

Post-Covid World Economy and India-China Bilateral Trade

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In the presence of covid-19 pandemic, US-China trade war and India's exit from RCEP, the current study attempts to analyze the trend of export and import between India and China, the reasons behind export growth, change in competitiveness, quality perception, etc. Further, it compares global value chain (GVC) participation of India and China especially backward and forward linkages. The paper finds that India lacks diversification and good quality. Its export growth has been mainly due to pure competitiveness. On the other hand, China has gained mainly through product diversification and economies of scale. In many products, China has started experiencing a decrease in competitiveness in Indian market. Both China and India had a steep rise in GVC participation but in terms of GVC position, China has moved towards forward participation in GVC and India towards backward participation. The paper concludes that for India, compete and cooperate simultaneously with China perhaps could be the best strategy.

Key Words: Coronavirus Pandemic, India-China Trade, Global Value Chain, Competitiveness and International Relations

JEL Classification: F14, F50,

1. Background

The ongoing coronavirus (Covid-19) pandemic has adversely affected all the economies around the world. The lockdowns imposed in various countries to reduce

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the spread of the virus have led to a halt in virtually all of the economic activities. Further, health crisis and the failure of health system to contain the epidemic has brought an unprecedented trauma leading to drop in consumer sentiment and increasing worry. The experts have been unable to predict the true impact of this pandemic due to the underlying uncertainties. The mainstream media as well as the social media often present a gloomy picture predicting that its negative effect might stay longer than the earlier expectations. The pandemic has disturbed the global supply chain, as China halted its production followed by other countries to contain the spread of the virus, and has also negatively impacted the global consumer demand. The response measures in the form of revival package and emergency in health expenditure have significantly deteriorated government's fiscal position. The depressed business outlook has also hampered the growth of investment. The adverse effects have, therefore, increased poverty as well as unemployment across the economies.

This pandemic came when the trade war between China and the US was easing out. Tit-for-tat tariff rise between these two economies which started in March 2018 came to a temporary halt in January 2020 through a 'Phase 1' agreement.¹ A 'Phase 2' agreement was also in negotiation which could bring further trade concessions and decrease in tariffs imposed by both the countries on one another.² However, the outbreak of Covid-19 did not just ruin the hopes of a second agreement but also the implementation of the first one. President Trump has been criticized for overlooking the early warning signs of the virus outbreak which has resulted in large US death-toll and US attempting to contain China for the mismanagement of the Covid-19 outbreak due to which it has taken hold all over the world. USA has also blocked mutual efforts of the countries to handle the crisis, in cases where these measures were helping China in any way.

¹Phase 1 Agreement between US and China (Dec 2019) is looking for structural reforms and other changes to China's economic and trade regime in the areas of intellectual property, technology transfer, agriculture, financial services, and currency and foreign exchange. A commitment by China was reached through this agreement for substantial additional purchases of U.S. goods and services in the coming years (at least \$200 billion worth of US goods over two years). Importantly, the agreement established a strong dispute resolution system to ensure prompt and effective implementation and enforcement. The US has agreed to modify its Section 301 tariff actions in a significant way. The US will be maintaining 25 percent tariffs on approximately \$250 billion of Chinese imports, along with 7.5 percent tariffs on approximately \$120 billion of Chinese imports.

²Phase 2 Agreement between US and China was still under negotiation and aimed at reversing more tariffs/ additional rollbacks.

This has put pressure on other countries as well to raise questions regarding China's fiasco to manage the disease outbreak. For example, Australia and European Union called for an international enquiry to establish the virus origin in order to form an early-warning system for such outbreaks. USA also obstructed the efforts of the International Monetary Fund to give Special Drawing Rights to economies impacted by Covid outbreak as it thought that this would help China with huge financial resources. It also gained support from India and it was argued that a major liquidity injection may cause costly consequences in case these funds are used for non-essential purposes. Some say that this Indian stand was due to pressure from the US and a hope to secure foreign exchange swaps from the US Federal Reserve.³

The pandemic also came when the economies over the world were moving towards more protectionist policies and were reconsidering the advantages of an integrated world economy, for an instance, renegotiation of North American Free Trade Agreement (NAFTA) for reversal of the liberalization provisions, Brexit for the desire of Britain to drop out of the European market etc. The economic impact of Covid has merely accelerated this trend and there are attempts going on to make global supply-chains less China-centric. In US, a bill has been announced to end its dependence on China for pharmaceutical manufacturing and its key restrictions will come into effect in 2022 under which the pharmaceutical enterprises have to inform regarding active ingredients which are imported from China for their goods so that vulnerability of the US can be evaluated. The bill also aims at creating transparency in the supply chain by instituting a country of origin label of all imported drugs as well as giving economic incentives for producing drugs and medical equipment in the US.⁴ The European Union also wants to boost its strategic autonomy through supply security of necessary inputs, pharmaceuticals and creation of strategic digital infrastructure and critical technologies.

It is argued in various reports that production houses will relocate from China, which will profit many emerging and developing countries including India and will make China a weaker nation. In fact, India is trying to turn the current crisis into an opportunity by attracting the investments which are exiting China and has also been

³Abraham Biju Paul, Nag Biswajit, and Ray Partha (2020); 'China-bashing and Post-COVID-19 Narrative: A Reality Check', EPW, Volume LV No. 39, September 26, 2020.

⁴Tom Cotton: Senator for Arkansas (2020); 'Cotton, Gallagher introduce bill to end U.S. dependence on Chinese-manufactured pharmaceuticals', Press Release, March 18, 2020.

working with state governments to create land-banks for investors trying to re-locate.⁵ However, there are a lot of complexities and uncertainties in the real and financial sector given the current situation. It is not going to be a cake-walk for firms to relocate from China as it dominates and has a large influence over the world economy which is quite diverse and deep-seated to be affected significantly. However, the prospective relocation still needs to be taken into account at least in the medium run as new supply chain structure may emerge in post-Covid world.

It is also important to note that the pandemic has inflicted serious negative shocks to the Indian economy, which already experienced sluggish growth before the disease outbreak. The major challenge faced by the government is to revive the economy by boosting the consumer confidence as well as the business sentiments. The businesses will need to adapt themselves in the new normal. There will also be further automation of the production process which might reduce the employment opportunities for the unskilled and semi-skilled workers.

At the global level, there might be more trade barriers imposed by the countries to strengthen their domestic economies in the post-pandemic period. The countries will rework on the supply chains and renegotiate the Free Trade Agreements to accommodate their priorities.⁶ There will be a slowdown in multilateral process for some time until the countries realize the mutual benefits of production sharing.

The attempt to develop pan-Asian trade agreement popularly known as Regional Comprehensive Economic Partnership (RCEP) especially after the debacle of Trans Pacific Partnership (TPP) showed the possible expansion of Chinese influence in Asia. This made a promise to bring two big countries viz. India and China closer to each other through an effective trade agreement. However, India remained hesitant due to rising trade deficit with China and not so encouraging export prospects of both goods and services in the region even having functional trade agreements with ASEAN, Japan and Korea Republic. Finally, India pulled out itself from RCEP,

⁵ Srivastava, Shruti (2020); 'India Pledges Easy Access to Land for Factories Leaving China', *Bloomberg*, May 4, 2020.

⁶It is important to note that ASEAN members, China, Australia, New Zealand, Japan and South Korea signed Regional Comprehensive Economic Partnership (RCEP) in Nov 2020, in the middle of the pandemic despite a huge anti-China sentiment in the world. India decided not to join this group. RCEP is expected to drive new China centric trade regime in the post-Covid world.

which was formally launched in Nov 2020. This raises a question about the changing trade structure between India and China and their competitive positions in each other's markets for possible bilateral trade growth in post-covid and post-RCEP period. India's apprehension for deeper engagement with Asia, especially with China requires to be juxtaposed to US-China trade war, pandemic related crisis and possible shifting of supply chain out of China or likely development of a value chain between China and India in coming days.

2. Objective

In this background, the study makes an attempt to analyze current trend of export and import between India and China, the reasons behind export growth in each other's markets such as general growth of demand, diversification of product basket, change in competitiveness, quality perception, etc. Further, it compares India and China to understand how their participation in global value chain especially backward and forward linkages will provide a lead about future trade possibilities. This will give us an indication about how bilateral trade will shape up in post-covid period and in the process, we can identify few sectors for emerging value chain between these two countries. For India, compete and cooperate simultaneously with China perhaps could be the best strategy as the new world will embrace a complex trade regime in which countries will have a strategic interplay between self-reliance and external market access through competitive advantage. The current paper investigates this empirical trade data analysis.

3. Methodology

This paper has analyzed the trade structure between India and China using the data from 2001 till 2019 to assess the changing pattern. Further, monthly data for last one year has been described to see how India's dependence on China has changed during the Covid and what happened to India's exports. Looking at the past data, the paper has used three popular analytical tools to assess the reasons behind bilateral trade growth, quality perceptions about Indian and Chinese goods and nature of global value chain (GVC) participation by these two countries.

First, to assess the changing relative competitiveness, the paper uses constant market share (CMS) model. It separates the total import growth in terms of general import

demand growth in the country, advantage of exporting countries in terms of their abilities to diversify the product basket within a category and a residual effect, which indirectly measures the effect of changing competitiveness.

Second, it also uses quality perception measure, which juxtaposes change in unit price vis-à-vis change in market share that reflects possibilities of improved quality, exploitation of economies of scale, indication for slowing down of competitive gains, etc. The results provide an insight about the future possibilities of the products including an early signal for structured investment for diversification, capacity development and cost reduction.

Third, the paper calculates two GVC indicators ‘participation’ and ‘position’ both for India and China and maps their dynamics over the years in terms of forward and backward linkage in production process. A movement towards higher forward linkage indicates increased ability of the country to export more parts and components and thereby reflects higher innovation and diversification capability. On the contrary, higher backward linkage implies increased dependence on foreign countries for components and rise of last stage assembling activities, which are mostly labour-intensive. The relative position of forward and backward linkage gives us an idea of comparative performance of India and China in value chain and future trade possibilities.

The detailed methodology is given below.

Constant Market Share Methodology⁷

Constant Market Share (CMS) analysis is used to understand the dynamics of export growth of top products at HS-02 digit level from India to China and vice-versa for the last 5 year period (2014-19). CMS methodology is an important tool for analyzing the export changes of an economy. The assumption is that a nation’s share in exports to a given market shall stay same over the time. But, in reality, it is not the case as trade is dynamic. The difference between the expected and the actual export performance is attributed to three factors i.e. the effect of a general rise in imports

⁷Joshi Rakesh Mohan, Nag Biswajit, Gupta Ashish (2012); ‘India’s Export Opportunity in Africa: Issues and Challenges in Select Sectors’, IIFT Working Paper, No. EC-13-18.

demand in the given market, composition of commodity and change in competitiveness. In order to keep the market share same, the competitiveness term is positive or negative for adjusting the actual change in the share.

$$EX(t) - EX(0) = rEX(0) + \sum[(r_i - r)EX_i(0)] + \sum[EX_i(t) - EX_i(0) - r_iEX_i(0)] \quad (1)$$

where,

EX: exports of nation P to nation Q

EX_i: product-i exports of nation P to nation Q

r: percentage rise in nation Q's total imports from period 0 to period t

r_i: percentage rise in nation Q's imports of product-i from period 0 to period t

EX = ΣEX_i.

The right hand side has three parts:

- (a) Increase in nation Q's total imports (overall growth effect on import demand)
- (b) The product composition of nation P's exports to Q in period 0 (diversification effect), and
- (c) Residual term reflecting the gap between nation P's actual rise in exports to nation Q and the hypothetical rise if nation P maintained its export share of each product group in nation Q (proxy for relative competitiveness effect).

These three components always add up to 100 (to reflect the share of change) and competitiveness shown by the residual is always adjusted accordingly. The CMS methodology can also be extended to accommodate geographical diversification (Chakraborty, et. al, 2019) of exports but it is not included in the current study as it focuses on bilateral trade.

Quality Perception Margin Map

The methodology provides a comparison of some major products at HS-04 digit level exported by India to China (under the top products identified at HS-02 digits) in terms of their changing export share in China in the last 5 years (calculated on the basis of quantity exported to the China) with respect to change in unit value, thereby provides an indirect perception of quality of exported good in the China market. Similar exercise is also done for China's exports to India.

In this analysis, quality perceived of a traded product is proxied by its unit value. The quality perception margin map depicts the change in market share on X-axis and change in unit value (perceived quality) on Y-axis. The size of the bubble indicates the exported quantity of a product in 2019.

In addition, map is divided into four quadrants as explained below⁸:

1. Top-right quadrant displays the products whose market share has risen despite rise in the unit value of the product in concern (i.e. perceived of high quality)
2. Top-left quadrant displays the products, whose market share has fallen with rise in the unit value of the product (i.e. decrease in competitiveness)
3. Bottom-left quadrant displays products whose market share has decreased even with the fall in unit value of the product (i.e. perceived of low quality or death of product)
4. Bottom-right quadrant displays products whose market share has increased with the fall in unit value of the product (i.e. innovation or economies of scale at work)

Global Value Chain Analysis

UNCTAD-Eora GVC database⁹ has been used for this purpose for analyzing the participation and position of India and China in the Global Value Chain and their share in value addition of each other's exports for the years 2001, 2010 and 2018. Also, secondary reports have been used to analyze the rising dominance of China in the global value chains.

In a value chain, there is vertical specialization which has 3 features i.e. there is a stage-wise production of goods; two or more nations provide value added in the sequence of production; and at least one economy uses the inputs imported in its production stage and exports some part of the product produced to a third nation or back to the economy of origin. This vertical specialization has two measures: one is

⁸For visual expression of quality perception, the work of Chakraborty and Hussain (2019) may be referred.

⁹UNCTAD: United Nations Conference on Trade and Development

from the import perspective and other from the export perspective developed by Hummels et al. (2001):¹⁰

1. **Foreign Value Addition or Backward Participation (Import perspective):** It refers to the imported intermediate input content of exports, which is calculated for each nation and every product as the amount of that input multiplied by the ratio of export to gross output for that product. By summing across products, the total for a country is calculated. Here, it is assumed that the ratio of intermediates to output is the same for output domestically sold and output exported.
2. **Indirect Value Addition or Forward Participation (Export perspective):** It refers to the export portion used by another nation in the manufacturing of its export goods, which is calculated for each nation as the sum over all products and destinations of its exports of intermediates multiplied by the ratio: exports/gross output for that industry in the destination economy. It is assumed that the usage of each intermediate input is proportionately the same for products domestically sold and exported.

The GVC Participation is calculated as:

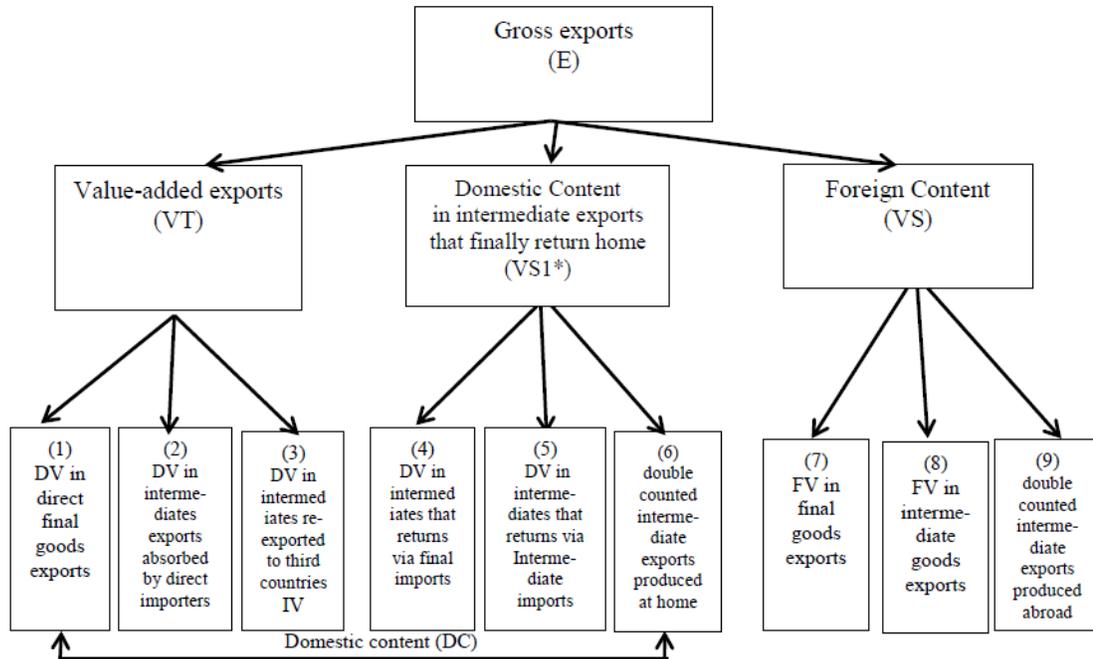
$$GVC\ Participation = \left(\frac{IV}{E} \right) + \left(\frac{FV}{E} \right)$$

where, IV is Indirect Value Addition; FV is Foreign Value Addition; E is Gross Exports which is explained in Figure 1 below¹¹. Higher the participation ratio, the greater is the intensity of involvement of a particular economy in GVCs.

¹⁰Aslam Aqib, Novta Natalija, and Rodrigues-Bastos Fabiano (2017); 'Calculating Trade in Value Added', IMF Working Paper, WP/17/178.

¹¹Koopman Robert, Zhi Wang, Shang-Jin Wei (2012); 'Tracing Value-Added and Double Counting in Gross Exports', National Bureau of Economic Research (NBER) Working Paper Series, Working Paper 18579.

Figure 1: Slicing Gross Exports in terms of Forward and Backward Linkage



Note: (7)+(8)+(9) is labeled as VS or backward linkage, (3) + (4)+(5)+(6) is part of VS1 or forward linkage.

Source: Koopman (2012).

Koopman et al. (2014) defined a position index that illustrates the relative upstream position of a country in particular industry. GVC Position is calculated as:

$$\text{GVC Position} = \ln \left[1 + \left(\frac{IV}{E} \right) \right] - \ln \left[1 + \left(\frac{FV}{E} \right) \right]$$

Nations with a larger position index are relatively more upstream, i.e., they contribute more value added to other nations' exports than other nations contribute to theirs.

4. India-China Trade Analysis

Export-Import Trend

Chinese economy has grown to be a major exporter in the world which accounts for about 13% (around US\$ 2498.57 Billion) of the total world exports and is the heart

of the global value chain. High demand for goods from developed as well as developing nations has been the reason behind the phenomenal rise in China's exports and consequent consistent current account surplus over the years. In fact, over the last hundred years, China is the only economy which has shown a yearly average economic growth rate of higher than 10% for thirty years from 1980 to 2009.¹² India, on the other hand, has been able to increase its exports to the world significantly i.e. from US\$ 43.88 Billion in 2001 to US\$ 322.79 Billion in 2019 but its share in the world exports has just shown a minor rise from 0.7% in 2001 to 1.7% in 2019.¹³

Economic reforms initiated in both the countries encouraged growth through market-driven competition, improved labour and capital productivity, infrastructure development, setting up of support and regulatory institutions and by attracting foreign investments. However, for China, the export growth has been greater in relation to the imports leading to trade surpluses while, on the other hand, India's case has been the opposite resulting in continuous trade deficits.

The trade developments which happened in China have also impacted the India-China bilateral trade flows. There has been a rise in the bilateral trade flow from US\$ 2.75 Billion in 2001 to US\$ 85.12 Billion in 2019 (India's exports as US\$ 16.96 billion and imports as US\$ 68.16 billion) at a compound annual growth rate of 21% which has made China a major trading partner of India over these years. In 2019, almost 14.20% of India's imports came from China while only 5.25% of India's exports had gone to China. Globally, China is India's second largest trading partner after USA.

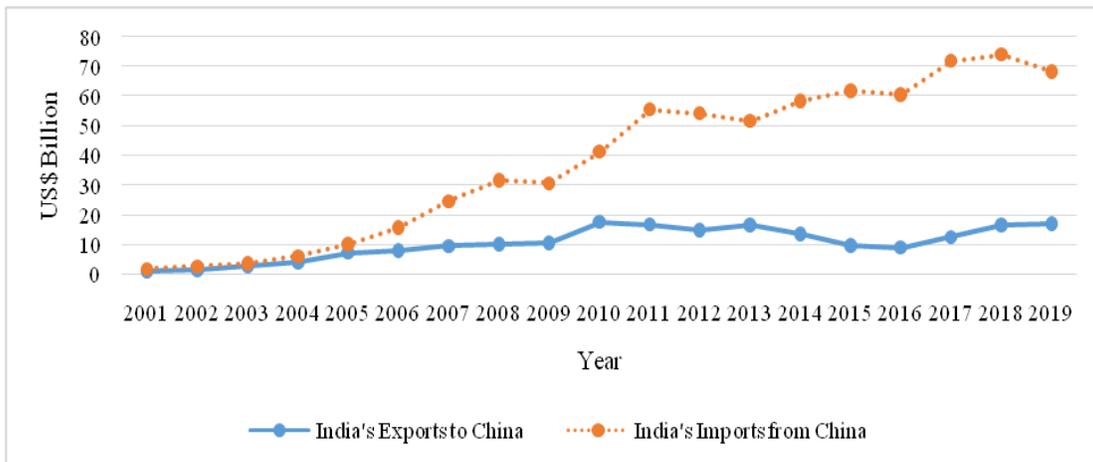
As China's share in the total imports of India has risen at a much quicker rate than that of exports, India's trade deficit with China has increased mainly post 2006 rising to around US\$ 51.20 Billion in 2019. The improved terms of trade enjoyed by China has been primarily due to the exports of high value manufactured products. It is important to note that India's exports reached the level of US\$ 17.44 billion in 2010 and since then, it has not crossed it. Almost stagnant exports to China over the years

¹²Abraham Biju Paul, Nag Biswajit, and Ray Partha (2020); 'China-bashing and Post-COVID-19 Narrative: A Reality Check', EPW, Volume LV No. 39, September 26, 2020.

¹³ITC Trade Map

raise serious questions of India’s comparative advantages and trade barriers imposed on it by China.

Figure 2: Yearly Trade Flows between India and China (2001-2019)



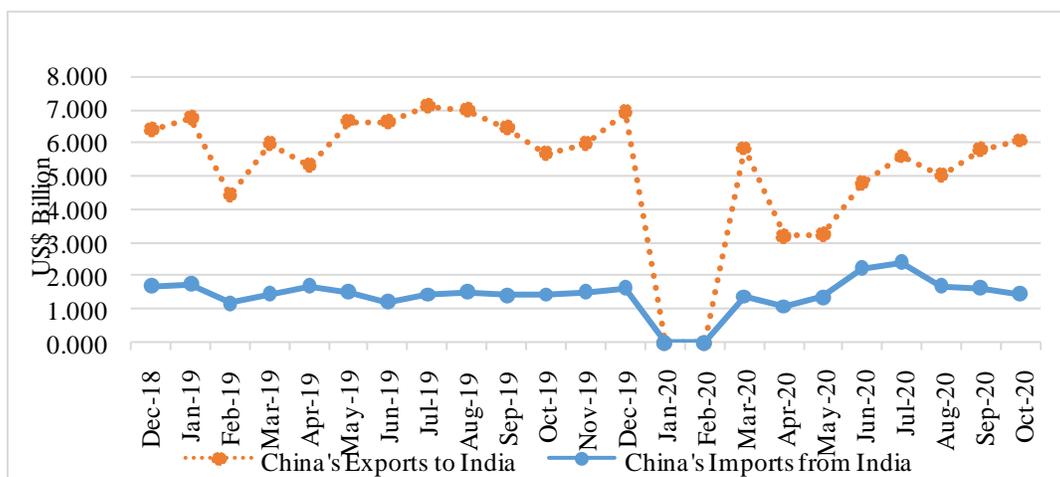
Source: ITC Trade Map

We have also looked into the monthly export and import data during the period Dec18-Oct20. Due to absence of India’s data in the latest months, China’s exports and imports based on preliminary estimates have been analyzed. The Figure 3 below provides a snapshot. The zero trade during January and February 2020 was due to the lockdown situation in China and similarly, drop in China’s exports in April-May 2020 was because of lockdown in India. However, it is interesting to observe that China’s exports to India have steadily increased since June and the figure in Oct20 is very close to Oct19, whereas India did have an initial spurt in exports but it has been declining since Aug 20. India exported significantly semi-finished & flat steel products and ferro alloys (HS: 7207, 7208 and 7202), iron ore and concentrates (HS: 2601), copper ores and concentrates (HS: 2603), organic chemicals, plastics and mechanical machinery etc. to China in 2020. This indicates that China resumed its metal productions immediately after the lockdown for its economic revival. On the other hand, India’s imports consists of telephone sets (HS: 8517), integrated circuits (HS: 8542), automatic data processing (HS: 8471), other semiconductors, chemical products etc. India’s import of antibiotics (HS: 2941) has been around US\$ 79 million in July 2020 (compared to US\$ 69 million in Nov 2019). Hence, it is clear

that our dependence on China is deep and it may take long time for India to shift its supply base even if it wants at least for these products.

The long-term trend shows that both India and China have consistent trade structure. China exports electronic and consumer products, whereas imports mineral, metal products, chemicals etc. from India. In general, the product composition of India's exports to China is dominated by Organic Chemicals (HS:29); Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes (HS:27); and Ores, slag and ash (HS:26) each accounting for a share of more than 10% followed by Fish and crustaceans, molluscs and other aquatic invertebrates (HS:03) and Cotton (HS:52) together accounting for a share of 56.43% in India's total exports to China. It can be seen that the structure of India's exports to China is dominated by primary products.

Figure 3: Monthly Trade Flows between India and China (Dec18-Oct20)



Note: Data for Aug-Oct 20 has been converted from INR billion to US\$ billion using average exchange rate during that month.

Source: Trade Map & Trading Economics

It is also important to mention that India's Top 3 products exported to the world which are not in the list of top exports to the China are Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin (HS:71); Machinery, mechanical

appliances, nuclear reactors, boilers; parts thereof (HS:84); and Vehicles other than railway or tramway rolling stock, and parts and accessories thereof (HS:87) together accounting for a share of only 5.88% in India's total exports to China.

Looking at the imports, Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles (HS:85, having 28.73% share); Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof (HS:84, having 20.20% share); Organic chemicals (HS:29, having 12.09% share) are the top importable products and these 3 add up to a share of 61.03% in India's total imports from China.

It can be seen that China is exporting high-value technology-intensive manufactured products to India while importing majorly primary products from India. This explains the China's efforts to move up the global value chain and the rising trade deficit of India. There has been a rapid change in China's trade composition and structure in the late 2000s because of the privatization of important manufacturing sectors, huge foreign direct investment (FDI) inflows, liberalization of trade and increased domestic content of exports.

State of Relative Competitiveness

We have considered 6 product categories (3 from India's top exports to China and 3 from India's top exports to world) for India's exports and 3 products for India's imports from China. CMS analysis has been conducted on the HS-4 digit products under each category for the period 2014-2019 to study the reasons behind the change in imports. CMS divides the changes in three groups which are expressed through percentage. They are rise in import due to overall change in aggregate demand, import growth due to product diversification effect and residual as proxy of change in competitiveness effect. The residual competitiveness effect is usually from two channels that is change in price competitiveness or trade agreements.

Table 1 summarizes the results. In case of India, the driver of the export growth has been majorly its export competitiveness and the demand-pull due to China's overall growth reflected in high import demand in general. However, product diversification effect is less. On the contrary, China's export to India is also due to its high competitiveness but product diversification effect is not negligible. Hence, China

derives its benefits through its combined strategy of rapidly changing product structure along with taking advantage of economies of scale.

Table 1: Constant Market Share Analysis Results (2014-19)

India's Top 3 Exports to China					
HS Code	Product Name	World Growth Effect	Product Composition Effect	Residual Competitiveness Effect	Absolute Change in Exports (US\$ Thousand)
29	Organic Chemicals	0.48%	0.21%	99.31%	21,74,363
27	Mineral fuels, mineral oils and products of their distillation; bituminous substances; mineral waxes	3.95%	-25.33%	121.38%	4,45,870
26	Ores, slag and ash	0.77%	-2.74%	101.98%	11,19,690
India's Top 3 Exports to World not in the list of Top 3 Exports to China					
71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin	2.96%	-10.67%	-92.30%	-58,139
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	1.98%	-2.81%	100.83%	2,89,539
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof	5.06%	-5.12%	-99.94%	-23,645
India's Top 3 Imports from China					
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles	1.05%	7.16%	91.78%	91,93,840
84	Machinery, mechanical appliances, nuclear reactors, boilers; parts thereof	2.13%	12.64%	85.23%	41,76,473
29	Organic chemicals	2.56%	11.17%	86.27%	21,50,251

Source: Authors' Calculations using ITC Trade Map data

In case of organic chemicals, China had decided to shut down several chemical manufacturing which has essentially helped in the growth of the Indian organic chemicals exports. Another reason for increased exports of organic chemicals to China has been the growing trade tensions between US and China. This product group is dominated by cyclic hydrocarbons (HS:2902) which has a share of 56.54% in India's total export to China.

In case of mineral fuels, mineral oils etc. (HS:27), product composition effect has been highly negative for India indicating that it is not offering a varied basket of goods under this category i.e. the product basket is very concentrated. In fact, petroleum oils and oils obtained from bituminous minerals (excluding crude), etc.(HS:2710) alone accounts for a share of 96% in India's exports to China of this product group.

However, for natural pearls, precious stones and metals, jewellery etc. (HS:71); and vehicles other than railway (HS:87), India's exports to the China have declined from 2014-19. CMS results reflect that there has been substantial decline in competitiveness and some reduced diversification or reduced import by China in these product groups. Diamonds, whether or not worked, but not mounted or set (HS:7102); and automobile parts and components (HS:8708) account for a share of 97.42% and 80.11% in their respective groups.

Rise in China's imports of machinery (HS:84) from India is encouraging during the period 2014-19. It seems that this is an emerging area for possible value chain between these two countries as China's exports of machinery to India is also increasing. India's exports of turbojets (HS:8411) increased significantly during this period which might pave the path for related products as well.

In case of China, the driver of the export growth is primarily export competitiveness followed by some diversification of product exports, growth in demand of the product group with very small world growth effect. For an instance, in case of electrical machinery (HS:85), the demand has been rising in India due to the expansion of power networks and infrastructure, new investments in technology and in energy-efficient industrial equipment.

Electronic integrated circuits; parts thereof (HS:8542); Parts suitable for use solely or principally with transmission and reception apparatus for radio-telephony, radio-telegraphy, radio-broadcasting, television, television cameras, still image video cameras and other video camera recorders, radar apparatus, radio navigational aid apparatus or radio remote control apparatus, n.e.s. (HS:8529); Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, incl. photovoltaic cells whether or not assembled in modules or made up into panels (excluding photovoltaic generators); light emitting diodes; mounted piezoelectric crystals; parts thereof (HS: 8541) have shown decent change in shares from 2014 to 2019 with 30% of the share belonging to Telephone sets, incl. telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, incl. apparatus for communication in a wired or wireless network; parts thereof (HS:8517). China has a distinct comparative advantage in these products.

India must focus on offering after sales services, distribution channel, innovative pricing, local brand development etc. as well as on diversifying its product basket in order to push domestic products in the category of electrical products and appliances. Post-import servicing of electronic products may help in two ways. It can generate employment and also increase the ability of 'learning by doing' which can be utilized to develop the domestic sector eventually.

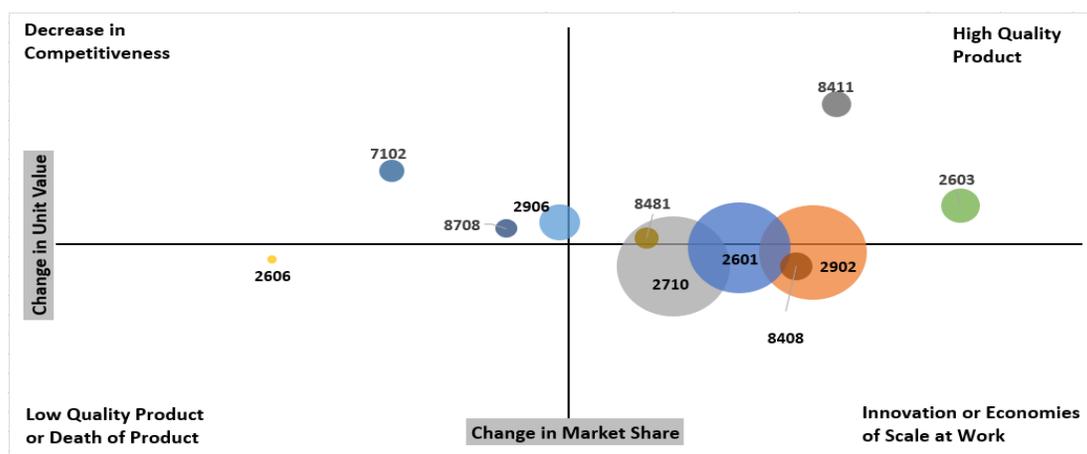
Mapping the Quality Perception of Exportable Products

Figure 4 depicts the 'quality perception' margin analysis of 11 major products at HS-4 digit level under the top products exported by India to the China and the world in terms of their changing export share in China in the last 5 years. Similarly, a reverse exercise has also been done to understand quality perception of Chinese products in Indian market as shown in Figure 5.

There are only 3 Indian products, out of the selected 11 products that India exports to China, perceived to be of high quality in Chinese market. They are Copper ores and concentrates (HS: 2603); Turbojets, turbo-propellers and other gas turbines (HS: 8411); and Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, incl. pressure-reducing valves and thermostatically controlled valves, parts thereof (HS: 8481). Their export market share has increased even with the rise

in their unit values but they are exported in very small amounts as indicated by the size of the bubble.

Figure 4: Quality Perception Margin - Change in Volume Share versus Change in Unit Price for Products exported by India to China (2014-19)¹⁴¹⁵



Source: Authors' Calculations using ITC Trade Map data

Other products like Diamonds, whether or not worked, but not mounted or set (HS:7102); Parts and accessories for tractors, motor vehicles for the transport etc. (HS:8708); and Cyclic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives (HS:2906) have lost their competitiveness over the years with rise in unit prices and declining shares. Suitable incentive structure may be framed for the SMEs who are involved in exporting these products.

While, Aluminium ores and concentrates (HS:2606) are considered to be of low quality now, products like Cyclic hydrocarbons (HS:2902); Compression-ignition

¹⁴Details of Products given in the Appendix

¹⁵For HS:2603, copper ores and concentrates, years 2016-19 is taken as no quantity was exported by India to China in 2014 and 2015.

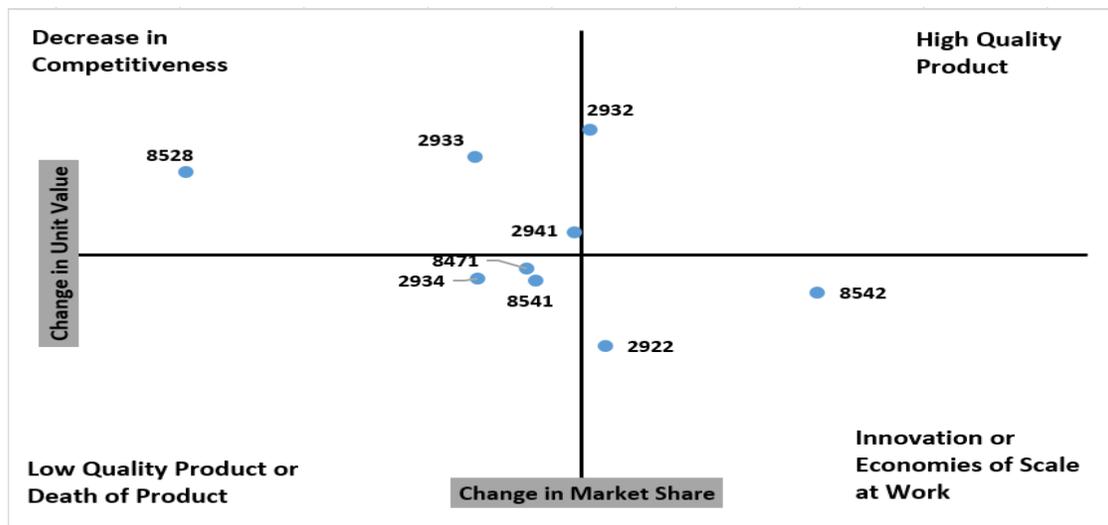
For HS:7102, India's and world's exported quantity to China in 2014 has been calculated by dividing the respective exported value of 2014 by the unit price of 2015.

For HS:7102, HS:8408 and HS:8411, the exported quantity by India to China in 2019 has been calculated by dividing the respective exported value in 2019 by the unit price of 2018.

internal combustion piston engine "diesel or semi-diesel engine" (HS:8408); Iron ores and concentrates, incl. roasted iron pyrites (HS:2601); and Petroleum oils and oils obtained from bituminous minerals (excluding crude), etc. (HS:2710) have been able to penetrate in the Chinese market with reduced unit value and increased export share.

It is clear from the above discussion that though India is known for its exports of primary commodities, mineral fuel and some chemical products to China, rising competitiveness in the category of machinery (HS:84) is worth noticing.

Figure 5: Quality Perception Margin - Change in Volume Share versus Change in Unit Price for Products imported by India from China (2014-2019)¹⁶¹⁷



Note: The bubbles reflecting import quantity are not shown here as import of HS 8541 and 8542 are much higher than others making size of bubbles of these two products unusually bigger in comparative terms.

Source: Authors' Calculations using ITC Trade Map data

¹⁶ Details of Products given in the Appendix.

¹⁷ For HS:8541 and HS:8542, India's imported quantity from China and world in 2014 has been calculated by dividing the respective imported value of 2014 by the unit price of 2015.

For HS:2933, India's imported quantity from world in 2014 has been calculated by dividing the respective imported value of 2014 by the unit price of 2015.

For HS:8471, HS:8528, HS:8541 and HS:8542, India's imported quantity from China and world in 2019 has been calculated by dividing the respective imported value in 2019 by the unit price of 2018 (unit price of 2017 in case of HS:8542).

Figure 5 provides the possible quality perception of 9 major exportable products¹⁸ from China to India during the period 2014-19. Comparing Figures 4 and 5, it is clear that India has more products falling in first and fourth quadrants implying improved quality perception and India's potentiality to take advantage of economies of scale. On the contrary, the two most exportable products from China (HS 8542: integrated circuits and HS 8541: diodes, transistors and similar semi-conductor products) are not in first quadrant. India imports integrated circuits (HS: 8542) from China due to cheaper costs as India imports in large volume. On the other hand, HS: 8541 has already slipped into third quadrant implying a slow but steady loss of Indian market. No product is clearly falling into first quadrant meaning India does not perceive Chinese products (at least the selected ones) as of good quality. It is important to note some chemical compounds (HS:29) and especially antibiotics (HS:2941) are losing in Indian market due to competitiveness. The explanation sometimes become elusive as the volume of import from China is still very large.

5. Role of India and China in the Global Value Chains

GVC participation and position index of India and China shows that from 2001 to 2018, participation in GVCs has increased for both the countries. The sharp rise between 2001 and 2010 reflects more integration with the world. Active participation in globalization process with steady trade liberalization, integration with East and South East Asia through different FTAs perhaps are the reasons behind it. However, global slowdown and especially, India's poor performance in exports in recent past reduced India's GVC participation.

However, India and China moved in opposite direction in terms of GVC position, especially between 2010 and 2018. India has moved backward implying that it is importing more inputs and other nations contribute more value added to its exports than it does to other nations' exports. On the other hand, China has moved from backward to forward during the period, which means that it is encouraging more domestic production in order to export to other countries and contributing relatively more value added to other nations' exports. Backward participation mostly indicates downstream activities (such as assembling final products) which require less

¹⁸Some major products i.e. HS:8517, HS:8529 and HS:8414 imported by India from China are not depicted in the diagram due to data unavailability on quantity imported.

innovation and low value addition. On the contrary, forward participation implies movement towards upstream activities (such as innovative product design and critical component production) which improves country's innovation capability and command more values. The visual explanation is given in Figure 6.

It can be seen in Table 2 that China's value addition in India's exports has increased from 0.70% in 2001 to 4.97% in 2018 while India has a negligible share of value addition in China's Exports. India requires to link manufacturing and innovation policies with a focus on exports. A time bound strategic approach in some selected sectors can help India to move up the value chain. Perhaps, a true *Aatma-nirbhar Bharat* not only requires self-reliance in terms of production for domestic market but also an effort to move forward in terms of GVC position.

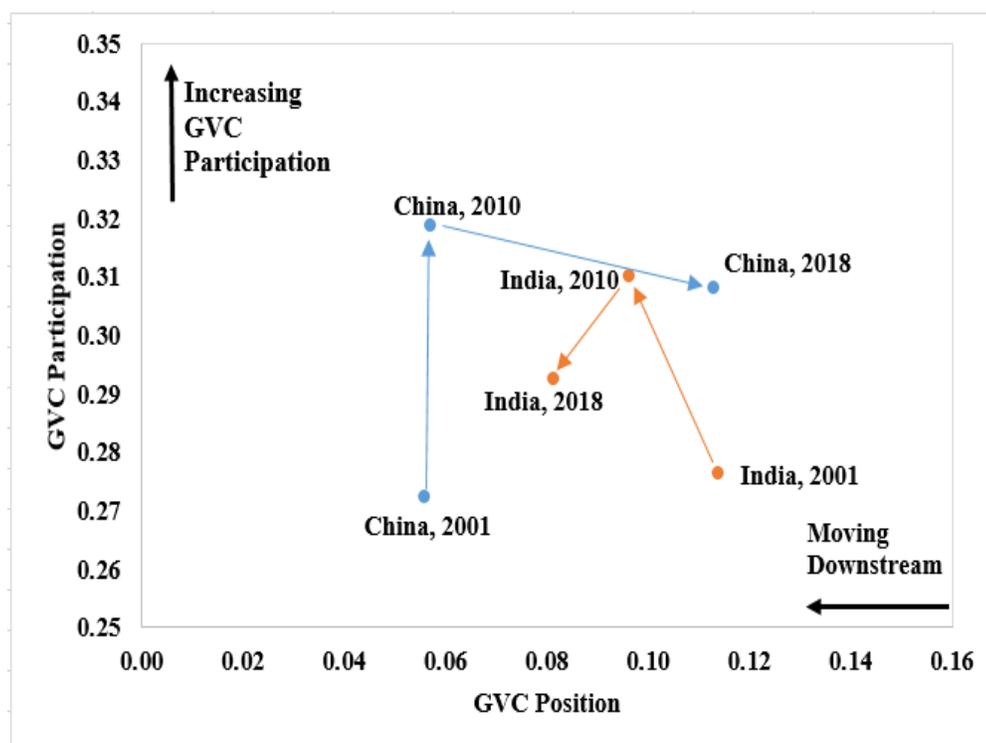
Globally, China is the second-largest nation in terms of GDP at market exchange rate which stands at USD 14.1 trillion and has beaten US with its 1/5th share in world GDP in terms of purchasing power parity reached in the mid-2010s. With an investment rate of 40-45% of GDP, China has been able to establish an inclusive and widespread network across the world to enhance its efficiency of forward and backward connectivity and the supply chains. Agriculture, mining, manufacturing, construction, scientific research, water conservancy, leasing and business service, banking, wholesale and retail trade, transport, storage, etc. are the common sectors where Chinese investment is visible. In absence of India in RCEP, member countries have an added advantage to integrate them with China especially when cost of production in China is increasing. We have also noted that China is slowly losing its advantage of economies of scale. Hence, India requires a strategic plan for its future trading relationship with China.

6. Post-Pandemic Future Scenarios and India's Strategy¹⁹

Since the global order post the pandemic is uncertain and information is limited, it is important to sketch out various scenarios possible in the future. The following

¹⁹Nag, Biswajit (2020); 'Post Covid-19 Global Economic Order and China - Scenario Building for India's 2050 Strategy', *COVID-19: Challenges for the Indian Economy - Trade and Foreign Policy Effects*, ASEAN-India Centre (AIC) - Engineering Export Promotion Council of India (EEPC), New Delhi.

Figure 6: India and China’s Participation and Position in the Global Value Chains



Source: UNCTAD-Eora GVC Database

Table 2: Share of Value Addition in Exports: India and China

	2001		2010		2018	
	China	India	China	India	China	India
Domestic Value Addition	85.64%	89.82%	81.39%	85.52%	86.54%	85.42%
China's VA in India's Exports		0.70%		1.75%		4.97%
India's VA in China's Exports	0.16%		0.35%		0.30%	

Source: UNCTAD-Eora GVC Database

scenarios are built considering China’s dominant position in global trade and the bilateral trade analysis as described above.

Scenario 1: China has assisted many developing countries by providing development assistance to them. This has helped China to enhance its dominance as well as its market size in these developing countries. It also indirectly controls foreign exchange flows in many developing countries as it owns several mines and commodity production there.

Through its Belt and Road Initiative (BRI), it has assured to develop a wide network of energy pipelines, railways, highways, and streamlined border crossings to enable smooth trade among the nations and has invested around US\$ 100 billion in the developing countries so far. In addition to the physical infrastructure, China plans to build fifty Special Economic Zones (SEZs), modelled after the Shenzhen SEZ. Such a network could bring about a new trading regime with Chinese dominance.

China also enjoys dominant position in crucial materials and minerals needed for the manufacturing of technology goods in the future. It may also try to influence these countries to raise trade barriers against other countries including India. This will help China in achieving its objective of global supremacy and might affect India's trade with many African and Latin American nations.

Scenario 2: China exploited its comparative advantage due to low wages and followed export-driven growth strategy in the past. The huge surplus accumulated through exports and large inflow of FDI created upward pressure on the currency and led to its appreciation. It is evident that China is losing its comparative advantage now as a result of rising wage costs and appreciation of the domestic currency due to which, the Chinese government is taking several measures to tackle the same.

The government has been following the strategy of “going out” and the investment outflows have grown exponentially since the financial crisis. It invested approximately US\$ 37.2 billion in EU and US\$ 46.5 billion in the USA in 2016.²⁰ Several countries in Asia, Latin America, US and Europe have been the preferred destination for Chinese investment. It has also put in money in foreign stock markets and bought government securities. Currently, China is focusing in sectors like robotics, artificial intelligence, 5G, 3D printing, pharmaceuticals, etc. It is also

²⁰ Wong, Perry, et. al. (2020); ‘China’s Global Investment Strategy’, Milken Institute

aiming to invest in new countries in the areas of basic electronics, petrochemical products, textiles, machine tools etc. By doing this, China will develop an external value chain of these products.

This might hamper India's dream in high-tech products and its export opportunities even in emerging markets such as South Africa, Brazil, Middle East and East European countries.

Scenario 3: In the midst of the political backlash faced by the foreign firms in China, the Chinese firms as well as their foreign partners would want to shift their bases away from China. Both the firms will try to find a mid-way solution to this problem. It is possible that the firms will shift their production base to a country where the Chinese firm has a subsidiary. Further, some tertiary activities such as packaging, final assembly, etc. can be shifted to other Chinese or joint venture companies located in some other countries. At the end, the money will flow back to China and the major beneficiaries will be the Multinational Corporations (MNCs) and the Chinese firms who are already a part of the GVCs. This scenario will create less supply disruption and less price volatility as compared to the situation in the Scenario 4 discussed below. Recent signing of RCEP indicates that Asian players tend to focus more on regional supply chain for developing a regional competitiveness. As India is not a part of RCEP, it will not be able to take advantage of this regional value chain. The paper has noted that India has started specializing in downstream activities. It is not sure whether Asian value chain will prefer India to other countries such as Vietnam, Indonesia for such activities. China's experience shows a rise through technological ladder as a growth strategy i.e to move from downstream to upstream activities through technology spillover and diffusion leading to innovation. India's absence in RCEP may pose a challenge to itself in GVC driven trade growth.

Scenario 4: In some cases, MNCs are being pressurized to shift their production base from China. These companies will look towards greener pastures for investments and new supply chains in the parts of South East Asia and Eastern European countries. But, in the short run, a shift from existing base with comparative advantage will lead to shortage of goods and price hikes. The readjustment will take time as the companies detach their supply chains from China. In this scenario, there will be a severe negative impact on the exports from China.

Given the above four scenarios, we sketch out possible responses from India for each scenario in the Table 3 below keeping India-China trade at the centre. The experts are still not able to truly predict the future course of the world economy and hence, it is necessary to prepare for each possible situation in the future. The future course will require a mix of openness, *Aatma-nirbharta*, international diplomacy and domestic policies to ensure recovery from the current situation as well as to ensure sustained growth with a robust trading relation with China.

Table 3: India’s Strategies Post-pandemic depending on the Scenario

Strategy I	Strategy II	Strategy III	Strategy IV
<p>India must focus on retaining its market share in countries such as:</p> <ul style="list-style-type: none"> • Africa • South Asia • Middle East • Central Asia • East Europe • Latin America <p>Its diplomatic channel should focus on using development assistance, soft power and lines of credit etc. to retain its market power.</p> <p>India could also promote investment in these countries and integrate them in its domestic value chain. There exists number of non-tariff barriers (NTBs) in these countries including issues in trade facilitation. India must</p>	<p>India must promote its innovation ecosystem to attract foreign companies to work together on technological front. This will enhance product development and subsequent exports.</p> <p>India should not ignore protecting itself from hostile takeovers and should encourage more greenfield investment.</p> <p>Sectors like pharmaceuticals (vaccines and generic medicines), electronics and digital products (Fintech, Agrotech, Healthtech, etc.) should be considered for focused areas in post-covid period.</p>	<p>India needs to strengthen its position in ASEAN (post-RCEP strategy) and East Europe, to remain proactive by being a part of newly developed value chains.</p> <p>India’s leverage in the following sectors could be effective:</p> <ul style="list-style-type: none"> • Chemicals • Electronics • Electrical • Metals • Capital goods • Machine tools • Auto- components <p>India needs to address inefficiency in domestic supply chain and promote skill development, design, innovation etc. by focussing more on Small and Medium Enterprises (SME) initiatives.</p> <p>Close cooperation among SMEs within India and</p>	<p>Identification of the key production sectors where India can take the place of China in short-run such as:</p> <ul style="list-style-type: none"> • Metals • Auto-components • Engineering products • Electrical machinery • Chemical products, including pharmaceutical. <p>Providing early incentives to such sectors to initiate product diversification and aggressive market entry strategies.</p> <p>Improving its FDI policy in the medium run to benefit these sectors.</p>

engage itself in bilateral discussion/negotiation to improve its market access.	For these tech-products/services, India must develop closer cooperation with like-minded countries having large market. Recent collaboration for development of Covid vaccine is an example.	companies from these countries may be promoted for 'bottoms-up' innovation. This requires a carefully crafted strategy for technology spillover and diffusion.	Focusing on improving domestic supply chain across the states to ensure time efficiency and attract foreign investment
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Source: Modified from Nag, Biswajit (2020).

7. Conclusion

As the global economic order is changing, India must redefine its position in the global market to leverage gains as well as to minimize potential risks. There should be a judicious mix of policies focusing on trade agreements as well as promoting self-reliance as envisaged in *Aatma-nirbharta* objective of the current Government. The paper looks into bilateral trade between India and China and it is observed that India's products are not sufficiently diversified and lack perception of good quality. On the other hand, China's exports mostly exploit economies of scale. Both India and China have improved their participation in GVC but in terms of GVC position, they moved in different direction. India has moved towards backward integration implying more import of value added goods for its exports. China has moved forward indicating production of more components for the export of third countries. Continuous investments in developing industrial eco-system, participating in global value chain and encouraging foreign players to connect with local SMEs have helped China to prosper. The study also identifies that India's collaboration with China in machinery development may pay off as both way trade is encouraging. India must retain market power in its traditional export destinations in post-covid period, refute hostile takeover of domestic companies, collaborate with foreign players in new product development and empower its SMEs. It also requires a clear strategy towards Asia including China in absence of its presence in RCEP. Some experts argue for India to take more aggressive export strategy with China with a focus on product diversification, bilateral negotiation on tariff and non-tariff barriers, collaborative approach for value chain creation etc. (Pant 2020). The de-globalization and

protectionism drive in the period of ‘new-normal’ may slowly turn to re-globalization and usher in new opportunities. India must grab this with a change in its policy mindset to compete, cooperate and co-opt simultaneously with China.

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Appendix

Appendix 1: Details of Products at HS-4 digit level (used in the Paper)

HS Code (4 Digit)	Product Name
2601	Iron ores and concentrates, incl. roasted iron pyrites
2603	Copper ores and concentrates
2606	Aluminium ores and concentrates
2710	Petroleum oils and oils obtained from bituminous minerals (excluding crude); preparations containing $\geq 70\%$ by weight of petroleum oils or of oils obtained from bituminous minerals, these oils being the basic constituents of the preparations, n.e.s.; waste oils containing mainly petroleum or bituminous minerals
2902	Cyclic hydrocarbons
2906	Cyclic alcohols and their halogenated, sulphonated, nitrated or nitrosated derivatives
2922	Oxygen-function amino-compounds
2932	Heterocyclic compounds with oxygen hetero-atom[s] only
2933	Heterocyclic compounds with nitrogen hetero-atom[s] only
2934	Nucleic acids and their salts, whether or not chemically defined; heterocyclic compounds (excluding with oxygen only or with nitrogen hetero-atom[s] only)
2941	Antibiotics
7102	Diamonds, whether or not worked, but not mounted or set (excluding unmounted stones for pick-up styluses, worked stones, suitable for use as parts of meters, measuring instruments or other articles of chapter 90)

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7202	Ferro-alloys
7207	Semi-finished products of iron or non-alloy steel
7208	Flat-rolled products of iron or non-alloy steel, of a width \geq 600 mm, hot-rolled, not clad, plated or coated
8408	Compression-ignition internal combustion piston engine "diesel or semi-diesel engine"
8411	Turbojets, turbopropellers and other gas turbines
8414	Air or vacuum pumps (excluding gas compound elevators and pneumatic elevators and conveyors); air or other gas compressors and fans; ventilating or recycling hoods incorporating a fan, whether or not fitted with filters; parts thereof
8471	Automatic data-processing machines and units thereof; magnetic or optical readers, machines for transcribing data onto data media in coded form and machines for processing such data, n.e.s.
8481	Taps, cocks, valves and similar appliances for pipes, boiler shells, tanks, vats or the like, incl. pressure-reducing valves and thermostatically controlled valves; parts thereof
8517	Telephone sets, incl. telephones for cellular networks or for other wireless networks; other apparatus for the transmission or reception of voice, images or other data, incl. apparatus for communication in a wired or wireless network [such as a local or wide area network]; parts thereof (excluding than transmission or reception apparatus of heading 8443, 8525, 8527 or 8528)
8528	Monitors and projectors, not incorporating television reception apparatus; reception apparatus for television, whether or not incorporating radio-broadcast receivers or sound or video recording or reproducing apparatus
8529	Parts suitable for use solely or principally with transmission and reception apparatus for radio-telephony, radio-telegraphy, radio-broadcasting, television, television cameras, still image video cameras and other video camera recorders, radar apparatus, radio navigational aid apparatus or radio remote control apparatus, n.e.s.
8541	Diodes, transistors and similar semiconductor devices; photosensitive semiconductor devices, incl. photovoltaic cells whether or not assembled in modules or made up into panels (excluding photovoltaic generators); light emitting diodes; mounted piezoelectric crystals; parts thereof
8542	Electronic integrated circuits; parts thereof
8708	Parts and accessories for tractors, motor vehicles for the transport of ten or more persons, motor cars and other motor vehicles principally designed for the transport of persons, motor vehicles for the transport of goods and special purpose motor vehicles of heading 8701 to 8705, n.e.s.

Source: ITC Trade Map