tariffs are intended to be imposed across the board this time. To start with, Mr. Trump has levied a 25% tariff on Steel and Aluminum products imported from any country to protect the US industries. The

impact of these tariffs on the US economy has been documented by several authors, including USITC (2023), which shows that the production of the Steel and Aluminum industry increased, but the other industries, using them as an intermediate input, have faced output loss. Apart from the potential output and employment loss/gain in several industries, it creates an environment of uncertainty and fear among investors to start new businesses and factories. Further, the flickering policy stance of the US in terms of tariffs also creates uncertainty for businesses. Box 1 shows a timeline related to the volatility of the US policy stance.

- **Nov. 24, 2025:** Unveiled plans to place 25% tariffs on Canada and Mexico
- **Feb 1, 2025:** Ordered 25% tariffs on Canada and Mexico, and 10% on China
- **Feb 1, 2025:** Canada announces retaliation
- **Feb 3, 2025:** US halted tariffs on Canada and Mexico
- **Feb 4, 2025:** Tariffs on China go enacted, China retaliates
- **Feb 10, 2025:** 25% tariffs on steel and aluminum for all countries
- **Mar 4, 2025:** 25% tariffs go into effect for Canada and Mexico
- **Mar 4, 2025:** An additional 10% tariff for China go into effect
- **Mar 4, 2025:** Canada and China retaliate to US tariffs
- **Mar 6, 2025:** Canada and Mexico products satisfying USMCA Rules of Origin exempted
- **Apr 2, 2025:** Reciprocal tariffs to go into force for several countries

Box 1: A Timeline of Trade War

In such a situation, it becomes a very topical issue to explore and find policy options for India in case tariffs are imposed by the US. In this article, we will try to see what policy alternatives India could use as an economy using a global CGE model. In section 2, a detailed analysis of the trade deficit of the US with its major trading partners, including India, has been done. In Section 3, a sectoral-level analysis of the tariffs for the goods and services of the US's trading partners has been done, while Section 4 is about the non-tariff measures. In section

5, data and methodology have been explained for the main analysis. Section 6 explains the different scenarios related to trade war and policy. Results are discussed in Section 7, and the last one concludes.

2 Trade Balance of the US: Traits and Trends

Apart from the tariffs, the Trade deficit of the US with its trading partners has been one of the pressing issues for Mr. Trump. A trade deficit for any country means more imports than exports, while vice-versa for a trade surplus. The POTUS has criticized many countries for not buying sufficient goods and services from the US. This is why he wants all US trading partners, which run a sustained trade surplus, to buy more from the US in some way or another.

How much a country imports or exports depends on market forces such as production, domestic market prices, world prices, import tariffs, consumer preferences, the economic structure of the country, etc. For a country, it is not bad to buy more foreign commodities (import). A low-price product from abroad will enhance consumer surplus in the importing country. For example, cheaper electronic products from China or cheaper commercial services from India will be good for US consumers as they will be able to consume more with a fixed budget. Nevertheless, running a trade deficit with a trading partner may become a political issue in any country. Hence, in this section, we will analyze the trade deficit of the US and the associated patterns with its trading partners.

In 2016, the United States imported goods worth of $2188.9 billion and exported $1452.4 billion of goods, which put the US with a trade deficit of $736 billion. This trade deficit comes out to 20.2% of the total goods trade, which marginally increased in 2023 to 20.8%. On the other hand, in trade in services, this trend is upended, meaning the US incurs a continuous trade surplus with the world. In 2016, the US exported Services worth $764.6 billion to the world but imported only $491.6 billion of services for the world, which provided it with a 21.7% of trade surplus in services. Figure 1 depicts these trends of the US trade balance with the world in both categories of goods and services. In 2020, during COVID-19, the trade surplus in services went up to 22.8% while the trade deficit deteriorated to around 24%. After 2020, the trade deficit in goods decreased and is slowly coming to the pre-pandemic level, while the trade surplus in services decreased due to the pent-up demands of American consumers.

Further, to determine the major trading partners of the US that contribute to

the trade deficit in goods to the US, we analyzed data from 2016 to 2023, and for this, the top 10 trading partners (or regions) have been considered. Table 1 shows the percentage shares of partner countries of the US in the latter's total trade deficit in goods for several time periods. For example, China, the highest contributor to the US trade deficit, on average, occupies around 36% of the total trade deficit during the period of 2016-20. Trading partners are the same in each time period, though their shares in trade deficit are changing. This pattern for trading partners in merchandise goods is almost changed for trade in services.

Table 2 provides the trading partners and related statistics for services trade. Unlike the merchandise trade data, the services data is available with several gaps in partner-year data. Hence, a simple average was taken for the entire period of 2016-23 instead of the moving average, as shown in Table 1 for merchandise trade. The first half of Table 2 provides information on trade surplus while the other half contains information on trade deficit in services of the US. Countries like China, Japan, and Korea, which contribute to the deficit in goods, become trade-surplus partners in services. Though the US has an average trade surplus of $28.3 billion in services with China during 2016-23, the trade deficit in goods with China during the same period is around $350 billion. In percentage terms, the surplus of the US in services with China is 10.5% of the total surplus, while the deficit of the US with the same is around 36% of the total deficit in goods. The countries with whom the US has a trade deficit in services are comparatively smaller economies except India. Some of them are island countries like Bermuda, the Dominican Republic, Costa Rica, and Croatia, which are known for their tourism industry.

Though the US incurs an overall trade surplus in services, with some partners it experiences a deficit in services too. India, one of these partners, contributes around 17.4% to the US deficit in services while the deficit in goods ranges from 2.3%-2.7%.

With India, the US has had an average trade deficit of around $29 billion in goods and $6.6 billion in services during 2016-2023. To analyze the trend in the trade balance of the US in both goods and services with India, we take the trade deficit as a percentage of the total trade between the US and India during 2016-23. This trend has been shown in Figure 2. The average total trade deficit with India is around 24% of total bilateral trade. In the COVID-19 year 2020, the deficit in goods increased by 22% while in services, it increased by around 90%.

2.1 Stylized Facts

Several stylized facts may be observed from Table 1, Table 2, Figure 1 and Figure 2 regarding the US trade balance with its trading partners. These stylized facts have been explained as follows.

- Though China is the biggest contributor to the US trade deficit in goods, its share is decreasing continuously. During the period 2016-20, China's share, on average, was around 36% while it became only 28.12% during 2019-23.
- Top five major contributors to the US trade deficit in goods are China, the European Union, the ASEAN, Mexico, and Japan, which collectively contribute around 80%, but their collective share is also decreasing because of the dwindling shares of China and Japan.
- The share of several trading partners, including ASEAN, Canada, Mexico, EFTA, and Taiwan, has increased over the period.
- The share of India and the Republic of Korea has increased marginally over the period while the European Union experiences a marginal decrease in share.
- Though the US has a deficit in goods trade, it runs a surplus in services trade. The major trading partners that contribute to the goods deficit turn into positive contributors to the services surplus.
- Major trading partners with whom the US has a trade deficit in services are small island countries that actually export Tourism services to US consumers.
- With India, the US assumes a deficit not because of Travel or Tourism services but due to Business, Telecommunication, Computer, and Information Services.
- However, with India, the share of services deficit in total bilateral trade is decreasing from 6.4% in 2016 to 1.4% in 2023.

3 Tariffs: A Bone of Contention

The POTUS has raised the issue of tariffs imposed on the US by its trading partners. The US intends to impose an additional tariff on foreign products equiv-

alent to the difference between the partner country's Value-added taxes (VAT) and the former's import tariffs. For example, if a certain commodity is levied with 10% VAT in the EU and the same commodity of the EU is charged with 5% import tariff by the US, an additional 5% will be charged to make taxes commensurate. Though both kinds of taxes provide the government with a source of revenue, the import tariffs are attributed more toward market protectionism. The more import tariffs there are for a sector, the more protection there is for that sector, which is not good from consumers' welfare point of view. Hence, the comparison between the import tariffs and the VAT is poorly placed. The other way reciprocal tariffs are considered is in terms of the difference of applicable tariffs between the US and the trading partners. In our analysis further, we have taken the reciprocal tariffs as a difference between the US tariffs and the trading partner for any commodity. In this section, we will review the tariff structures of the US and its partner economies.

3.1 Goods

India, particularly, has been on the hit list of Mr. Trump for charging high tariffs on US products. However, India swiftly started to act on this front by giving signals for duty-cuts. Even before the US presidential election, India started lowering its import duties. In 2023, India reduced tariffs to zero for the satellite ground installation, benefiting US exports. India has reduced tariffs on US bikes of several specifications. Besides bikes, tariffs on synthetic flavoring essence, fish hydrolysate, select waste and scrap items have also been reduced[1].

Figure 3 shows the tariff patterns for the same set of US partners with which it has a trade deficit. This figure shows the simple average of the most-favored-nation (MFN) tariffs of the countries for all commodities (goods) applicable to the world. It is evident from this graph that India has started to lower its duties since 2022. However, the duties levied by India are the highest among all the economies analyzed here. Among the advanced economies, the Republic of Korea has the highest tariffs but slightly lowered its tariffs since 2018. Most of the economies have maintained their tariffs throughout the years. Apart from India, the Republic of Korea have average MFN tariffs of more than 10% while those of others are clustered around 3% to 6%.

Apart from the partner economies' tariff patterns for the world, we also an-

[1] Available on https://www.bbc.com/news/articles/cn93eyp5r2zo

alyze the effective tariff structure of the US and the partner economies levied against each other. This has been provided in Table 3 where column 2 provides the simple average of effectively applied tariff rates for all commodities of the partner economies for the US and vice-versa in the third column. These values are the simple average of tariffs over the period of 2016-2023. From Table 3, it is evident that most of the US trading partners charge more than what the US charges them, except for EFTA and Japan. India charges a hefty tariff (12.4%) for US products. China comes in second place with 8%. India and China charge very high tariffs in absolute terms, but in comparative terms, Korea and Canada charge much higher tariffs. The Republic of Korea charges the US 54.5 times what the US charges it, and in the case of Canada, this is 26.3 times; but for India and China, these are 3.6 times and 2.3 times only, respectively. EFTA and Japan have the lowest tariffs against the US, both in absolute and relative terms.

Further, we explore the tariffs applied by the partner countries sector-wise. Figure 4 shows the effective applied tariffs for the major sectors of the partner economies levied on the US. The shown values are the simple average of tariffs over the period of 2016-23. The classification of sectors is according to the SITC (Standard International Tariff Classification) revision 4.

According to this figure, India again has the highest tariff for US products in all the sectors shown. The 'Beverages and tobacco,' 'Animal and vegetable oils and fats', and 'Food and live animals' are the most protected markets (or sectors) of India for the US. Generally, the 'Food and live animals' market is highly protected in all the partner countries. Apart from India, developing countries/regions like China, ASEAN, and Mexico are the most protected countries in many sectors. EFTA applies the least tariffs on US products in most of its markets. Among the developed partner countries, the Republic of Korea levies higher tariffs in many sectors.

3.2 Services

Besides trade in goods, trade in services is becoming equally important for the countries. The export of services contributes a significant chunk to the GDP of several countries. Unlike the tariff structure for the goods trade, the services trade is not marked by the tariffs. Nevertheless, the services trade is occupied by several kinds of restrictions or compliant measures that act like a tariff. Since both goods and services are part of the international trading system, it becomes

Is India a 'Tariff King'? Not really

The President of the US has accused India, several times, of charging high tariffs on US products. He labeled India as the 'Tariff King' also. Apart from the POTUS, the White House press secretary also accused India among other countries of charging 100% tariffs on agricultural goods. Is India the highest tariff-applying country in the World? What is the general tariff structure of India for US products? What are the commodities that are charged the highest tariffs by India? What is the tariff for the Automobile sector in particular?

It is true that India applies a maximum rate of 150% for some of the imported commodities but India is not alone in this. Table 4 shows the names of those countries (and their maximum tariff rates) that apply higher tariffs than India does for any commodity. The highest rate (800%) has been applied by the Republic of Korea, a long-term US ally. Norway also applies 439% tariff on some US commodities. We go one step further to analyze the tariff structure of the big countries mentioned in Table 4, which are the Republic of Korea, Turkey, Norway, and Thailand. Table 5 shows several tariff slabs (i.e. 0-5%, 5-10% etc.) and the respective number of commodities therein for India and the above-mentioned countries. More than half of the commodities imported from the US are charged up to 10% by India. The same pattern is also observed for other countries as well. But, for India, there is no commodity in the 'more than 150% (>150%)' tariff slab while Korea, Norway, and Turkey have 122, 16, and 13 commodities respectively in the same slab.

Further, there are only 116 US commodities that are charged more than or equal to 100% tariff by India; and these belong to Agricultural products (75) and Automobiles (41), according to Table 6. Now, we further dissect 75 commodities and find that if we exclude the 'beverages and spirits' commodities, the number of commodities boils down to 29 only, as shown in Table 7. This means 'the beverages and spirits' sub-sector is highly protected within the Agricultural sector; 46 US commodities (American Wine) in the 'beverages and spirits' sub-sector face higher tariffs.

Now coming to the Automobile tariffs, we find that higher tariff imposition on US auto products is done only by small island or developing countries (Table 8). All these countries want to protect their small-scale automobile parts industry from the US imports, this is why they apply high tariffs. Though India applies a very high tariff of 100 or above on some of the US commodities, this is not an India-specific tariff pattern. Surprisingly, the US imposes a 350% tariff on India's tobacco products.

Hence, the US accusations against India do not find strong holding. Also, singling out the instances should not be the practice. India may also single out the US tobacco tariff case but that won't change the reality of trade for different tariff lines.

Box 2: A case study of India's tariffs for the US commodities

necessary to analyze the restrictions on the services sector, too, for the countries. Hence, in this subsection, a brief view of the restrictions on services in the US and its partner countries has been presented.

The restrictions imposed on the service sectors are translated into an 'ad-valorem equivalent (AVE)', which is the closest proxy for a tariff. Fontagné et al. (2016) have estimated these AVEs for the services for several countries and sectors using GTAP data. Figure 5 provides these AVEs for major service sectors in the US and its partner countries. These statistics are for the base year 2011. To the best of our knowledge, similar, estimates for a recent year(s) are not available

According to figure 5, the trend is different in services. India does not seem to be a protective market anymore, except for 'the Government services.' The Trade services in India are more open than those in any other partner economy. Mexico and China are highly restrictive in almost all the sectors. 'Communication,' 'Construction,' 'Business services,' and 'Trade services' are the most protected sectors of Mexico, while for China, 'Transport' and 'Financial services' are the most protected. Even Japan, which is one of the most open markets for trade in goods, is most protected for 'Insurance and pension services' among the analyzed countries. The US is also very protective in 'Trade services', 'Water transport' and 'Construction services'.

In the next section, we will analyze the non-tariff measures. Tariffs are only one side of the trading system, and non-tariffs will show the other.

4 Non-tariff Measures: The Devil in Disguise

In the multilateral or bilateral trading system, there are not only tariff barriers that protect the market, but non-tariff measures/barriers do the same thing. The non-tariff measures (NTM) can be anything other than tariffs, hindering fair and smooth trade flow. According to the UNCTAD, "NTMs are defined as policy measures, other than ordinary customs tariffs, that can potentially have an economic effect on international trade in goods, changing quantities traded, or prices or both." The NTMs may include any rules or regulations, product standards, quality controls, import quotas, etc., that affect the trade of any country.

In literature, it has been established that multilateral or bilateral tariffs have decreased over time, but the use of NTMs has increased (Bacchetta and Beverelli (2012), Bown (2015)). In fact, the NTMs are becoming an even more dominant

instrument of trade protection (Niu et al. (2018)). Hence, since trade protection is maintained in one way or another, looking and analyzing the NTMs, too, for the US and its partner countries seems necessary.

Table 9 gives a snapshot of NTM statistics at the aggregate level for the US and its trading partners. This Table shows the Frequency index (FI), the Coverage ratio (CR), and the Prevalence score (PS), which are the aggregates of several NTMs, including, 'Sanitary and Phytosanitary Measures (SPS), 'Technical Barrier to Trade (TBT),' 'Pre-shipment inspection,' 'Quality control measures,' 'Price control measures,' and 'Export-related measures'. The related statistics are not available for Norway, Iceland, and Lichtenstein; hence, instead of EFTA, only Switzerland has been included in the analysis. According to the UNCTAD NTM database, data collection is in progress for the Republic of Korea, while Taiwan is not listed as a country in this dataset. The presented values as in Table 9 are for the year 2020, for which the latest statistics are available.

The Frequency Index is a statistic that measures the percentage (or count) of products in a specific category subject to at least one NTM. For example, according to Table 9, Canada's entire import basket is subject to at least one NTM. Apart from Canada, China, and the EU protect their markets by applying NTMs intensively. For these two countries, 90% and 92% of imported commodities, respectively, are subject to some kind of NTM. The US comes closer to China and the EU, with 77% of imported tariff lines being subjected to at least one NTM. Mexico and India apply NTM on the least number of products, which is 38% and 47%, respectively.

The Coverage Ratio is a percentage of the trade (import) value of any country subject to NTMs. Again, for example, 98% of the Canadian import value has been imposed at least one NTM by Canada. Then comes China and the EU with 92% and 89%, respectively. Again, the same pattern is observed for the US, which is closer to China and the EU in terms of NTM imposition. With just 45% and 50%, respectively, of import value under NTM adherence, Mexico and Switzerland apply them less frequently than others.

The Prevalence score is the average number of NTMs applicable for imported commodities. China and the EU impose the highest number of NTMs on imported products. India and Switzerland impose, on average, around five measures on imported commodities, while the US and Canada are less restrictive in terms of PS. Mexico, on average, applies only one measure on imports.

We observe here that China and the EU are the most protected markets in

terms of NTM, and then comes the US, which uses NTMs very intensively for trade protection. These findings are at an aggregate level; to get a clearer and more concise picture, one should see the breakup of the aggregates NTM statistics sector and measure-wise.

4.1 Sector-wise

In this subsection, we will analyze the NTMs sector-wise. For this purpose, three sectors have been considered: agriculture, manufacturing, and natural resources. Figure 6, 7, 8 show the frequency index, the coverage ratio, and the prevalence score for the three sectors, respectively.

It may be observed from these figures that the agricultural sector is the most protected of the three in all countries/regions. Even Japan, which is the least protected of all, applies at least one NTM on 97% of agricultural products. NTMs are applied to all agricultural commodities in Canada, China, India, and the US. The same pattern is observed for the coverage ratio as well. The import value subject to any kind of NTM in Canada, Switzerland, China, India, and the US is 100%. Other countries are also very close, except Mexico, whose 95% agri-products, which is also a big number, are NTM compliant. The number of NTMs being applied (prevalence score) on agricultural products is very high for Switzerland, China, and India. The PS, which is around 23-24 for these countries, means that, on average, 23-24 measures have been applied to agri-products. For the EU and the US, this number is around 15-16, which is also very high. Of all the countries taken here, Mexico and Japan have applied the least number of measures, around 6-7 on agri-commodities.

Now, in the natural resources sector, the related markets in the US and Canada are extremely protected as all product lines in this sector face at least one kind of measure with which to comply. Among developed countries, Switzerland has the most liberated market in natural resources, while in developing countries, this is Mexico. China's 90% commodities of the natural resources are protected in some way, while India does this for only 60% commodities. But, in terms of trade value protectionism (coverage ratio), again, Canada and the US are extremely protected because their 100% import value is under the NTM scanner. Regarding CR, one observed pattern is that the CR for all countries is higher than their FI. For example, Switzerland applies NTMs only on 18% natural resource commodities, but the import value of around 80% is subject to some kind of NTM, meaning the commodities that are frequently imported are placed under

NTM restrictions. The same pattern has been observed for countries like Japan, India, and Mexico. Regarding the average number of NTMs on commodities, natural resources get fewer restrictions than agriculture. Comparatively, India and China use more NTMs per product to protect this market, while Switzerland and Mexico use fewer measures.

One general pattern regarding the manufacturing sector is that it is the least protected of the three in terms of frequency index. Developed countries like Canada, the EU, and the US are more restrictive than their counterpart, Japan and Switzerland. These countries are even more restrictive than developing countries such as India and Mexico. The same pattern has been exhibited for the coverage ratio. Regarding the prevalence score, developed countries, except Japan, use more NTMs in manufacturing than natural resources. The developing countries Mexico and India apply the least number of NTMs in the manufacturing sector in comparison to the other two. while China uses more than five measures on manufacturing that are higher than what it applies to the natural resources sector.

5 Data and Methodology

To analyze the impact of the trade war initiated by the US on India and its other trading partners, we use the standard Global Trade Analysis Project (GTAP) model and GEMPACK software suite. The GTAP model, which is a computable general equilibrium model, is a comparative-static, multi-region, and multi-sector model. The assumptions for this model include perfect competition and constant returns to scale. The bilateral trade is determined by the Armington assumption, which means that the imports are distinguished by their source as well.

The GTAP model is based on the concept of a circular economy where a regional household represents a country; this household sells factor endowments to firms and receives income in lieu of this. Then, this household's income is spent according to the Cobb-Douglas function. Firms get revenue by selling their products in the domestic market and foreign market and they pay the returns to primary factors, import taxes, and domestic taxes. Each region is then linked to each other by international trade and investment flows. Since the firms use domestically produced and imported intermediate products as determined by the Armington function, a shock or a change in any part of the economy will affect the whole world economy. Some regions and sectors will have a direct impact,

while others will experience it due to economies' inter-sectoral linkages. After the shock, the world economy will again reach an equilibrium where, for each region, the difference between savings and net investment will equal the trade balance, and as a whole, the total exports of the world economy will be equal to total imports.

The GTAP model assumes full employment conditions of factors, as its default standard closure, but in this exercise, we've relaxed the full employment condition for skilled and unskilled workers as well as for capital to make this model more realistic. In other words, the labor and capital supply have been made endogenous in the model. This closure has been called unemployment closure in Burfisher (2021). All the experiments in our study use the Unemployment closure only. To shock the tariff rates, we use the variables tms(i,r,s), which means the tariff rate for product i from region r to region s. NTM scenarios have been simulated using a shock on the variables ams(i,r,s), which stands for the import of product i from region r, augmenting tech change in region s. According to Hertel et al. (2001), 'ams' represents the negative of the rate of decay on the commodity i from r to s. So when ams(i,r,s) is shocked by 10%, then 10% more of the product becomes available to the consumer in the importing country given the same level of exports from the source country. Since the quantity of imports increases, the import prices go down by the same percentage.

We use the latest GTAP v11B dataset created by Aguiar et al. (2022), which takes 2017 as the base year. In this GTAP dataset, there are a total of 160 regions and 65 sectors, which have been aggregated initially into 20 regions and 15 sectors, respectively. The aggregation of the countries and sectors has been presented in Table 11 and 12. The five production factors are retained here as they are.

6 Trade War Scenarios

In this section, we describe the design of different trade war scenarios analyzed in this study. All the simulations have been clubbed into different sets of scenarios. The rationale behind this segregation is the impact assessment of different trade war designs on trading partners and the world, as well as finding the best available policy option for India in the face of tariff aggressions.

For India, we propose three unilateral policy options here: first, no retaliation or not engaging in the trade war; second, retaliation by increasing its existing

base rates; and, third, cut its existing tariff rates across the board for all partners. From a policy perspective, many policy actions can be counted like signing new trade agreements, reviewing older trade deals, etc., but these would be either bilateral or multilateral ones while in this analysis, our scope is limited to only unilateral policy actions. Further, these are medium- to long-term policy options, whereas the unilateral policy actions considered here can be implemented in the near-term. This is why we have tested only the above-mentioned policy impact for India.

For this purpose, we have a total of twelve experiments that have been grouped into four categories; Set 1, Set 2, Set 3, and Set 4. In Set 1 and Set 2, we have two different trade war modalities with either no-retaliation or retaliation by India. In Set 3 and Set 4, India cuts tariffs in both situations. These scenarios have been explained in detail below.

6.1 Set 1

In this scenario, the US imposes uniform tariffs (in absolute terms) for those trading partners that sustain a high trade surplus in goods with it; these trading partners have been mentioned in Section 2 and in Table 1. In this scenario, the US applies tariffs on all the commodities across the board coming from all the targeted trading partners.

- **Run 1:** For Canada and Mexico, the tariff rate has been set at 25% by the US for all commodities coming to the US; for China, this rate is 20% while for other (EU, ASEAN, Japan, Korea, India, EFTA, Taiwan), the rate is set at 10%. No country is retaliating to the US measures in this simulation. This simulation would help us capture the impact of unilateral action by the US.

- **Run 2:** Here, starting from Run 1, Canada, and Mexico retaliate against the US tariffs by the same quantum of tariffs, which is 25% in this case. China slaps back 20% tariffs while EU levies 10% on the US products. No other country including India undertakes any retaliatory measure.

- **Run 3:** Now, all targeted countries retaliate except India. That means ASEAN, EFTA, Taiwan, Korea, Japan, EU, China, Canada, and Mexico counter US tariffs with the same amount of tariffs that they have been imposed. India still stays neutral.

- **Run 4:** In this experiment, all countries including India retaliate against the US tariffs. India increases its existing tariffs by 10% for all the products. Only in this simulation, India gets engaged in the trade war.

6.2 Set 2

This is a different trade war setup. This is a mix of uniform tariffs, reciprocal tariffs, and metal tariffs, wherein some of the US's trading partners are targeted with uniform tariffs for all the products while others are targeted with reciprocal tariffs sector-wise. Under reciprocal tariffs, the US imposes the same tariff rate on a particular product as that imposed by the partner country for that product. Thus, the reciprocal tariff rate imposed by the US would differ by commodity and by country. Further, the US applies tariffs on metals and metals products for all trading partners. In the context of our regional aggregation, the US applies metal tariffs against all 19 regions (or trading partners).

- **Run 5:** Here, like earlier, the US applies 25% uniform tariff on Canada and Mexico, 20% on China, and 10% on the EU across all products. The reciprocal tariffs are applied against India, Korea, Japan, Brazil, and South Africa. The metals tariffs of absolute 25% applied by the US are working against all trading partners. No retaliation by any country.

- **Run 6:** Here is the same setup as in Run 5 but with Canada, Mexico, China, and the EU retaliating against the US tariffs. India stays neutral and does not retaliate.

6.3 Set 3

In this set of experiments, we consider the case wherein India swims against the tide by unilaterally cutting down tariffs instead of going for tariff hikes. We consider both sets of trade war modalities as in Sets 1 and 2 above.

- **Run 7:** In this simulation, starting from the trade war situation of Run 2, India cuts tariffs by 10 percent from existing levels for all the products for all trading partners; i.e., tariff rate x% becomes 0.9x%.

- **Run 8:** India cuts tariffs by 10 percent with Run 3 going on in the background.

- **Run 9:** India cuts tariffs by 10 percent with Run 6 going on in the background.

6.4 Set 4:

The idea behind the simulations of this set is to get an idea of whether a deeper tariff cut will benefit India or not. Hence, for that purpose, we re-run the Set 3 scenarios with a 25% tariff rate cut.

- **Run 10:** A tariff cut of 25% for all products by India is performed with the background of Run 2 so x% becomes 0.75x% which is a quarter cut in tariffs.
- **Run 11:** India cuts tariffs by 25 percent with Run 3 going on in the background.
- **Run 12:** India cuts tariffs by 25 percent with Run 6 going on in the background.

A complete picture of all scenarios has also been presented in Table 13. Experiments have been performed according to these runs and the results of the same have been discussed in the next section.

7 Results and Discussion

Finally, in this section, we will discuss the implications of different trade war scenarios, as designed in Section 6, on the economy of trading partners and the world. Further, the implications of different unilateral trade policies available for India will be discussed. For this purpose, the results are divided into two parts: the first one will be for the impact of the trade war on different countries and the world in terms of percentage change in GDP and welfare, and the other one will be an India-specific discussion.

7.1 Part 1: Impact of Trade War for the World

Firstly, we examine the impact of trade war scenarios on the economy of the US and other countries. Table 14 and Table 15 describe the impact of these scenarios in terms of %change of GDP and welfare, respectively. These tables present the simulation results of two scenarios, i.e. Set 1 and Set 2. We also analyzed the total loss to the world in terms of %change in GDP in figure 13.

When the US imposes a tariff on the countries, it distorts the global trade flows. This has several effects and repercussions on the US and other economies. The imposition of tariffs escalates the prices of imported commodities, which in turn reduces the demand for these imported items. The reduced demand will lower import prices of imported articles compared to export prices of the US commodities, which will give positive terms of trade effect for the US economy. At the same time, since the exported commodities of other countries have been levied tariffs by the US, their export prices will go down relative to their import prices, in case of no retaliation. Hence, their terms of trade will erode. So, what works positively for the US will work against its trading partners. But, since the US has imposed heavy tariffs on imported products, it will create allocative inefficiency in its economy. The US resources will get misallocated — domestic producers will expand production in sectors that are not necessarily the most efficient. The imports that were previously cheaper and more efficient will shrink because, due to tariffs, their price will shoot up, which will decrease consumers' purchasing power and welfare. The consumer has to buy costly and inefficient domestic products now. Apart from the finished consumer goods, these tariffs also apply to the raw and intermediate input commodities, which will make it costly for the producers in the US to produce any final product. This will bear two effects: first, the consumer prices in the US will go up, which may create a situation of inflation, and due to the inflation, consumers' purchasing will decrease further, or they will spend less as a second-order effect. Second, apart from domestic demand, the export demand for US products may go down as costly inputs will make US exports uncompetitive in the global market. This may decrease production in several sectors, and unemployment rate may increase. The investment may also be dampened because of market uncertainty and rising production costs. Hence, the gains in terms of trade will be outweighed by the loss in other areas, and as a net effect, a country may lose a lot in terms of GDP and welfare. This is what exactly is happening to the US economy, as evident in Table 14 and 15 for Set 1 scenario, and in Table 16 and 17 for Set 2 scenario.

In all the no-retaliation simulations (Run 1 and Run 5), the US suffers less than in other simulations where the partner countries retaliate. In these scenarios, the loss to the US economy ranges from around 18% to 22% in terms of GDP while the welfare loss may go up to 35 hundred billion USD. Retaliation by major economies (Run 2 and Run 6) gives a major dent in the US economy. For both changes in GDP and welfare, this loss becomes 1.7 times to 1.9 times compared

to no-retaliation runs. The reason behind this is very straightforward; one is that these economies are very important for the US and its trade flows. For Mexico and Canada, the US is their biggest trade partner, as illustrated in Table 10. Mexico exports 80% of its products to the US while imports around half of its total imports from the US. More or less, the same pattern is observed for Canada, too. China and the EU also depend on the US for their export and import. In such a situation, when these trading partners slap back the tariff on the US products, the US exports suffer more. They may inflict more pain on the US economy. The US export-oriented sectors like machinery, electronics, and transportation lose access to the market of these countries as consumer prices in partner countries go up, which will reduce demand for US products. Back in the home country, the US, this will add to the woes, and production will go down, which will reduce GDP further and affect the terms of trade negatively. The same mechanism happens in Run 3, when every targeted country retaliates except India, and in Run 4, when all targeted countries join in retaliation. This time, loss increases but not in that amount when only Canada, Mexico, China, and the EU retaliate. The US may lose up to 41% in GDP if tariffs are applied to all the countries and all the countries retaliate in the same tone, while in terms of welfare loss, the US may lose up to 7 thousand billion USD.

Not just the US, but almost every country/region, except India, faces loss in terms of welfare or GDP in the Set 1 scenario. Of all the countries, the biggest losers are Canada and Mexico. These two economies are very extremely dependent on the US. They bear two-edged woes: first, when they bear the US tariffs, and second, when they retaliate. Both give their economies a drastic shock, which reduces their output, employment, and exports. Their GDP may reduce by up to 60% and, in terms of welfare, they may lose up to six hundred billion USD. One pattern that should be noted here is that in trade war scenarios, the non-retaliating partners also suffer, like GCC, Latin America, and Oceania. This could be due to several factors. The prominent one is the supply chain factor. When tariffs are increased from both sides, the export and import demands go down, which in turn reduces the demands for intermediate goods and services inputs of the non-retaliating partners. These non-retaliating countries face low external demand for their goods and services in retaliating countries, which is why they also suffer in terms of negative GDP and welfare. For example, suppose China applies tariffs on US products and reduces the import of automobile parts that are used in Chinese electric cars, apart from many other goods and

services procured from non-retaliating countries like Vietnam or Malaysia, then the demand for Malaysian products would also decrease.

The only country which gains in each of these scenarios is India. India's GDP may rise by 0.5% to 0.6% in the Set 1 scenarios while, in terms of welfare, it may gain up to 11 billion USD as shown in Table 14 and 15. There may be several reasons behind this. Since the US is applying higher tariffs on Canada (25%), Mexico (25%), China (20%), and the EU (10%) compared to India (10%), the latter's commodities in several sectors may see a lower price jump compared to other countries, which would make its products cheaper in the global market. Hence, the demand would shift to Indian products. India's products would not just be cheaper for the US but also for other markets like the EU because the latter is also engaged in a tariff war with the former. Hence, this change in the direction of trade will benefit India in terms of improved terms of trade, output, and export. Though, in aggregate terms, India's exports may increase, this increment in external demand may not be homogeneous across the sectors which we will discuss later.

While in the Set 1 scenario, all tariff-levied or retaliating countries suffer, but in the case of the Set 2 scenario, this does not happen as shown in Table 16 and 17. The Set 2 scenario is a combination of uniform tariffs, reciprocal tariffs, and metal tariffs. The US loss is less in the Set 2 scenario than in the Set 1 scenario (Run 1 and 2 vs Run 5 and 6). The countries that face uniform tariffs across the products (CAN, CHN, MEX, EU) are at a loss, irrespective of their retaliatory action (Run 5 and Run 6). When these countries retaliate, they suffer more because of the same logic that we discussed earlier. South Africa faces loss when these four countries retaliate, but Brazil's economy gets hurt in both runs because of supply chain factors. Japan and Korea get an advantageous position in this scenario because these two countries face only reciprocal tariffs sector-wise, which is still better for them than across-the-board tariffs as in Set 1 scenarios. This is why tariff-hit countries' importers look for cheaper alternatives in the global market, and this change in the direction of trade benefits Japan and Korea. For the same reason, India also gains in both simulations. Regions like GCC, Oceania, and Latin America face losses in economic activity and welfare.

The world as a whole will suffer because of the trade war. According to figure 13, the world GDP may suffer by around 14% in case of a full-blown trade war (Run 4). For the World GDP, the unilateral tariff imposition by the US (Run 1 and Run 5) is not as bad as when these are retaliated by the big four (CHN,

CAN, MEX, EU) countries (Run 2 and Run 6), while the worst would be a full retaliation run that includes India as well (Run 4). One more comparison may be added that the Set 1 trade war scenario is worse than the Set 2 scenario because, in the Set 1 scenario, an absolute and uniform high tariff is levied compared to the Set 2 scenario's tariff, which is a mix of uniforms and reciprocal. However, each of these trade conflict scenario is bad for the world. Since the world GDP is shrinking, this may stoke a recession phase for the global economy because output will go down, which will reduce people's income and expenditure, and unemployment will go high. Hence, this tariff-induced recession may become more detrimental to the world economy, which is still in the recovery phase after the COVID-19 shock.

7.2 Part 2: Policy Implications for India

In this subsection, we estimate the implications of the policy options for India. As discussed earlier, we test three policy options for India: no retaliation (or don't do anything), retaliation against the US tariffs by increasing tariffs, and decreasing the tariffs for all trading partners.

7.2.1 Aggregate Impacts

As evident in Table 14, in all experiments, India gains in terms of positive change in GDP. In Run 1, when no country retaliates India gains 0.5% in GDP which increases by 0.04% when the big four countries slap back the tariffs on the US products. This gain further increases to 0.6% when all targeted countries except India retaliate. As more and more countries join the retaliating band, it becomes a beneficial situation for Indian products as their global prices will be lower. The same thing happens in Run 5 and Run 6 in Table 16. When the big four retaliate, in Run 6, India's GDP shows a 0.9% uptick because of the trade diversion effect. In terms of welfare, India may gain 11 billion USD in the Set 1 scenario and up to 19 billion USD in the Set 2 scenario, as shown in Table 15 and 17. Now, when India retaliates in Run 4, its GDP shrinks because of higher import market prices for consumers and producers. Hence, between retaliation and no-retaliation, the latter policy of doing nothing is better.

Now we analyze the Set 3 scenario results for India, where India, in fact, cuts the tariffs by 10% of the existing base rate across the products for all trading partners. Figure 9 and 10 compare the different simulations (Run 2, Run 3,

Run 6) with their tariff-cut counterparts (Run 7, Run 8, Run 9). We see that in all three situations, India does better. In Run 7 and Run 8, India's GDP gain is almost double compared to what it gains in the no-retaliation case. While in Run 9, it becomes 1.5 times of its no-retaliation counterpart. The same pattern is observed for India's welfare in figure 10. Hence, it can be said that the no-retaliation policy is better than the retaliation one, but the tariff-cut policy is even better than the no-retaliation. In other words, India should take advantage of the trade war situation by cutting tariffs instead of doing nothing, and definitely, retaliation would not help the country at all.

Next, we compare different tariff rate cuts for India. In Set 3, we have taken a 10% cut, while in Set 4, it becomes 25% to see whether a larger tariff cut will benefit India or not. Figures 9 and 10 stand for 10% cut while figures 11 and 12 are for 25% cut. We see that India's GDP response is even better with higher tariff cuts. In all experiments (Run 10, Run 11, and Run 12), India gains more both in terms of GDP and welfare. With a deep tariff cut of 25%, India's GDP expands by more than 1.7 times compared to a 10% cut. With 25% decrease, India may gain up to 2.2% in GDP and 44 billion USD in welfare. Hence, a larger tariff cut will surely benefit India.

7.2.2 Sectoral Impacts

Now, we turn our focus to India's sectoral gain/loss analysis. Table 18 and 19 show the percentage change in exports of India sector-wise. Several patterns have been observed here. For the Set 1 scenario, when uniform tariffs across the products are levied, several sectors see an absolute positive jump, and some sectors see a dip in exports while the export response of a few sectors depends upon other countries' actions. In the goods sector, chemical products, metal products, machinery, electrical products, transportation equipment, and other manufacturing products will see a rise in exports in all scenarios, while in services, utility services (electricity, gas distribution, water, and construction) will increase. The big-losing sectors in the goods will be extraction and pharmaceuticals, whose exports may go down by 21% and 11%, respectively, among others. The other losing sectors are grains crops, processed food, textile and leather, rubber and plastic products. In the transport services sector, the fall will be caused by the slowdown in global trade. Other services will also see a dent in their demand due to global slowdown. The meat and livestock sector will lose only when many countries retaliate to the US levies. The same patterns are visible for the Set 2

simulations. One thing should be noted here that when India joins the retaliating nations (Run 4), the export growth goes down for all sectors. The reason for this is straightforward. When India applies tariffs on intermediate commodities, it escalates the prices of these commodities, which in turn escalates the price of finished products. This is how India's products become costly in the world market, too, which reduces export demand further.

The same logic applies to the increased export demand due to tariff cuts in the Set 3 and 4 scenario shown in Table 19. Tariff cuts are beneficial not just for the consumers but also for the producers. Tariff cuts will bring efficiency to the sectors, which will provide competitiveness in the global market for Indian products. The deep tariff cut of 25% seems significantly beneficial for India's exports as the sectors that saw a dip in their export demand due to the trade war in Set 1 and Set 2 scenarios mark a positive growth in their products' exports. The textile and leather products, rubber, and plastic products sectors have a competitive edge in the global market now due to deep tariff cuts.

In output Table 20 and 21, the sectors that lose production in all simulations of the Set 1 scenario are extraction, pharmaceuticals, and processed food and textile and leather products. All these see a decline in their exports as well; hence, these will be at a loss in the economy. The rubber and plastic sector, which saw a decline in exports, will actually gain in terms of output. The reason behind this is that the products from this sector are used more as intermediate inputs rather than as a final finished one. Hence, this sector is also a gainer. The textile and leather products sector will gain a little bit in the case of the Set 2 scenario. The biggest output loss will be for the pharmaceutical sector which may lose production up to 3.9%. There will also be more demand for the services in the economy. The export of transport services went down because of the global slowdown, but demand in India is going up because of increased production because increased production will require enhanced freight services. Hence, in terms of output, there are only three sectors in the economy that will face adverse effects of a trade war; these are extraction, processed foods, and pharmaceuticals. But, retaliation by India will adversely affect India's sectoral output (Run 4 in Table 20). Further, in the case of tariff cuts, the same pattern is observed for the sectoral production in the economy, but a deep cut of 25% or more will recoup a sector from the loss. The pharmaceutical sector, which is losing up to 3.85% in output (Run 6), may lose only 1.66% in the presence of tariff cuts (Run 12).

Since the output is increasing in the country due to increased export demand, the employment of factors will also increase. Table 22 and 23 present the percentage increase in the factor employment. Both the unskilled and skilled labor force employment increase, but the increment in the skilled one is greater than the unskilled one because more skill-intensive sectors (like machinery, electrical, and transport equipment sectors) are expanding than the labor-intensive sectors (like textile, leather, rubber, and plastic sectors). Since the output is expanding, capital employment is also increasing. This can be due to the opening of new factories or outlets that require more capital, like metal products, electrical or machinery, etc. In the absence of tariff cuts, India's unskilled labor employment may increase by 0.8% while demand for skilled labor will increase by 1.2%. Again, the retaliation by India will hurt employment prospects for the labor force. In the presence of the tariff cuts (Table 23), demand for unskilled labor force will increase by 2% while for skilled one, it may be more than 2.5% (Run 12). Hence, a more significant or larger tariff cut may solve India's unemployment problem to some extent.

8 Conclusion

This paper attempts to assess the impact of trade war on the global economy, various countries, and India in particular. It also explores some near-term policy options that India may consider using a global Computable General Equilibrium Model viz., the GTAP model. Examining first the nature of US's trade balance on both merchandise and services accounts and the tariffs and non-tariff measures at a sectoral level, we find the following stylized facts:

- Though the US has a deficit in goods trade, it runs a surplus in services trade.
- Top five major contributors to the US trade deficit in goods are the ASEAN, China, the European Union, Japan, and Mexico, which collectively contribute around 80%, while India contributes only 2.3%-2.7%.
- The average total trade deficit of the US with India is around 24% of total bilateral trade, during 2016-23. The deficit in goods with India is steady around 20%-22% while the deficit in services has gone down significantly from 6.4% in 2016 to 1.4% in 2023.

- Among major trading partners of the US, India charges a hefty tariff (12.4%) for US products. Apart from India, the Republic of Korea have average aggregate MFN tariffs of more than 10%.
- India and China charge very high tariffs in absolute terms, but in comparative terms, Korea and Canada charge much higher tariffs. The Republic of Korea charges the US 54.5 times what the US charges it, and in the case of Canada, this is 26.3 times; but for India and China, these are 3.6 times and 2.3 times only, respectively.
- More than half of the commodities imported from the US are charged up to 10% by India. There are only 116 US commodities that are charged more than or equal to 100% tariff by India, with the maximum rate being 150%. In comparison, the maximum rate in Korea, Norway, Thailand, Turkey, among others is way above India's maximum rate, going up to 800% in Korea.
- In services, India does not seem to be a protective market anymore, except for 'the Government services.' The Trade services in India is most open service sector.
- Mexico and China are highly restrictive in almost all the sectors. The US is also very protective in 'Trade services', 'Water transport' and 'Construction services'.
- Canada, China, and the EU protect their markets by applying Non-tariff Measures (NTM) intensively. The US comes closer in this.
- Out of the agriculture, manufacturing and natural resources, the agriculture sector is the most protected sector in any country using NTM.

These findings show that the reasons behind initiating the trade war are not well-founded. Policymakers should not think of trade in the binary of trade deficit or surplus. A trade deficit may be good from the consumption point of view, meaning that the consumers in the economy are demanding more from abroad, and since they find efficient products in the foreign market, they are procuring. In this way, the country does not have to produce everything. The country's resources are allocated to more efficient sectors, which increases the efficiency of the economy. Even though the US runs a deficit in goods, it sustains a surplus in services. Though its tariffs are more or less severe than those of its

trading partners, in terms of non-tariff measures, the US is more protective than its developing counterparts like India and Mexico.

Using the GTAP model, we develop various scenarios that capture trade war between the US and its trading partners and the policy options for India. We consider three possible near-term policy options for India, viz., (i) do nothing, (ii) retaliate by increasing tariff, and (iii) swim against the tide by cutting tariffs. We develop four sets of scenarios that combine alternative trade war situations and India's policy response. The results show the following impacts at the global level.

- The World GDP may go down by 5.6% to 7.2% due to unilateral tariff imposition by the US on its trading partners. The retaliation by few of the targeted countries may make situation worse for the World GDP (-11% to -12.6%). If every targeted country adopts retaliatory measure, the World GDP may shrink by 13.8%.
- In both Set 1 and Set 2 scenarios, the most adversely affected countries in trade war would be the US, Canada, and Mexico because of their higher interdependence on each other. Their GDP may shrink by 41%, 60%, and 62% respectively.
- The retaliation by Canada, China, the EU and Mexico will make things worse for other countries except India.
- Some non-targeted and non-participating regions like the GCC, Oceania and the Latin America will also suffer from trade war because of supply chain linkages.
- The Set 2 scenario may benefit Japan and the Republic of Korea because reciprocal tariffs are less detrimental than uniform tariffs. Korea, and Japan may gain 44-51 billion USD and 200-250 billion USD respectively in welfare.

The following are the impacts on India:

- If each targeted country, except India, undertakes the retaliatory measure against the US tariff, India may gain up to 0.6% in GDP in Set 1 scenario and up to 0.9% in Set 2.
- A retaliation by India will bring GDP and welfare loss for India.

- In aggregate terms, India's exports and output would increase but it may lose in several sectors.
- In the goods sector, chemical products, metal products, machinery, electrical products, transportation equipment, and other manufacturing products will see a rise in exports in all scenarios, while in services, utility services (electricity, gas distribution, water, and construction) will increase.
- The big-losing sectors in the goods will be extraction and pharmaceuticals, whose exports may go down by 21% and 11%. In the transport services sector, the fall will be caused by the slowdown in global trade.
- In terms of output, the extraction, pharmaceuticals, processed food and textile and leather products lose. The rubber and plastic sector, which saw a decline in exports, will actually gain in terms of output because of intermediate demand from other sectors.
- The biggest output loss will be for the pharmaceutical sector which may lose production up to 3.9% in the absence of any tariff cut by India.
- India will benefit from a unilateral 10% tariff cut to the tune of 1.1% to 1.9% of GDP. The welfare gain is in the range of 21 to 36 billion USD. A deeper cut brings greater benefits.
- The tariff cuts will recoup a sector from the loss. The pharmaceutical sector, which is losing up to 3.85% in output, may lose only 1.66% in the presence of tariff cuts.
- In the presence of tariff cuts, the production of each sector except extraction, processed food, and pharmaceuticals, will increase. A deeper tariff cut will be more beneficial.
- In the presence of the tariff cuts, demand for unskilled labor force will increase by 2% while for skilled ones, it may be more than 2.5%.

These simulations clear show that the trade war initiated by the US will be harmful to itself as well. The most trusted and long-term allies of the US, Canada, Mexico, and the EU will be facing loss for no reason. Apart from this, the entire world will face repercussions. The world economy, which still has to recover fully from the COVID-19 shock, may get an additional shock due to the trade war. The trade war may drag the world economy into a recession, which

will be more detrimental to developing and least-developed countries. Hence, trade should not be used as a tactic to get a favorable deal. One should understand that bilateral trade relations are not confined only to trade in goods or services; they go beyond that. It also encapsulates the investment flows and related treaties. A tariff threat will create uncertainty for new investment, which may have long-term effects.

Apart from tariffs, non-tariff measures also pose a big threat to the multilateral trading system. Multinational agencies like the WTO have been successful in lowering tariffs at the global level through several rounds of negotiations, but at the same time, efforts to minimize non-tariff measures have not been taken enough. India and its trading partners may take the initiative to develop an institutional mechanism to address the NTMs. The rationalization of NTMs will enhance the welfare of the parties.

India may benefit from these trade war situations, but it should cut tariffs, which are high enough. This tariff cut should not be seen as a compulsion in the face of US aggression; in fact, it should be long-term India's policy to liberalize its market. Several studies, including Polaski et al. (2008), Ganesh-Kumar et al. (2006), have shown that unilateral tariff cuts will benefit India. Our analysis is also on the same line. A free market not only benefits the consumers but also brings competitiveness to those sectors that are not very competitive. Protection is not the answer. The jobless growth of the Indian economy may see a new trend in employment generation because of tariff cuts. Hence, if curated carefully, this trade war may prove a watershed moment for the Indian economy.

India should not pursue a trade deal with the US out of compulsion. Instead, it should take its due time to do proper homework so that the economy does not have a negative impact. One should remember that Canada and Mexico already have had a trade agreement with the US, the US-Mexico-Canada Agreement (USMCA) (earlier the NAFTA), but they still face tariff threats, which is a violation of the provisions of the USMCA. Though the Canadian and Mexican products satisfying the USMCA rules of origin have been exempted at the last moment, it shows non-abidance of trade laws. In the same way, in 2020, the US and China signed a trade deal, but the US still slapped tariffs on China. Hence, a trade deal may not guarantee an escape from US tariffs. Instead of signing a bad deal with the US, India should focus more on its home market reforms, including labor reforms, financial reforms, and trade reforms.

Apart from the recommended policy, India should also look to sign new trade

agreements. Several Indian scholars, including Ganesh-Kumar and Chatterjee (2016) and Pant and Paul (2018), have opined to sign bilateral trade agreements with its major trading partners. Negotiations with some countries like the UK and the EU are in the advanced stage. India administration may consider starting an Early Harvest Scheme with these partners to check out the feasibility of preferential trade. India and its trading partners like Canada and Taiwan should explore other channels to restart the trade deal talks. A trade agreement may prove a good tactic to reduce their dependence on a few countries that may work as a cushion in the face of sudden external shocks like tariff threats, supply chain disruptions, etc.

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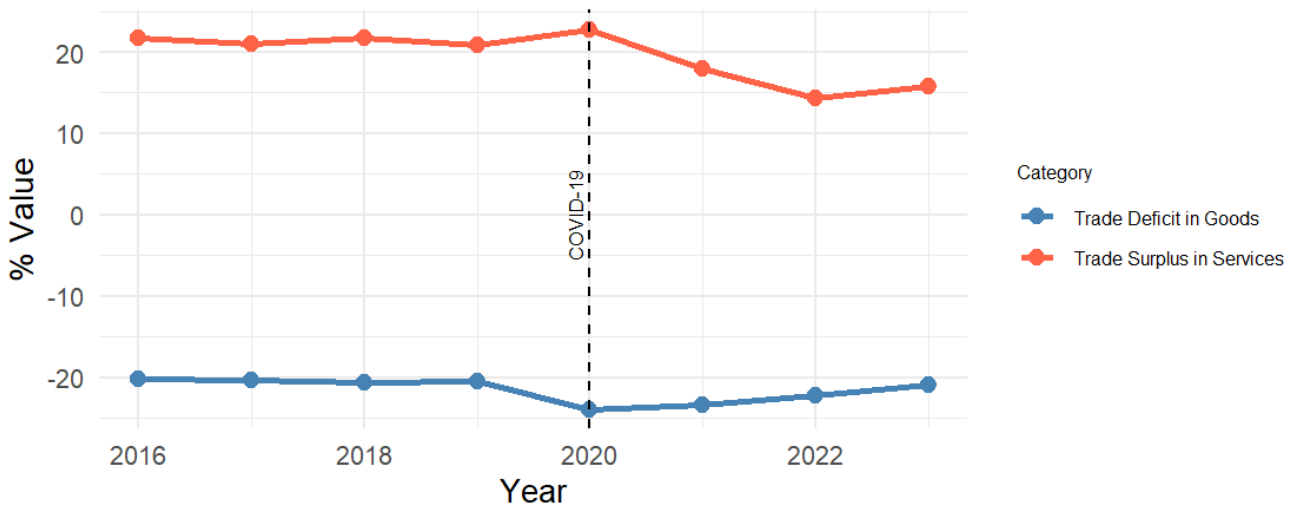
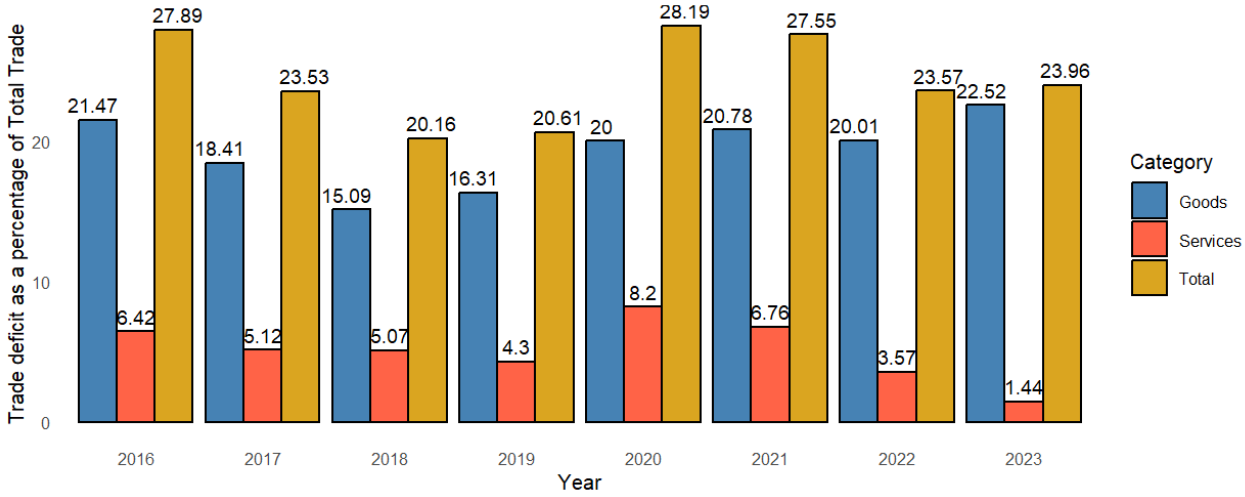
Figures



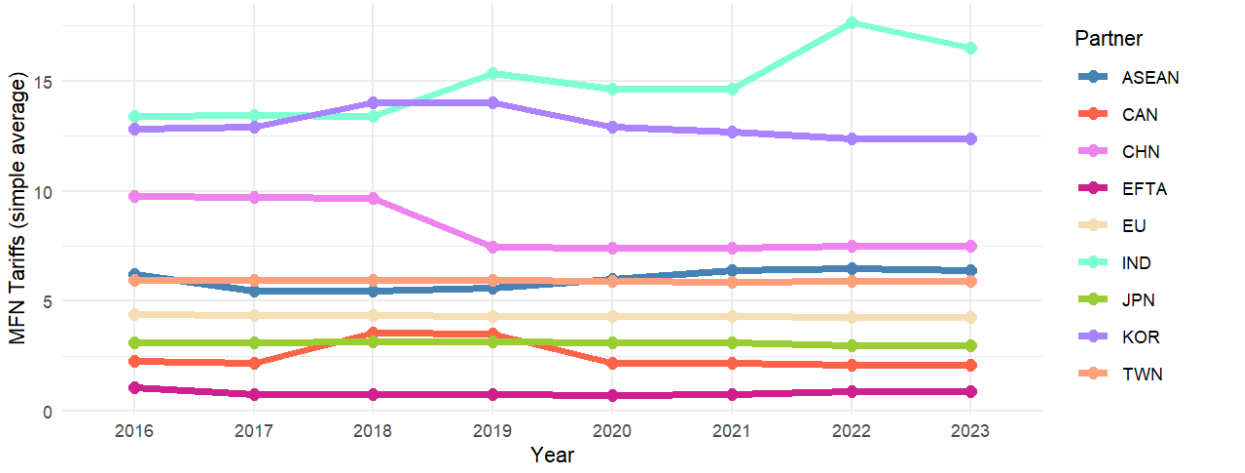
Note: Authors' depiction using data from the IMF and the WTO STATS

Figure 1: Trade balance of the US in goods and services



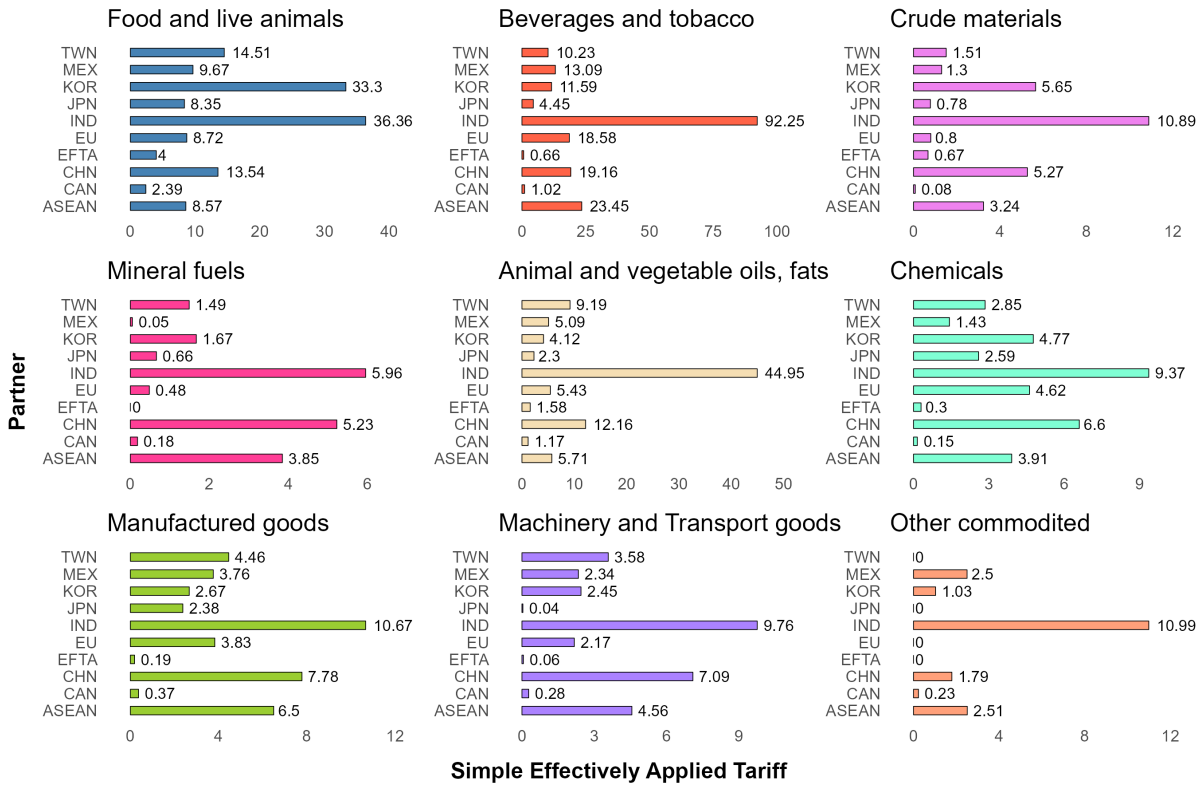
Note: Authors' depiction using data from the IMF and the WTO STATS

Figure 2: US's Trade deficit with India in Total trade



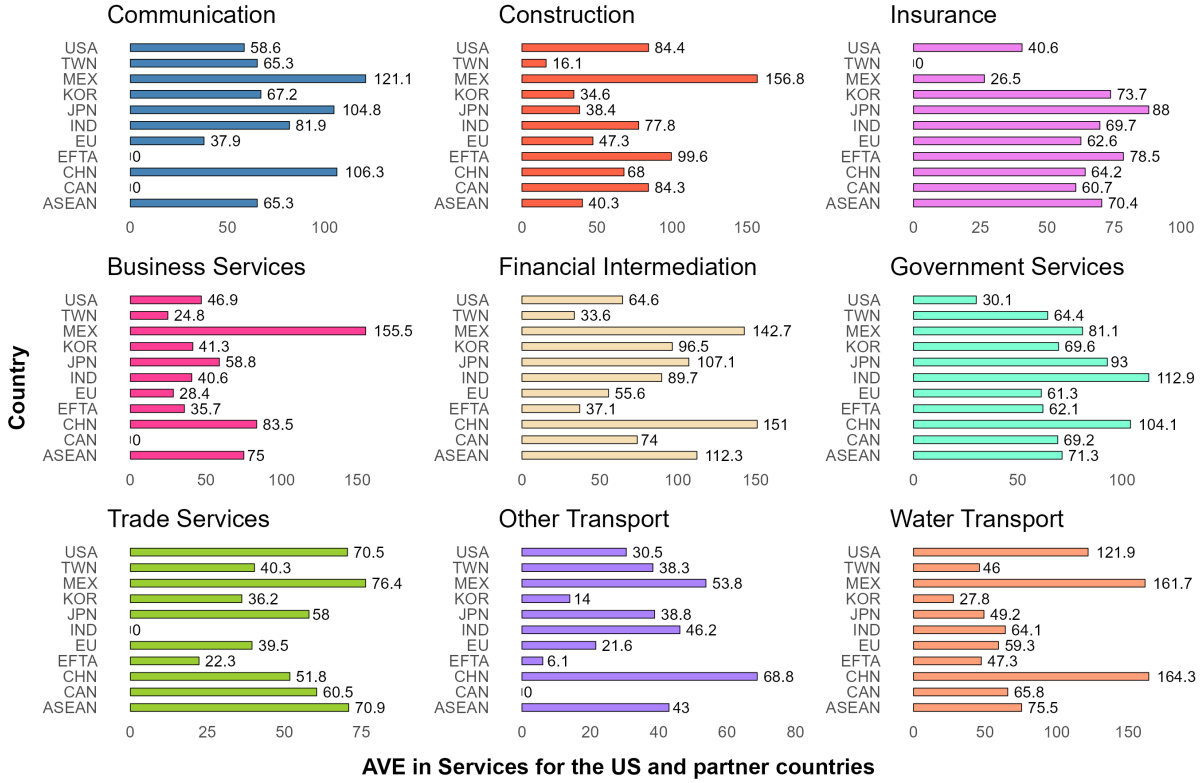
Note: Authors' depiction using data from the WITS-UNCTAD TRAINS

Figure 3: Tariff Pattern of the partner countries



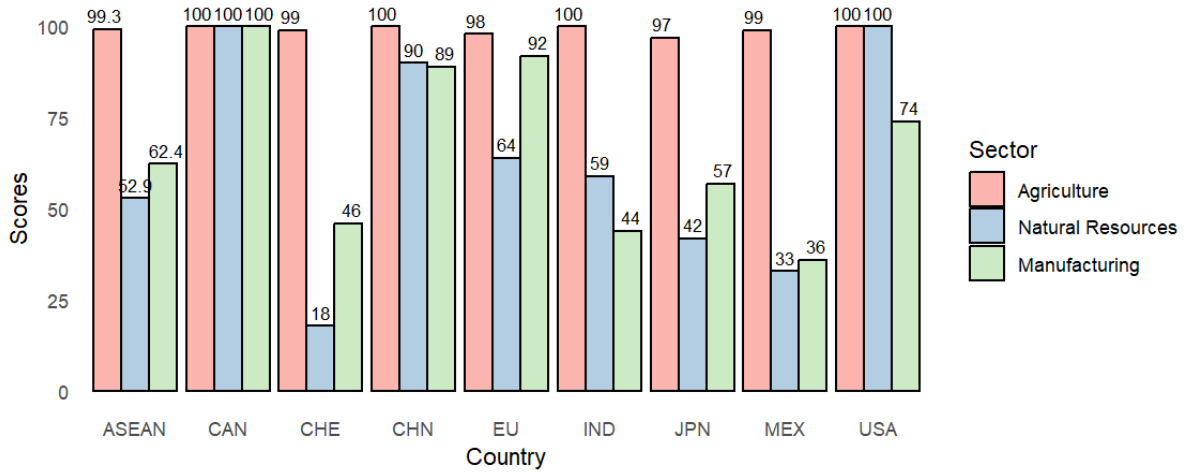
Note: Authors' depiction using data from the WITS-UNCTAD TRAINS

Figure 4: Average tariffs levied by the partner economies on the US, 2016-23



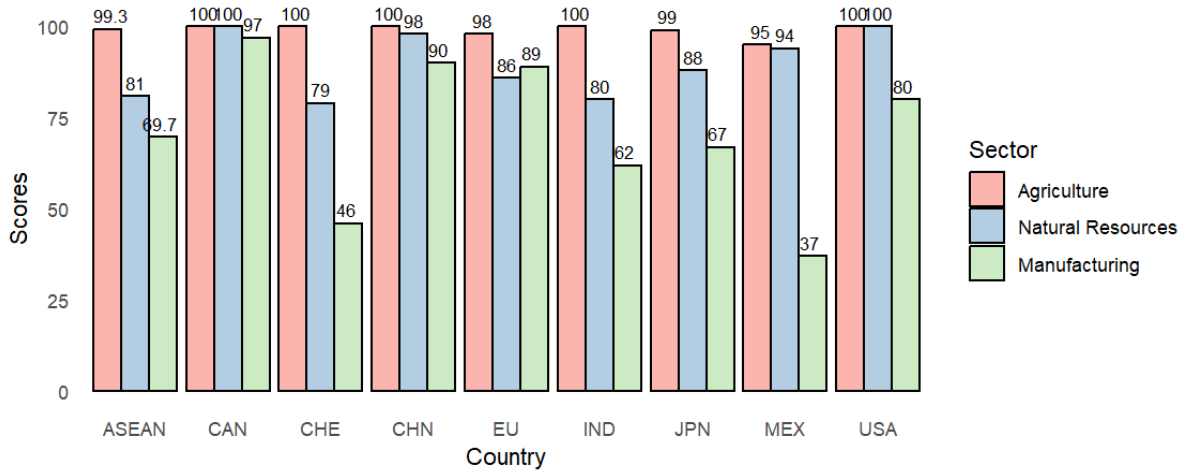
Note: Authors' depiction using data for 2011 from CEPII which are based on Fontagné et al. (2016)

Figure 5: Restrictions in Service sectors in the US and partner countries



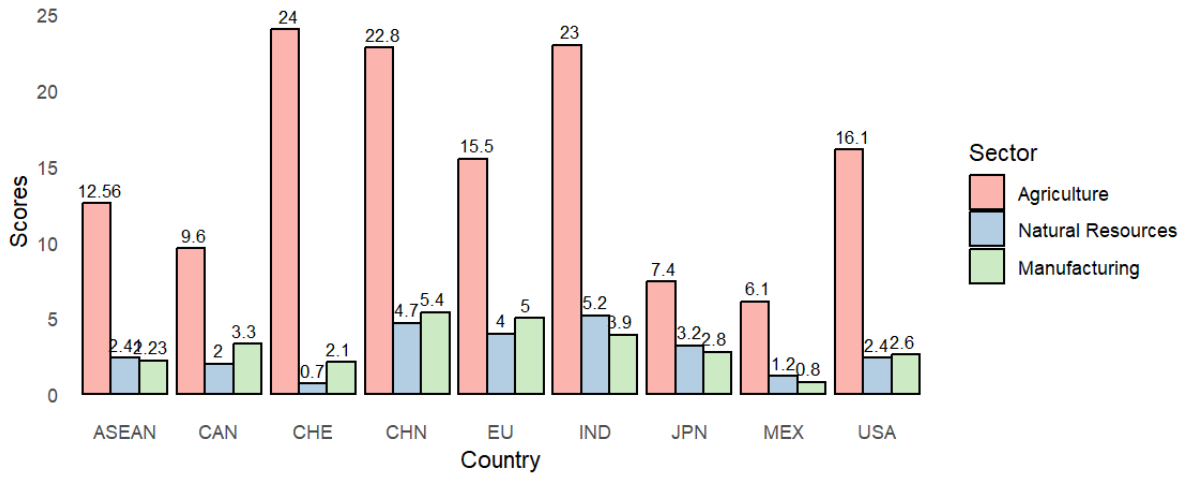
Note:Authors' depiction using data from UNCTAD NTM

Figure 6: Frequency Index



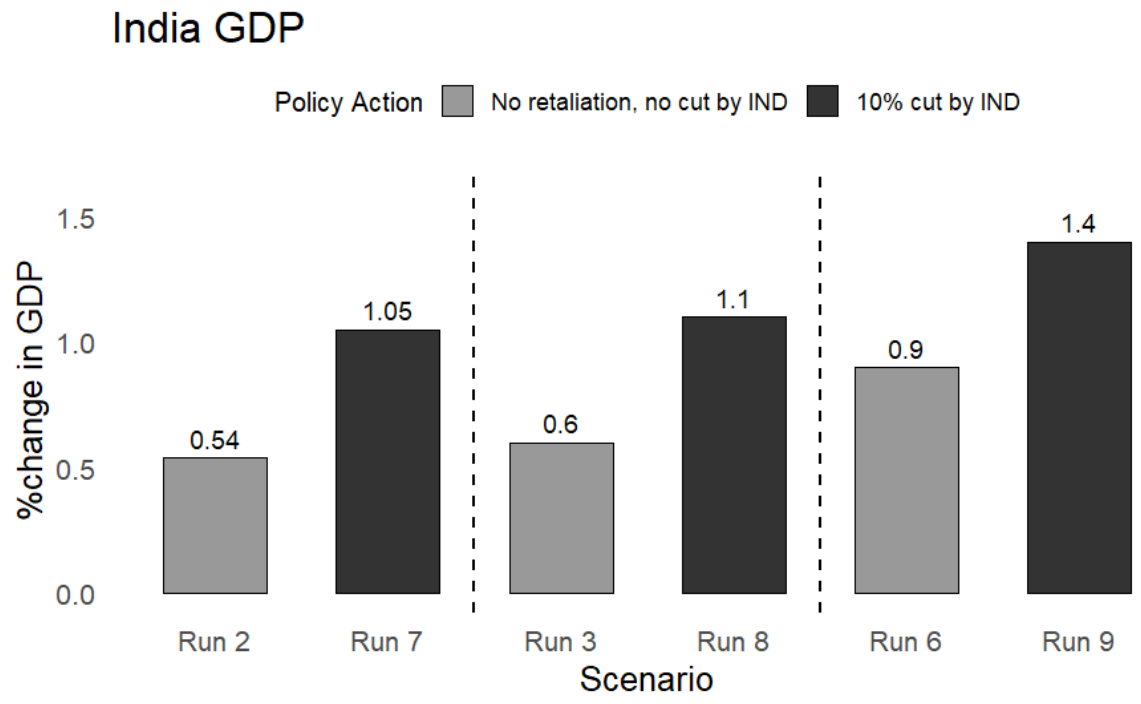
Note:Authors' depiction using data from UNCTAD NTM

Figure 7: Coverage Ratio



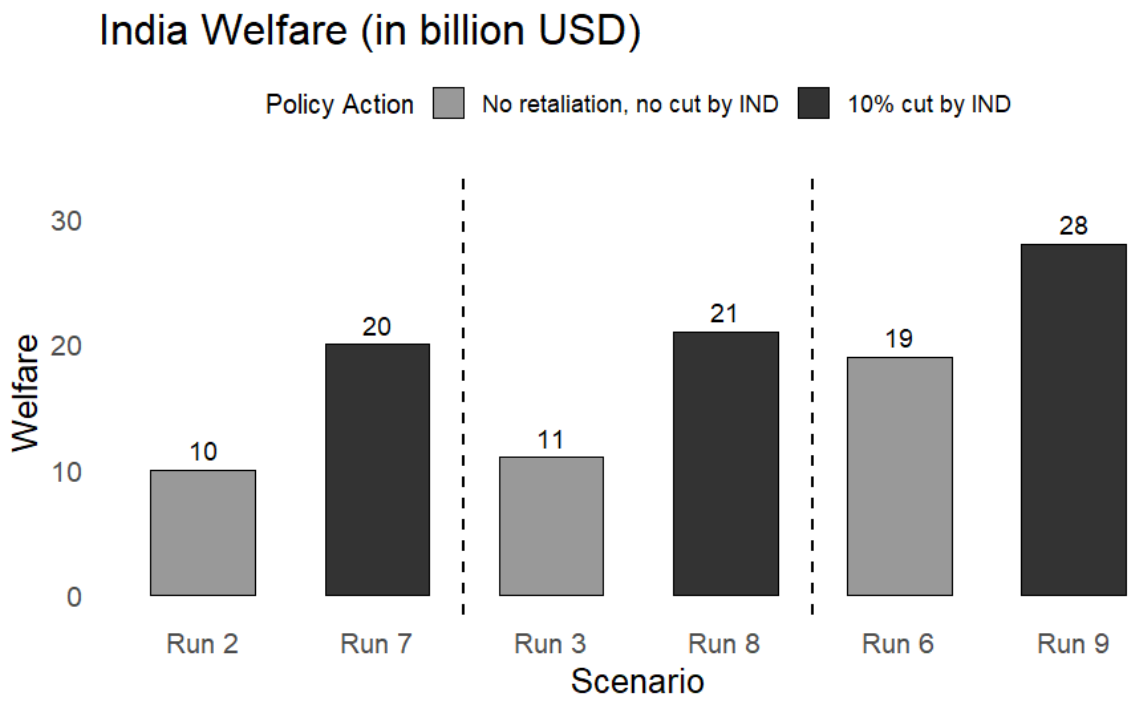
Note:Authors' depiction using data from UNCTAD NTM

Figure 8: Prevalence Score



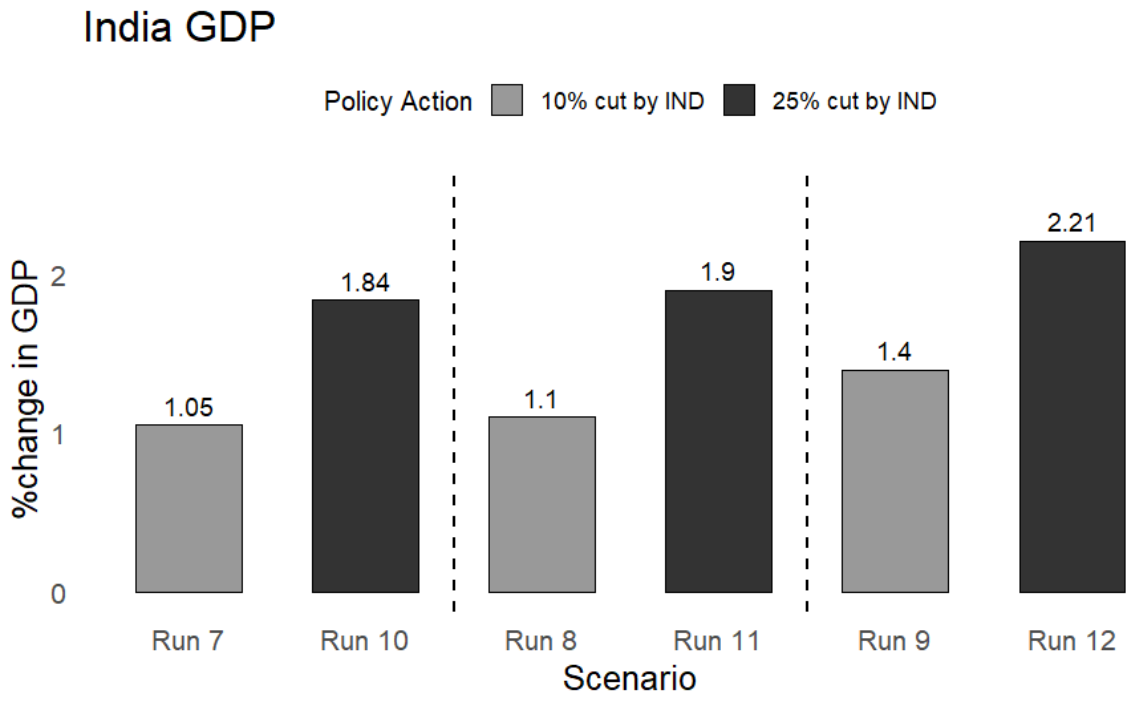
Source: Authors

Figure 9: Impact of Tariff cut on India's GDP



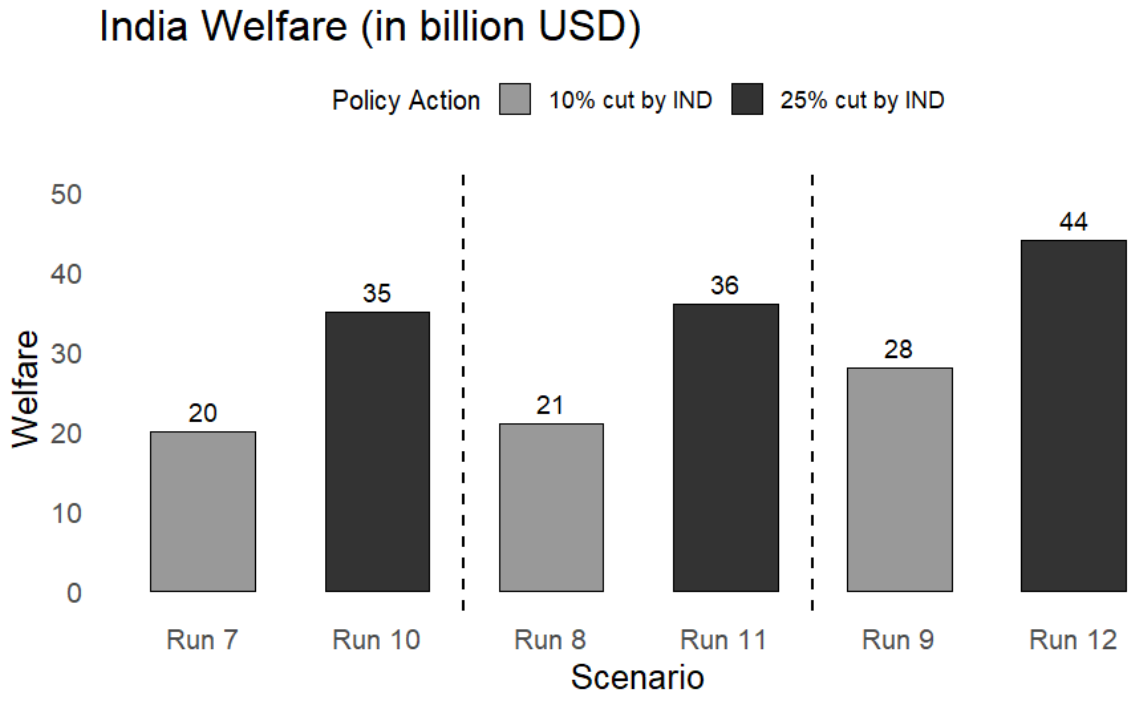
Source: Authors

Figure 10: Impact of Tariff cut on India's Welfare



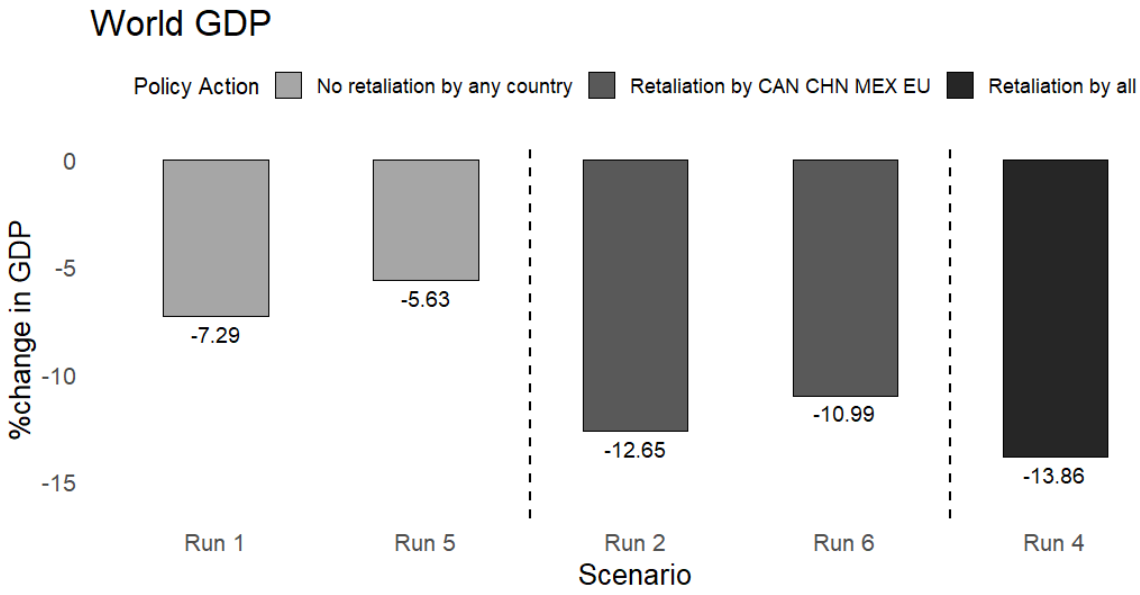
Source: Authors

Figure 11: Impact of higher tariff cuts on India's GDP



Source: Authors

Figure 12: Impact of higher tariff cuts on India's Welfare



Source: Authors

Figure 13: Impact of trade war on World's GDP

Tables

Percentage share of partner countries in total trade deficit							
Partner	2016-20	Partner	2017-21	Partner	2018-22	Partner	2019-23
CHN	35.9	CHN	33.9	CHN	31.7	CHN	28.1
EU	20.4	EU	20.3	EU	20.0	EU	20.2
ASEAN	11.6	ASEAN	12.7	ASEAN	14.0	ASEAN	15.2
MEX	8.4	MEX	8.7	MEX	9.1	MEX	10.0
JPN	6.6	JPN	6.1	JPN	5.6	JPN	5.5
EFTA	2.7	EFTA	3.1	EFTA	3.1	CAN	3.7
IND	2.3	IND	2.3	CAN	3.0	EFTA	3.2
KOR	2.3	TWN	2.3	TWN	2.6	TWN	3.1
TWN	2.0	CAN	2.2	IND	2.4	KOR	2.8
CAN	1.7	KOR	2.2	KOR	2.3	IND	2.7

Note: Authors' calculations using data from the IMF DATA Portal

Table 1: Trade deficit of the US in Merchandise trade

Trade Surplus in Services (2016-23)			Trade Deficit in Services (2016-23)		
Partner	Trade Surplus with Partners (in billions $)	% of Total Surplus	Partner	Trade Deficit with Partners (in billions $)	% of Total Deficit
Ireland	42.1	15.6	Bermuda	-19.8	52.1
China	28.3	10.5	India	-6.6	17.4
Switzerland	19.9	7.4	Philippines	-2.8	7.4
Singapore	18.1	6.7	Dominican Republic	-2.7	7.2
Brazil	15.5	5.8	Greece	-2.1	5.5
Korea	10.7	4.0	Costa Rica	-1.5	3.9
Japan	9.3	3.4	Israel	-1.4	3.8
Netherlands	6.3	2.4	Poland	-0.7	1.9
Saudi Arabia	5.4	2.0	Czech Republic	-0.2	0.6
Sweden	2.6	1.0	Croatia	-0.1	0.3

Note: Authors' calculations using data from the WTO STATS

Table 2: Trade surplus and deficit of the US in Services trade

Partner	Partner's Tariff on US	US tariff on Partner	Partner's tariff/US tariff
ASEAN	5.95	4.03	1.48
Canada	0.79	0.03	26.33
China	8.02	3.47	2.31
EFTA	0.61	2.8	0.22
India	12.39	3.42	3.62
Japan	2.77	3.42	0.81
Korea	6.55	0.12	54.58
Mexco	3.91	3.16	1.24
Taiwan	4.89	3.42	1.43
EU	4.2	NA	NA

Note: Data Source: WITS-UNCTAD TRAINS, 2016-23

Table 3: Effectively Applied Tariff rates of the partners and the US

Country	Maximum Tariff on any US product
Republic of Korea	800.3
Norway	439
Palau	253
Turkey	225
Thailand	216
Maldives	200
Morocco	200
Dominica	165
Honduras	152

Note: Data Source: WITS-UNCTAD TRAINS, 2023

Table 4: MFN Tariffs of countries

Tariff slabs	IND	KOR	NOR	THA	TUR
0-5%	960	3071	4315	4055	3445
5-10%	5658	5073	131	2108	1636
10-25%	1326	794	177	677	1412
25-50%	520	409	3	987	1376
50-75%	36	56	28	305	344
75-100%	25	47	0	70	42
100-125%	36	8	0	5	0
125-150%	57	24	10	14	55
>150%	0	122	16	6	13
Total	8618	9604	4680	8227	8323

Note: Data Source: WITS-UNCTAD TRAINS, 2023

Table 5: Number of imported US commodities in different tariff slabs

Sector	Number of commodities
Agri-prods	75
Automobile	41

Note: Data Source: WITS-UNCTAD TRAINS, 2023

Table 6: No. of US commodities on which India applies high tariffs ($\geq$ 100%)

Country	All Agri-products	Agri-prods minus 'Beverages and Spirits'
IND	75	29
KOR	142	139
THA	25	25
TUR	68	68
NOR	24	24

Note: Data Source: WITS-UNCTAD TRAINS, 2023

Table 7: No. of US commodities which face high tariffs ($\geq$ 100%)

Tariff	Country
>=100%	India, Pakistan
>=75%	India, Pakistan, Thailand, Nepal, Maldives, Bermuda
>=50%	India, Pakistan, Thailand, Nepal, Maldives, Bermuda, Vietnam, Angola, Indonesia
>=40%	India, Pakistan, Thailand, Nepal, Maldives, Bermuda, Vietnam, Angola, Indonesia, Belize, China, Morocco, Dominica

Note: Data Source: WITS-UNCTAD TRAINS, 2023

Table 8: Countries which apply high tariffs for US Automobile products

Country	Frequency Index	Coverage Ratio	Prevalence Score
ASEAN	65.9	73.8	3.2
CAN	100	98	4.2
CHE	52	50	4.9
CHN	90	92	6.8
EU	92	89	6.3
IND	47	69	4.9
JPN	61	76	3.3
MEX	38	45	1
USA	77	83	4.1

Note: Data Source: UNCTAD NTM

Table 9: Non-tariff Measures applied by countries

Partner	2016-20		2017-21		2018-22		2019-23	
	Export	Import	Export	Import	Export	Import	Export	Import
ASEAN	11.6	7.6	12.7	7.6	13.8	7.5	14.7	7.3
CAN	76.0	51.5	75.3	50.6	75.1	49.9	75.5	49.3
CHN	18.3	7.6	18.1	7.1	17.6	6.7	16.9	6.5
EFTA	10.5	7.6	12.6	7.4	13.1	7.2	13.0	7.7
EU	7.0	4.6	7.1	4.5	7.2	4.5	7.3	4.6
IND	16.1	6.2	16.5	6.6	17.2	7.1	17.6	7.2
JPN	19.6	11.2	19.2	11.2	18.9	11.1	18.8	10.9
KOR	12.8	11.2	13.1	11.6	13.8	11.9	14.8	12.0
MEX	80.2	46.1	80.3	45.4	80.5	44.8	81.0	44.1

Note: Authors' calculations using data from the IMF DATA Portal

Table 10: %Share of trade flows of countries with the US

No.	Code	Region Description	Comprising regions
1	USA	United States of America.	United States of America.
2	ASEAN	Association of South East Asian Nations	Brunei Darussalam; Cambodia; Indonesia; Lao People's Democratic Republ; Malaysia; Philippines; Singapore; Thailand; Viet Nam.
3	EFTA	European Free Trade Area	Switzerland; Norway; Rest of EFTA.
4	Taiwan	Taiwan	Taiwan Province of China.
5	Korea	Republic of Korea.	Republic of Korea.
6	Japan	Japan	Japan.
7	EU	European Union	Austria; Belgium; Bulgaria; Croatia; Cyprus; Czechia; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; Netherlands; Poland; Portugal; Romania; Slovakia; Slovenia; Spain; Sweden.
8	China	China	China.
9	Canada	Canada	Canada.
10	Mexico	Mexico	Mexico.
11	India	India	India.
12	Brazil	Brazil	Brazil.
13	UK	United Kingdom	United Kingdom of Great Britain.
14	SAfrica	South Africa	South Africa.
15	Russia	Russia	Russian Federation.
16	GCC	Gulf of Cooperation Council	Bahrain; Kuwait; Oman; Qatar; Saudi Arabia; United Arab Emirates.
17	Oceania	Australia, New Zealand	Australia; New Zealand; Rest of Oceania.
18	RoAsia	Rest of Asian Countries	China, Hong Kong SAR; Mongolia; Rest of East Asia; Rest of Southeast Asia; Afghanistan; Bangladesh; Nepal; Pakistan; Sri Lanka; Rest of South Asia.
19	LatinAmer	Latin America	Argentina; Bolivia (Plurinational State o; Chile; Colombia; Ecuador; Paraguay; Peru; Uruguay; Venezuela (Bolivarian Republic; Rest of South America; Costa Rica; Guatemala; Honduras; Nicaragua; Panama; El Salvador; Rest of Central America; Dominican Republic; Haiti; Jamaica; Puerto Rico; Trinidad and Tobago; Caribbean.
20	RestofWorld	Rest of World	Rest of North America; Albania; Serbia; Belarus; Ukraine; Rest of Eastern Europe; Rest of Europe; Kazakhstan; Kyrgyzstan; Tajikistan; Uzbekistan; Rest of Former Soviet Union; Armenia; Azerbaijan; Georgia; Iran (Islamic Republic of); Iraq; Israel; Jordan; Lebanon; Palestine; Syrian Arab Republic; T rkiye; Rest of Western Asia; Algeria; Egypt; Morocco; Tunisia; Rest of North Africa; Benin; Burkina Faso; Cameroon; C te d'Ivoire; Ghana; Guinea; Mali; Niger; Nigeria; Senegal; Togo; Rest of Western Africa; Central African Republic; Chad; Congo; Democratic Republic of the Con; Equatorial Guinea; Gabon; South-Central Africa; Comoros; Ethiopia; Kenya; Madagascar; Malawi; Mauritius; Mozambique; Rwanda; Sudan; United Republic of Tanzania; Uganda; Zambia; Zimbabwe; Rest of Eastern Africa; Botswana; Eswatini; Namibia; Rest of Southern African Custo; Rest of the World.

Source: Authors

Table 11: Aggregation of countries

No.	Code	Sector Description	Comprising Sectors
1	GrainsCrops	Grains and Crops	Paddy rice; Wheat; Cereal grains nec; Vegetables, fruit, nuts; Oil seeds; Sugar cane, sugar beet; Plant-based fibers; Crops nec; Processed rice.
2	MeatLstk	Livestock and Meat Products	Bovine cattle, sheep and goats; Animal products nec; Raw milk; Wool, silk-worm cocoons; Fishing; Bovine meat products; Meat products nec.
3	Extraction	Mining and Extraction	Forestry; Coal; Oil; Gas; Minerals nec.
4	ProcFood	Processed Food	Vegetable oils and fats; Dairy products; Sugar; Food products nec; Beverages and tobacco products.
5	Chemicals	Chemicals	Chemical products.
6	Tex_Lea	Textiles and Clothing and leat	Textiles; Wearing apparel; Leather products.
7	RubPlast	Rubber and Plastics	Rubber and plastic products.
8	Metals	Metals and Products	Ferrous metals; Metals nec; Metal products.
9	Pharma	Pharmaceuticals	Basic pharmaceutical products.
10	Mach_Elec	Machinery and Electrical	Electrical equipment; Machinery and equipment nec.
11	Trans_Equp	Transport equipments	Transport equipment nec.
12	Other_Mnf	Light Manufacturing	Wood products; Paper products, publishing; Petroleum, coal products; Mineral products nec; Computer, electronic and optic; Motor vehicles and parts; Manufactures nec.
13	Util_Cons	Utilities and Construction	Electricity; Gas manufacture, distribution; Water; Construction.
14	TransComm	Transport and Communication	Trade; Accommodation, Food and servic; Transport nec; Water transport; Air transport; Warehousing and support activity; Communication.
15	OthServices	Other Services	Financial services nec; Insurance; Real estate activities; Business services nec; Recreational and other service; Public Administration and defe; Education; Human health and social work a; Dwellings.

Source: Authors

Table 12: Aggregation of sectors

Scenario	Simulation	Targeted Countries	Retaliating Countries	Description
Set 1	Run 1	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	No retaliation by any country	The countries which sustain high trade surplus with the US are targeted. US applies 25% absolute tariff on CAN and MEX, 20% for CHN, and 10% for other mentioned countries/regions.
	Run 2	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	CAN, MEX, CHN and EU	**Run 1** + retaliation by four countries. CAN, MEX, CHN and EU retaliate with the same amount of tariffs, that is, 25%, 25%, 20%, and 10% respectively.
	Run 3	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, and MEX	**Run 1** + retaliation by all targeted countries except IND. All targeted countries impose same quantum of tariffs on the US products what they have been charged by the US.
	Run 4	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	**Run 1** + retaliation by all targeted countries. All targeted countries impose same quantum of tariffs on the US products what they have been charged by the US.
Set 2	Run 5	Particular targets are CAN, MEX, CHN, EU, IND, KOR, JPN, BRA, ZAF; All countries are targeted in metal sector.	No retaliation by any country	CAN, MEX, CHN and EU are targeted with uniform tariffs across the sectors except metal sector, which are 25%, 25%, 20%, and 10% respectively while IND, KOR, JPN, BRA and ZAF are levied with reciprocal tariffs in each sector except metal sector. All countries are imposed 25% in metal sector.
	Run 6	Particular targets are CAN, MEX, CHN, EU, IND, KOR, JPN, BRA, ZAF; All countries are targeted in metal sector.	CAN, MEX, CHN and EU	**Run 5** + retaliation by CAN, MEX, CHN, and EU with same quantum of tariffs
Set 3	Run 7	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	CAN, MEX, CHN and EU	**Run 2** + 10% Tariff cut by IND for all products
	Run 8	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, and MEX	**Run 3** + 10% Tariff cut by IND for all products
	Run 9	Particular targets are CAN, MEX, CHN, EU, IND, KOR, JPN, BRA, ZAF; All countries are targeted in metal sector.	CAN, MEX, CHN and EU	**Run 6** + 10% Tariff cut by IND for all products
Set 4	Run 10	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	CAN, MEX, CHN and EU	**Run 2** + 25% Tariff cut by IND for all products
	Run 11	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, MEX and IND	ASEAN, EFTA, TWN, KOR, JPN, EU, CHN, CAN, and MEX	**Run 3** + 25% Tariff cut by IND for all products
	Run 12	Particular targets are CAN, MEX, CHN, EU, IND, KOR, JPN, BRA, ZAF; All countries are targeted in metal sector.	CAN, MEX, CHN and EU	**Run 6** + 25% Tariff cut by IND for all products

The acronyms for the countries/regions- ASEAN: Association of Southeast Asian Countries; EFTA: European Free Trade Area; EU: European Union; CAN: Canada; TWN: Taiwan; KOR: Republic of Korea; JPN: Japan; CHN: China; IND: India; MEX: Mexico; BRA: Brazil; ZAF: South Africa

Source: Authors

Table 13: Scenarios and their description

%Change in GDP				
	Set 1			
Country	Run 1	Run 2	Run 3	Run 4
USA	-21.95	-37.22	-41.46	-41.5
ASEAN	-0.62	-1.12	-2.08	-2.08
EFTA	-4.56	-6.79	-8.7	-8.7
Taiwan	-4.19	-4.62	-7.51	-7.51
Korea	-1.67	-0.87	-3.85	-3.85
Japan	-1.69	-2	-1.76	-1.76
EU	-1.33	-4.15	-4.1	-4.1
China	-2.31	-3.3	-3.21	-3.2
Canada	-39.02	-59.12	-59.86	-59.87
Mexico	-44.93	-62.14	-62.84	-62.85
India	0.5	0.54	0.6	0.55
Brazil	1.69	0.4	-0.08	-0.08
UK	2.22	-1.82	-2.34	-2.35
SAfrica	2	1.41	1.33	1.33
Russia	2.09	1.69	1.68	1.68
GCC	0.15	-0.13	0.01	0.02
Oceania	-0.55	-1.66	-1.99	-2
RoAsia	0.39	-0.26	-0.41	-0.41
LatinAmer	-0.35	-2.65	-3.08	-3.08
RestofWorld	1.12	0.25	0.14	0.14

Source: Authors

Table 14: %Change in GDP of countries in different scenarios of Set 1

Change in Welfare (billion USD)				
	Set 1			
Country	Run 1	Run 2	Run 3	Run 4
USA	-3567	-6189	-6913	-6920
ASEAN	-22	-35	-53	-53
EFTA	-45	-66	-82	-82
Taiwan	-22	-24	-37	-37
Korea	-24	-13	-49	-49
Japan	-71	-83	-73	-73
EU	-164	-477	-471	-472
China	-257	-336	-328	-328
Canada	-530	-775	-785	-785
Mexico	-448	-602	-609	-609
India	9	10	11	10
Brazil	25	3	-5	-5
UK	49	-41	-52	-52
SAfrica	5	3	3	3
Russia	20	12	12	12
GCC	-12	-20	-18	-18
Oceania	-13	-30	-34	-34
RoAsia	3	-5	-7	-7
LatinAmer	-14	-68	-78	-78
RestofWorld	30	-12	-17	-18

Source: Authors

Table 15: Change in Welfare of countries in different scenarios of Set 1

%Change in GDP		
	Set 2	
Country	Run 5	Run 6
USA	-18.25	-33.69
ASEAN	1.83	1.19
EFTA	-0.31	-2.97
Taiwan	1.52	0.8
Korea	3.3	3.84
Japan	6.12	5.16
EU	-0.97	-3.56
China	-2.19	-3.09
Canada	-31.85	-54.19
Mexico	-40.97	-59.53
India	0.75	0.9
Brazil	-2.04	-2.44
UK	0.64	-2.66
SAfrica	0.11	-0.02
Russia	0.96	0.82
GCC	-0.15	-0.25
Oceania	-0.49	-1.43
RoAsia	0.08	-0.32
LatinAmer	-1.78	-3.47
RestofWorld	0.49	-0.13

Source: Authors

Table 16: %Change in GDP of countries in different scenarios of Set 2

Change in Welfare (billion USD)		
	Set 2	
Country	Run 5	Run 6
USA	-2971	-5621
ASEAN	38	21
EFTA	-5	-31
Taiwan	7	4
Korea	44	51
Japan	248	209
EU	-119	-405
China	-239	-310
Canada	-434	-708
Mexico	-409	-576
India	15	19
Brazil	-35	-43
UK	14	-59
SAfrica	-1	-1
Russia	7	2
GCC	-12	-18
Oceania	-11	-25
RoAsia	0	-5
LatinAmer	-44	-85
RestofWorld	8	-25

Source: Authors

Table 17: Change in Welfare of countries in different scenarios of Set 2

%Change in Sectoral Export for India						
	Set 1				Set 2	
Sector	Run1	Run 2	Run 3	Run 4	Run 5	Run 6
GrainsCrops	-1.91	-2.3	-3.1	-3.13	-2.41	-2.97
MeatLstk	0.95	0.5	-0.63	-0.66	0.28	-0.49
Extraction	-15.85	-20.45	-20.84	-20.85	-12.63	-18.55
ProcFood	-3.77	-5.9	-6.83	-6.91	-19.84	-19.64
Chemicals	0.89	2.37	2.77	2.63	0.92	2.48
Tex_Lea	-1.22	-3.26	-3.97	-4.11	0.19	-1.87
RubPlast	-0.57	-0.36	-0.69	-0.82	-2.45	-1.76
Metals	0.8	2.37	2.55	2.42	-1.29	1.05
Pharma	-7.4	-10.13	-11.09	-11.24	-9.93	-12.07
Mach_Elec	2.06	3.88	3.91	3.73	1.52	3.54
Trans_Equp	5.67	8.39	10.73	10.54	5.26	8.07
Other_Mnf	2.09	1.83	1.61	1.47	1.83	1.81
Util_Cons	1.65	2.66	3.06	2.98	2.32	3.41
TransComm	-5.7	-8.78	-9.54	-9.61	-1.21	-4.68
OthServices	-3.89	-6.1	-6.17	-6.25	0.5	-2.26

Source: Authors

Table 18: Impact of Trade War on sectoral Export of India

%Change in Sectoral Export for India						
	Set 3			Set 4		
Factor	Run 7	Run 8	Run 9	Run 10	Run 11	Run 12
GrainsCrops	-1.89	-2.69	-2.55	-1.19	-1.99	-1.85
MeatLstk	0.92	-0.21	-0.07	1.65	0.53	0.67
Extraction	-19.89	-20.27	-17.97	-19.02	-19.38	-17.09
ProcFood	-5.08	-6.02	-18.95	-3.75	-4.69	-17.81
Chemicals	4.13	4.54	4.25	6.95	7.37	7.08
Tex_Lea	-1.57	-2.29	-0.16	1.18	0.45	2.65
RubPlast	1.29	0.96	-0.12	3.96	3.62	2.52
Metals	4.24	4.42	2.9	7.23	7.43	5.87
Pharma	-8.52	-9.5	-10.49	-5.92	-6.91	-7.93
Mach_Elec	6.44	6.46	6.1	10.58	10.62	10.26
Trans_Equp	11.15	13.55	10.84	15.62	18.12	15.33
Other_Mnf	3.58	3.35	3.56	6.39	6.16	6.38
Util_Cons	3.71	4.11	4.47	5.4	5.81	6.18
TransComm	-8.05	-8.82	-3.92	-6.88	-7.65	-2.69
OthServices	-5.25	-5.32	-1.37	-3.88	-3.94	0.07

Source: Authors

Table 19: Impact of different Tariff cuts on sectoral Export of India

%Change in Sectoral Output for India						
	Set 1				Set 2	
Sector	Run1	Run 2	Run 3	Run 4	Run 5	Run 6
GrainsCrops	0.13	0.09	0.04	0.03	0.06	0.09
MeatLstk	0.31	0.29	0.29	0.26	0.31	0.38
Extraction	-1.94	-2.49	-2.53	-2.56	-1.44	-2.15
ProcFood	0.04	-0.12	-0.18	-0.18	-1.39	-1.28
Chemicals	1.1	1.81	2.05	2.01	1.05	1.86
Tex_Lea	-0.15	-0.6	-0.76	-0.82	0.41	0
RubPlast	1.07	1.5	1.62	1.58	0.97	1.56
Metals	2.03	3.07	3.42	3.37	1.64	2.92
Pharma	-2.44	-3.36	-3.68	-3.75	-3.21	-3.85
Mach_Elec	1.83	3.09	3.36	3.29	1.82	3.22
Trans_Equp	1.91	2.75	3.13	3.08	1.93	2.89
Other_Mnf	1.57	1.98	2.11	2.08	1.61	2.16
Util_Cons	1.08	1.41	1.56	1.52	1.27	1.73
TransComm	0.34	0.26	0.28	0.23	0.83	0.83
OthServices	0.52	0.49	0.54	0.5	0.96	1.02

Source: Authors

Table 20: Impact of Trade War on sectoral Production of India

%Change in Sectoral Output for India						
	Set 3			Set 4		
Factor	Run 7	Run 8	Run 9	Run 10	Run 11	Run 12
GrainsCrops	0.18	0.13	0.18	0.32	0.26	0.31
MeatLstk	0.6	0.6	0.69	1.08	1.08	1.17
Extraction	-2.23	-2.27	-1.89	-1.81	-1.85	-1.47
ProcFood	-0.09	-0.14	-1.26	-0.06	-0.12	-1.25
Chemicals	2.34	2.58	2.39	3.21	3.46	3.27
Tex_Lea	-0.02	-0.18	0.6	0.94	0.77	1.57
RubPlast	1.94	2.06	2	2.65	2.77	2.71
Metals	3.48	3.84	3.33	4.18	4.54	4.03
Pharma	-2.51	-2.84	-3.01	-1.15	-1.48	-1.66
Mach_Elec	3.72	3.98	3.85	4.75	5.02	4.89
Trans_Equp	3.39	3.78	3.54	4.44	4.84	4.59
Other_Mnf	2.61	2.73	2.79	3.61	3.73	3.79
Util_Cons	1.95	2.1	2.27	2.8	2.96	3.13
TransComm	0.8	0.82	1.38	1.66	1.67	2.24
OthServices	1.02	1.08	1.56	1.87	1.93	2.42

Source: Authors

Table 21: Impact of different Tariff cuts on sectoral Production of India

%Change in Employment of Factors for India						
	Set 1				Set 2	
Factor	Run1	Run 2	Run 3	Run 4	Run 5	Run 6
Land	0	0	0	0	0	0
UnSkLab	0.48	0.54	0.58	0.54	0.63	0.8
SkLab	0.61	0.66	0.73	0.68	0.98	1.13
Capital	0.46	0.48	0.53	0.49	0.76	0.88
NatRes	0	0	0	0	0	0

Source: Authors

Table 22: Impact of Trade War on Factor Employment for India

%Change in Employment of Factors for India						
	Set 3			Set 4		
Factor	Run 7	Run 8	Run 9	Run 10	Run 11	Run 12
Land	0	0	0	0	0	0
UnSkLab	0.98	1.02	1.24	1.67	1.71	1.93
SkLab	1.19	1.26	1.67	2.04	2.11	2.53
Capital	1	1.05	1.4	1.82	1.87	2.23
NatRes	0	0	0	0	0	0

Source: Authors

Table 23: Impact of different Tariff cuts on Factor Employment for India