INDIA'S TRADE TIES WITH CHINA SINCE 2001

Thesis Submitted for the Award of the Degree of

DOCTOR OF PHILOSOPHY

in ECONOMICS

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DECLARATION

I, hereby declared that the presented work in the thesis entitled "INDIA'S TRADE

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i

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ii

ABSTRACT

India and China, two of the world's oldest civilizations, have long shared deep historical and cultural connections. Together, they represent over thirty-seven per cent of the global population, with China home to approximately 1.4 billion people and India to around 1.3 billion. Geographically, China is the fourth-largest country and India the seventh, both play vital roles in East and South Asia. Following India's independence in 1947, relations with China began on a positive note, with diplomatic ties formally established in 1950. The 1954 Sino-Indian trade agreement marked early cooperation but the 1962 war strained their relationship. Diplomatic ties were restored in 1976, leading to enhanced economic cooperation and a surge in bilateral trade.

Today, India and China are the largest developing economies driving growth in Asia. However, their trade relationship remains heavily imbalanced. While China has become India's largest import partner, India's exports to China are limited, resulting in a widening trade deficit. This growing imbalance is a concern, both in terms of the size of the deficit and its rapid increase over the years. Despite ongoing political tensions, such as the 2020 Galwan Valley clash, economic interdependence between the two nations remains strong. To sustain this relationship, addressing the trade deficit is crucial. A more balanced trade partnership would benefit both countries and ensure long-term stability in their economic ties. While trade remains central to their relationship, achieving more equitable economic cooperation is essential for sustainable growth.

Most existing literature on India-China trade relations has focused on the impact of the 2007 economic recession, often overlooking more recent global developments such as the COVID-19 pandemic, the US-China trade war and escalating border disputes between the two nations. While these studies acknowledge the growth of bilateral trade, they emphasize the rising trade deficit that India has been experiencing with China. Notably, no comprehensive study has been found that examines India's trade with China in light of these recent global and bilateral shifts.

This study, titled "India's Trade Ties with China since 2001," aims to fill this research gap. Although trade between India and China existed prior to 2001, China's

entry into the World Trade Organization (WTO) that year marked a crucial turning point, integrating it into the multilateral trading system and deepening economic engagement with India. The study offers a thorough economic analysis of the trade relationship since 2001. Additionally, it projects future trade patterns between India and China, taking into account the recent shifts in global economic conditions and bilateral relations. By addressing these overlooked developments, this research aims to provide a more complete understanding of the trade dynamics between the two nations, offering valuable insights for policymakers and economists seeking to enhance trade cooperation and address the growing trade imbalance.

The study primarily explores the economic dimension of India-China relations, emphasizing trade trends and patterns. It also seeks to identify products where India holds a competitive edge and address challenges that impact India's trade performance with China.

The main objectives of the study are:

- 1. To analyse the trends and patterns in bilateral trade between India and China.
- 2. To assess the trade competitiveness between the two nations.
- 3. To explore the trade potential between India and China.
- 4. To identify the issues and challenges faced by Indian stakeholders in trading with China.

By addressing these aspects, the study aims to offer insights that can help improve India's trade balance and strengthen economic ties between the two countries.

This study aims at performing an empirical analysis of India's trade with China. The study has been based on primary and secondary data. The primary data has been collected through survey method. Secondary data has been used for this purpose for the reference time period of 2001 to 2023. The data has been taken from various authentic sources such as UNCOMTRADE, UNCTAD, World Bank, World Trade Organization (WTO) and International Monetary Fund (IMF).

Various statistical techniques have been used in this study such as Compound annual growth rate (CAGR), percentage share, export and import intensity index, trade intensity index, export and import similarity index, trade complementarity index to study the trends and patterns Of India's trade with China. Revealed comparative advantage index is used to assess India's trade competitiveness with China. The gravity model of trade is used to explore trade potential between India and China. A primary survey is conducted to capture stake-holders views on issues and challenges faced by them while trading with China. To narrow down the list to Indian exporters exporting to China, a list was collected from Federation of Indian Exporters Organisation (FIEO). Based on Cochran's method a sample size of 384 respondents was determined. An online survey was conducted with exporters; to collect the data and 120 successful responses were received based on questionnaire giving it a success ratio of 31.25 per cent.

The results obtained shows that China is India's largest import partner, accounting for around 14% of India's total imports in 2022. On the other hand, India's exports to China represent only about 3% of its total exports, bringing forth the unequal nature of this trade relationship. Conversely, China does not rely heavily on India for its imports, as India ranked 32nd among China's import partners in 2022, accounting for a mere 0.64% of China's total imports. This indicates that while China plays a crucial role in India's trade, India does not occupy a similarly significant position in China's trade portfolio.

One of the main findings is the low similarity between the top 20 export products of India and China in the global market. This lack of export similarity shows that India does not compete directly with China in terms of global exports. Additionally, India exhibits low import similarity with China, which further highlights the different needs and trade compositions of the two economies. Despite this, there is notable trade complementarity between Indian exports and Chinese imports. India's exports tend to align well with China's import demands, suggesting that India could potentially expand its exports to China, provided that barriers to trade are addressed.

The assessment of India's trade competitiveness with China shows that the analysis of product categories at the HS 2-Digit code level for 2022 reveals that, out of 15 product groups, India holds a comparative advantage in four where the Revealed Comparative

Advantage (RCA) value exceeds 1. This indicates stronger export performance of these product groups relative to other product groups in India's trade with China. Specifically, India enjoys a comparative advantage in two resource-intensive product groups—Mineral products (HS 25-27) and Plastics/rubbers (HS 39-40) and two technology-intensive groups—Metals (HS 72-83) and Machinery/electrical products (HS 84-85). In contrast, India faces a comparative disadvantage in 11 other product groups, where the RCA value is less than 1. This suggests that India struggles to compete effectively in these areas when trading with China.

The more detailed examination of HS 6-Digit product classification shows that Mineral Products (HS 25-27), Chemical & Allied Industries (HS 28-38), Animal and Animal products (HS 01-05) emerge as the top three product groups with the highest percentage of competitively positioned (CP) product lines. These products perform strongly in the India-China trade dynamic. In contrast, the Footwear/Headgear product (HS 64-67) group has the highest percentage of product lines in Threatened Products (TP) category, indicating a risk of losing competitiveness in trade. Other product groups have less than 1% of their product lines in this category, signalling a lower level of threat in terms of losing their competitive standing for those product lines.

The analysis further reveals promising trends in emerging products. Raw Hides, Skins, Leathers & Furs (HS 41-43), Chemical & Allied Industries (HS 28-38) and Wood & Wood Products (HS 44-49) are the top three product groups with the highest percentage of product lines in Emerging Products Tier I (EPTI) category, representing new areas of growth potential for Indian exports and are likely to contribute to the country's trade competitiveness in the future. In the Emerging Products Tier II (EPTII) category, Machinery/Electrical (HS 84-85), Miscellaneous (HS 90-97) and Textiles (HS 50-63) stand out, with more than 50% of their product lines classified in this category. Product lines in EPTII category have relatively lower RCA profile but exhibit potential to become competitive in the future.

Mineral Products (HS 25-27), Chemical & Allied Industries (HS 28-38) and Textiles (HS 50-63) are the only three product groups with product lines classified in the Weakly Positioned Tier I (WPTI) category. However, the share of product groups in this category is less than 1%, indicating a relatively small portion of India's export portfolio

facing challenges in these sectors. All the product groups have significant percentage of product lines in Weakly Positioned Tier II (WPTII) category with Animal and Animal products (HS 01-05), Mineral products (HS 25-27), Metals (HS 72-83), Vegetable products (HS 06-15), Foodstuffs (HS 16-24), Stone/Glass (HS 68-71) having more than fifty per cent of their product lines in this category. These product lines are at comparative disadvantage and are at the lower end of competitiveness spectrum.

Overall, this HS 6-Digit product analysis has been instrumental in identifying the top 10 performing products under different product groups classification where Indian exports have enjoyed a revealed comparative advantage in trade with China in 2022. These findings help identify India's strengths and weaknesses in its trade relations with China and highlighting key areas for policy intervention and export promotion.

Ordinary Least Square (OLS) and Random Effects Generalised Least Squares estimation techniques are used to perform gravity model analysis of India's trade flow with China from the year 2001 to 2022. The results show that various economic and geographical factors significantly influence trade flows between India and China which offers practical insights for policymakers aiming to enhance bilateral trade relations. The findings indicate that certain key factors such as GDP, per capita GDP, population, distance and common border, significantly influence trade flows between the India and China. Conversely, variables such as relative factor endowments and preferential trade agreements are found to be statistically insignificant, which suggests that these factors do not play as crucial a role in determining bilateral trade between India and China. The findings suggest that India's trade flows with China align with theoretical expectations.

The survey was conducted to explore various issues and challenges faced by Indian stakeholders in their trade with China. India's trade relationship with China is fraught with difficulties and several of these issues are highlighted by the study's findings. Key factors affecting the performance and competitiveness of Indian exports include taxes and duties on the import of raw materials, the availability of export warehousing and packaging facilities, and access to a skilled workforce. Respondents identified the duty-free import of inputs as the most beneficial form of financial assistance for boosting exports.

One of the main external constraints on Indian exports to China is competition from other countries, which was viewed as a significant challenge by respondents. Additionally, the price of products was identified as the primary factor influencing demand for Indian goods in the Chinese market. To address these challenges, the Government of India has introduced various export promotion schemes aimed at supporting Indian exporters. Among these, the "Star Export House" certification emerged as the most prominent, as identified by survey respondents. While these schemes provide competitive advantages in the export market, many respondents reported difficulties in accessing them. Respondents identified the top-ranked use of imports from China as their use as raw materials, followed closely by their use as final goods for domestic supply. The primary reason for importing from China, as identified by respondents, is the price-cost margin advantage that Chinese products offer. However, 34.16% of respondents expressed a desire to reduce their dependence on Chinese imports. The key reasons for this shift include the need to support and develop Indian industries through initiatives like "Make in India" and "Aatmanirbhar Bharat." Reducing import dependence is also seen as a way to improve India's foreign exchange reserves by cutting down the import bill, as well as preparing for potential future disruptions, such as war or trade disputes, by exploring alternative markets.

When assessing the Chinese market, respondents identified competition from domestic Chinese producers as the primary factor affecting the performance of Indian exports. Additionally, discriminatory restrictions were identified as a significant challenge faced when exporting to China, although cultural differences and language barriers were rated relatively minor obstacles.

A key issue identified by respondents for improving India's export performance in China is the need for greater investment in research and development (R&D). The respondents emphasized that focusing on innovation and technology development is essential for improving the quality and competitiveness of Indian products in the Chinese market. The development of local manufacturing capabilities was identified as the top-ranked remedial measure for both boosting exports and reducing dependence on Chinese imports. By enhancing domestic production capacities, India can strengthen

its export performance and reduce its reliance on foreign suppliers, thereby addressing the trade imbalance with China.

India can reduce its trade deficit with China, enhance economic resilience, and leverage its comparative advantages through strategic policy measures. The following recommendations offer a pathway to attain these objectives such as diversification of import sources away from China to reduce import dependence on China, aiming for greater integration with the global economy, taking advantage of trade complementarity, strive to strengthen competitive advantages, increased investment in Research and Development (R&D), recalibration of trade policies, increased investment in infrastructure development, promotion of domestic manufacturing and creating public awareness campaigns to encourage Indian consumers to buy domestically produced goods.

In conclusion, India and China, two of the world's largest economies, should aim to enhance their economic relationship. Although China's economy is significantly larger, India's rapid growth and young workforce offer complementary strengths. By reducing trade barriers and focusing on emerging opportunities, India and China can unlock new avenues for prosperity. A strong economic partnership between the two countries will contribute not only to their own growth but also to regional stability and global economic resilience.

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χi

TABLE OF CONTENTS

Contents	Page No.
List of Tables	xiv-xv
List of Figures	xvi-xvii
List of Appendices	xvii
Abbreviations	xviii-xx
Chapter 1- Introduction	1- 49
1.1 Introduction	2
1.1.1 Theories of International Trade	3
1.1.2 India- China Engagement in various Forums	6
1.2 India- China Relations Evolution	10
1.2.1 Historical Ties	10
1.2.2 Political Relations	11
1.2.3 Summit level Talks	13
1.2.4 Economic Ties	17
1.3 Review of Literature	18
1.3.1 Trends and patterns of India's trade with China	18
1.3.2 Trade competitiveness of India and China	28
1.3.3 Trade potential between India and China	31
1.3.4 Issues and challenges faced by Indian stakeholders while trading with China	36
1.4 Rationale and Research Gap	40
1.5 Research Objectives	41
1.6 Data Sources	41
1.7 Research Methodology	42
1.8 Design of study	49
1.9 Summary	49
Chapter 2- Trends and Patterns of India- China Bilateral Trade	50- 74
2.1 Background	51
2.2 Overview of India- China Trade Ties	51
2.3 India- China Bilateral Trade	55

2.4 Direction of Trade	63
2.5 Export, Import and Trade Intensity between India and China	65
2.6 India's Export and Import Similarity with China	68
2.7 Trade Complementarity between India and China	71
2.8 Summary	72
Chapter 3- Trade Competitiveness between India and China	75- 106
3.1 Introduction	76
3.2 Comparative Advantage of India's Export Products to China: Aggregate Analysis at HS 2- Digit Classification	77
3.3 Comparative Advantage of India's Export Products to China: Aggregate Analysis at HS 6- Digit Classification	79
3.4 Summary	104
Chapter 4- Trade Potential between India and China	107- 119
4.1 Introduction	109
4.2 Gravity model evolution	103
4.3 Gravity model empirical analysis	110
4.4 Summary	118
Chapter 5- A Survey of Indian Stakeholders while Trading with China	120- 147
5.1 Survey Result	121
5.2 Summary	146
Chapter 6- Summary and Conclusions	148- 160
6.1 Summary of the Study	149
6.1.1 Objective 1 Summary	150
6.1.2 Objective 2 Summary	151
6.1.3 Objective 3 Summary	152
6.1.4 Objective 4 Summary	153
6.2 Policy Implications	154
6.3 Conclusion	158
6.4 Limitations of the Study and Future Research Scope	159
Bibliography	161- 176
Annexures	177- 195

LIST OF TABLES

S. No.	Title					
Table 1.1	Recent Developments in RTAs					
Table 1.2	Recent Engagements of India and China in various Forums					
Table 1.3	Bilateral Visits by Political Leaders and Agreements signed	12-14				
Table 1.4	India- China Summit level talks and their outcome	15				
Table 2.1	Demographic and Macroeconomic Indicators of India and China (2022)	53				
Table 2.2	India- China Bilateral Trade (US\$ Thousand)	55-56				
Table 2.3	Rate of growth of India- China Bilateral Trade (%)	59				
Table 2.4	Share of India and China in World Trade (%)	60				
Table 2.5	Share of India and China in Bilateral Exports, Imports and Trade (%)	61-62				
Table 2.6	India- China Bilateral Trade Intensity	66-67				
Table 2.7	Export Similarity Index between India and China (2001-2022)	69				
Table 2.8	Import Similarity Index between India and China (2001-2022)	70				
Table 2.9	Trade Complementarity Index of India and China	71-72				
Table 3.1	Technological Classification and RCA of India's exports with China at HS 2- Digit level (2022)	77-78				
Table 3.2	RCA Profile and Product Grouping at HS 6-Digit level (2001-2022)	80				
Table 3.3	Top ten products with highest RCA values in product grouping (2022)	86-90				
Table 4.1	Variables descriptives	111-112				
Table 4.2	Empirical results of Gravity Model Estimation	112-113				
Table 4.3	Gravity Model Estimation Results	113-114				
Table 5a	Conversion of Rank and Percentile into Garrett Score	123				
Table 5.1	Ranking of characteristics of raw materials affecting exports performance based on the perception of the respondents	124				
Table 5.2	Ranking of characteristics of infrastructure facilities affecting exports performance based on the perception of the respondents	125-126				

Table 5.3	Ranking factors affecting competitiveness of India's exports	126					
	based on the perception of the respondents						
Table 5.4	Ranking financial assistance provided to boost Indian	128					
	exports according to the perception of the respondents						
Table 5.5	Ranking factors impacting demand for Indian products in	129					
	Chinese market according to the perception of the						
	respondents						
Table 5.6	Ranking external constraints affecting Indian exports	130					
	according to the perception of the respondents						
Table 5.7	Ranking export promotion schemes helping Indian	131					
	exporters as perceived by the respondents						
Table 5.8	Ranking export promotion schemes benefits as perceived by	133					
	the respondents						
Table 5.9	Ranking reasons for imports from China as perceived by the	137					
	respondents						
Table 5.10	Ranking China market environment factors impacting	142					
	India's exports performance with China as perceived by the						
	respondents						
Table 5.11	Ranking overall impression of Chinese market as perceived	143					
	by the respondents						
Table 5.12		144					
	facilitate India's exports performance in Chinese market as						
	perceived by the respondents						
Table 5.13	Ranking remedial measures to boost Indian exports and	145-146					
	reduce imports as perceived by the respondents						

LIST OF FIGURES

S. No.	S. No. Title							
Figure 2.1	Bilateral exports and imports between India and China (2001-2022)	56						
Figure 2.2	India's trade balance with China (2001-2022)	58						
Figure 2.3	Top ten export destinations for India (2022)	63						
Figure 2.4	Top ten import partner countries of India (2022)	64						
Figure 2.5	Top ten export destinations for China (2022)	64						
Figure 2.6	Top ten import partners of China (2022)	65						
Figure 3.1	Technological Classification of India's exports with China (2001-2022) using RCA approach	79						
Figure 3.2.1	Top ten products with highest RCA for animal and animal products category (2022)	84						
Figure 3.2.2	Top ten products with highest RCA for vegetable products category (2022)	85						
Figure 3.2.3	Top ten products with highest RCA for foodstuffs category (2022)							
Figure 3.2.4	Top ten products with highest RCA for mineral products category (2022)							
Figure 3.2.5	Top ten products with highest RCA for chemical and allied industries category (2022)							
Figure 3.2.6	Top ten products with highest RCA for plastics/rubber products category (2022)	94						
Figure 3.2.7	Top ten products with highest RCA for raw hides, skins, leather and fur products category (2022)							
Figure 3.2.8	Top ten products with highest RCA for wood and wood products category (2022)							
Figure 3.2.9								
Figure	Top ten products with highest RCA for	98						
3.2.10	footwear/headgear products category (2022)							
Figure	Top ten products with highest RCA for stone/glass 99							
3.2.11	products category (2022)							
Figure	Top ten products with highest RCA for metals products							
3.2.12	category (2022)							

Figure	Top ten products with highest RCA for	102						
3.2.13	machinery/electrical products category (2022)							
Figure	Top ten products with highest RCA for transportation	103						
3.2.14	products category (2022)							
Figure	Top ten products with highest RCA for miscellaneous	104						
3.2.15	products category (2022)							
Figure 5.1	Respondents profile industry-wise	121						
Figure 5.2	Nature of business of respondents	121						
Figure 5.3	Size of the enterprises	122						
Figure 5.4	Products exported by respondents	122						
Figure 5.5	Access to export assistance programs as perceived by the	134						
	respondents							
Figure 5.6	Products imported by respondents	135						
Figure 5.7	Use of imports from China							
Figure 5.8	Imports whether supplied by domestic suppliers	136						
Figure 5.9	Impact of increased imports from China on sales of the	137						
	Indian enterprises							
Figure 5.10	Impact of increased imports from China on exports of	138						
	Indian enterprises							
Figure 5.11	Impact of increased imports from China on imports from	138						
	other countries							
Figure 5.12	Intention to reduce import dependence on China							
Figure 5.13	Sustainability of export volume	140						

ANNEXURES

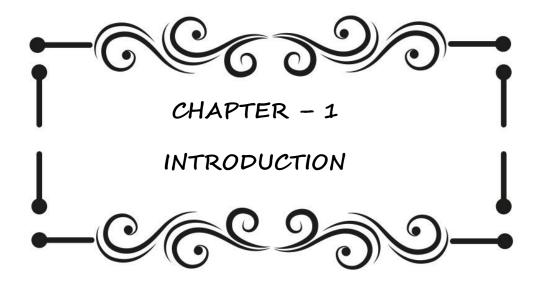
S. No.	Particulars	Page No.
Annexure I	Survey Questionnaire	178- 189
Annexure II	List of Publications	190-192
Annexure III	List of Conferences	193-194

LIST OF ABBREVIATIONS

AAS	Advance Authorisation Scheme					
AfCFTA	African Continental Free Trade Area					
APTA	Asia Pacific Trade Agreement					
ASEAN	Association of South East Asian Nations					
BIMSTEC	The Bay of Bengal Initiative for Multi-Sectoral Technical and					
	Economic Cooperation					
BRI	Belt and Road Initiative					
BRICS	Brazil, Russia, India, China, South Africa					
CAGR	Compound Annual Growth Rate					
CECA	Comprehensive Economic Cooperation Agreement					
CIS	Commonwealth of Independent States					
COC	Cost of compliance					
СР	Competitively positioned					
СРТРР	Comprehensive and Progressive Trans-Pacific Partnership					
DFIA	Duty-Free Import Authorisation scheme					
DGFT	Directorate General of Foreign Trade					
DGTR	Directorate General of Trade Remedies					
DPI	Digital Public Infrastructure					
DRC	Development Research Centre					
EAC	East African Community					
EAS	East Asia Summit					
ECGC	Export Credit Guarantee Corporation					
EFTA	European Free Trade Association					
EII	Export Intensity Index					
EM (TI)	Emerging Product Tier I					
EM (TII)	Emerging Product Tier II					
EME	Emerging Market Economy					
EPCG	Export Promotion Capital Goods					
ESI	Export Similarity Index					

EU	European Union			
FDI	Foreign Direct Investment			
FIEO	Federation of Indian Export Organization			
FTA	Free Trade Agreement			
GBA	Global Biofuels Alliance			
GDP	Gross Domestic Product			
GLS	Generalized Least Squares			
GNP	Gross National Product			
GVC	Global value chain			
H-O	Hecksher-Ohlin			
HTI	High technology intensive			
IES	Interest Equalisation Scheme			
III	Import intensity Index			
IMEC	India- Middle East- Europe Economic Corridor			
IMF	International Monetary Fund			
ISI	Import Similarity Index			
JEG	Joint Group on Economic Relations, Science and Technology			
LAC	Line of Actual Control			
LTI	Low-technology Intensive			
MAIS	Market Access Initiative scheme			
MOU	Memorandum of Understanding			
MSMEs	Medium, small and micro enterprises			
MTI	Medium technology Intensive			
NAFTA	North American Free Trade Agreement			
NIRVIK	Niryat Rin Vikas Yojana			
NITI	National Institution for Transforming India			
NTMs	Non-tariff measures			
OLS	Ordinary Least Squares			
PCGDP	Per Capita GDP			
PLI	Production Linked Incentives			
PTA	Preferential Trade Agreement			

R&D	Research and Development			
RCA	Revealed Comparative Advantage			
RCEP	Regional Comprehensive Partnership			
RFE	Relative Factor Endowment			
RI	Resource-Intensive			
RTA	Regional Trade Agreement			
SCO	Shanghai Cooperation Organization			
SED	Strategic Economic Dialogue			
SIM	Similarity Index			
SMEs	Small and Medium Enterprises			
SRs	Special Representatives			
TCI	Trade Complementarity Index			
TII	Trade Intensity Index			
TP	Threatened Product			
UN	United Nations			
UNCOMTRADE	United Nations Commodity Trade Statistics Database			
UNCTAD	United Nations Conference on Trade and Development			
UNDP	United Nations Development Programme			
WEF	World Economic Forum			
WITS	World Integrated Trade System			
WMCC	Working Mechanism for Consultation and Coordination			
WP (TI)	Weakly Positioned Product Tier I			
WP (TII)	Weakly Positioned Product Tier II			
WTO	World Trade Organization			



CHAPTER – 1 INTRODUCTION

The introductory chapter entails the background of the study and explains the reason providing justification for the selection of this research topic. It brings into focus the evolution of India-China bilateral trade, the study objectives, research methodology used, data sources, study relevance and the chapter scheme for the study. Chapter 1

aims to provide a deeper understanding of the topic under study.

1.1 Introduction

In current world, every nation's economy is associated with the economies of its trade partners which results in international movement of goods, services, investment, labor, business venture and technology. The level of economic interdependence of countries shows the historical evolvement of the world's political and economic order (Carbaugh, 2011). International economics is concerned with the financial and economic interdependence between countries. It studies the flow of goods, services, money and payments between one country and the rest of the world including the policies directed at regulation of these flows and their resulting impact on the nation's welfare. The financial and economic interdependence is affected by and in turn also influences the political, military, social and cultural relationship among countries. The world is facing revolution based on globalization of production, tastes, labor and financial markets which is made possible because of improvements in telecom and transport. This has made globalization inevitable. Globalization can be defined as the integration between countries through foreign investment and trade. Consumers increasingly demand similar products because of convergence in tastes. Thus, firms need to outsource components and parts from wherever they are made cheaper and better. In order to be internationally competitive they need to invest their technology and capital wherever they will be most productive so as to maintain their international competitiveness. Globalization is inevitable because it is required in the face of international competition but it is also important as it increases efficiency (Salvatore, 2006). Understanding and capitalizing on the trade's potential for generating a more prosperous and peaceful world for future generations will be vital as nations continue to engage in it.

1.1.1 Theories of International Trade

The fundamental foundations for understanding the dynamics, trends and ramifications of international trade are given by theories of trade. Economists have created a number of theories over the ages to explain why nations trade, how trade benefits them, and what influences trade patterns. These theories help understand the workings of international trade and develop practical trade policies by offering insightful analyses of trade dynamics.

Mercantilism is a 16th-century theory of international trade that emphasized on accumulating wealth and resources by maintaining a favorable balance of trade with partner countries. Mercantilism places a strong emphasis on the accumulation of wealth as a gauge of a country's prosperity, particularly in the form of precious metals like gold and silver. Using protectionist policies like tariffs, subsidies and trade restrictions, countries should maximize exports and minimize imports in order to create a trade surplus, in accordance with mercantilist ideas. Mercantilism sets the foundation for understanding the significance of trading for national wealth but later theories supporting free trade have questioned mercantilism's emphasis on protectionism.

In "The Wealth of Nations" (Smith,1776) Adam Smith introduced the theory of absolute advantage suggesting that countries should specialize in producing such goods in which they have an absolute productivity advantage over other nations. Smith maintained that countries could improve productivity, broaden their product offerings and save costs by concentrating on their areas of strength and engaging in trade with other nations.

David Ricardo introduced theory of comparative advantage in his book "On the Principles of Political Economy and Taxation" (Ricardo, 1817). It builds upon Smith's work and highlights the importance of relative opportunity costs in determining a nation's trade patterns. The theory suggests that even if one country is more efficient than another country in producing all goods, both can still gain from trade by specializing in goods in which they have a lower opportunity cost compared to their trade partners. Comparative advantage theory suggests that countries should assign resources to produce goods where they hold a comparative advantage and trade in those

goods where they have a comparative disadvantage leading to mutually beneficial outcomes.

The Heckscher-Ohlin model is developed by Eli Heckscher and Bertil Ohlin in the early 20th century. It emphasized differences in factor endowments as determinants of trade patterns. According to this theory, countries export goods which intensively use their abundant factors of production and import those goods that require factors of production in which they are relatively scarce. This model highlights the role of factor endowments impacting comparative advantage and trade specialization among nations.

The New Trade Theory, developed by economists such as Paul Krugman in the late 20th century, departs from traditional theories of trade by including elements of economies of scale, imperfect competition and product differentiation into the analysis of international trade. It suggests that firms could specialize in the production of certain goods because of economies of scale, leading to intra-industry trade and the propagation of diverse products in international markets. It highlights the importance of market structure and firm behaviour in determining trade patterns and competitiveness in global markets.

The Gravity Model of international trade draws on physics principles suggesting that trade between two countries is directly proportional to their economic size and inversely proportional to the distance between them. Though simple in concept, the Gravity Model has been empirically validated and remains a useful tool for understanding trade flows amongst nations. By including factors such as distance, economic size and cultural affinity, the Gravity Model provides insights into the determinants of bilateral trade relationships.

In conclusion, theories of international trade offer different viewpoints on the mechanisms, implications and drivers of trade among nations. From classical theories such as absolute and comparative advantage to modern theories like the New Trade Theory and Gravity Model, these frameworks shed light on the complex interplay of factors impacting global trade patterns. By helping make informed policy decisions, guiding business strategies and expanding our understanding of the global economy,

theories of international trade play a crucial role in steering the challenges and opportunities of an interconnected world.

Over time, most countries have increasingly opened up their economies for international trade and the resulting trade and globalization brought vast benefits to many such countries. Various factors have created changes in trade patterns such as the growth of global value chains (GVCs), services trade, emerging market economies (EMEs), digitization and technology and a gradual reduction in tariffs. These changes in trade patterns have been reshaping the structure of global trade (Vidya *et al.*, 2020).

International trade is one of the important factors promoting global economic integration and serving as an instrument of economic growth and development. The global trade system has seen the growth of Regional Trade Agreements (RTAs) which are aimed at achieving various economic and political objectives. RTAs are a key feature in international relations which have not only increased in number but also in depth and complexity over the years. According to World Trade Organization (WTO), RTAs imply any reciprocal trade arrangement between two or more trade partners which do not necessarily belong to the same region and all WTO members have an RTA in force as of June, 2016. As of 1 January 2024, 361 RTAs are in force. The base principle of WTO membership is non-discrimination whereby members commit, in general, not to favor one trade partner over the other. The exception to this principle is RTAs because these agreements allow signatories to enjoy more favorable conditions for market access. RTAs aim to facilitate trade between its signatories but they do not raise trade barriers with respect to third parties (WTO, 2024).

Table 1.1 - Recent developments in RTAs

RTAs		Region		n	Members		
1.	Comprehensive and	1.	Asia-	Pacific	1. Australia, Brunei		
	Progressive Trans-		Region		Darussalam, Canada, Chile,		
	Pacific Partnership		C		Japan, Malaysia, Mexico,		
	(CPTPP) Agreement				Peru, New Zealand,		
	(CI III) Agreement				Singapore and Vietnam		
2.	Regional	2.	Asia		2. Ten ASEAN members,		
	Comprehensive				China, Japan, South Korea,		
	Partnership Agreement				Australia, New Zealand		
	(RCEP)						

3.	3. Pacific Alliance		Latin America	3.	Chile, Colombia, Mexico,
					Peru
4.	African Continental	4.	Africa	4.	54 out of 55 African Union
	Free Trade Area				Members
	(AfCFTA)				

Source- World Trade Organization

India actively participates in trade negotiations in order to expand and diversify its exports markets and also ensure access to inputs required to sustain domestic manufacturing sector. India is engaged in preferential market access and economic cooperation with the help of trade agreements with over fifty countries including Free Trade Agreement (FTA) with UAE, Australia, Singapore, Japan and Preferential Trade Agreement (PTA) with numerous countries including China, Thailand, Vietnam and other states (Ministry of Commerce, India, 2024). China has engaged in bilateral investment agreements with over 100 countries covering arbitration, expropriation, most favored nation treatment and return of investment proceeds. It is engaged in 21 FTAs with countries including Association of South East Asian Nations (ASEAN) members, Pakistan, New Zealand, Singapore, Chile, Peru, Iceland, Maldives, South Korea, Australia among others. China is a member of PTA termed Asia Pacific Trade Agreement (APTA) with India, Bangladesh, Republic of Korea, Lao and Sri Lanka (Ministry of commerce, China, 2024).

1.1.2 India-China Engagement in Various Forums

1. World Trade Organisation (WTO)

India has been a founding member of WTO since its beginning in 1995. China became a member of WTO in 2001 which gave it steady access to the world markets. India runs a trade deficit with China and is suspicious of China unfairly subsidising its exports to capture the Indian market resulting in filing of anti-dumping and countervailing duties against Chinese exports. Despite their bilateral issues, both nations have largely been in agreement with each other at multilateral level on various issues such as special safeguard mechanism, food security and fisheries subsidies. India and China are part of four negotiating groups: G-20, G-33, W-52 and Asian Developing members. They form common South focused agenda on important areas of negotiation and this cooperation

shifted the global power balance at WTO. The 18th G-20 summit was held in New Delhi with the theme of "Vasudhaiva Kutumbakam" which means that the world is one family. This summit marked the entry of African Union (AU) as a permanent member of G-20 which signalled increasing representation of developing countries in the alliance. Global Biofuels Alliance (GBA) was initiated with the aim of increasing collaboration of governments, industry and international organizations to promote the adoption of biofuels. A Memorandum of Understanding (MOU) was signed for the establishment of India- Middle East- Europe Economic Corridor (IMEC) between the governments of India, USA, Saudi Arabia, European Union, UAE, France, Germany and Italy. This is viewed as an alternative infrastructure network to China's Belt and Road Initiative (BRI). The transformative impact of India's Digital Public Infrastructure (DPI) is lauded by the members. The New Delhi declaration achieved unanimous consensus addressing diverse issues like Russia- Ukraine war, sustainable development, food security, tackling climate change by enhancing renewable capacity, commitment to address global food security and nutrition, launching Global Biofuel Alliance (Sharma, 2023).

2. BRICS (Brazil, Russia, India, China, South Africa)

BRICS was formed in the aftermath of 2009 financial crisis with the aim of establishment of more equitable global order by challenging western nations supremacy in world economy and allowing larger developing countries a greater say in global policymaking. It encourages economic, cultural and political cooperation amongst its member countries and is a great example of South-South collaboration at the global stage. Despite controversial issues e.g. Doklam standoff of 2017, India and China participated in subsequent summits and displayed cooperation on certain issues. This partnership provides them an opportunity to deal with various bilateral and multilateral issues (Ghosh *et al.*, 2018). The 15th summit, held in 2023, was the first in person meeting since 2019 due to Covid-19 outbreak and after the start of Russia- Ukraine war. This summit is marked with the expansion of BRICS with the inclusion of six members- Argentina, Ethiopia, Egypt, Iran, Sudi Arabia and UAE taking the

total membership to eleven. The original members had two common points i.e. high potential growth rates and large size of the economies. The expanded BRICS-11 is a less coherent group where some members are thriving and others are in crisis. India had high stakes in the summit because it was the first in person meet since India – China military standoff at the Line of Actual Control (LAC). After bilateral talks between Indian and Chinese premiers, both nations agreed to ramp up efforts for de-escalation of tensions along LAC and disengagement of troops along the border. India called for BRICS collaboration the field of space technology and research and the protection of endangered big cats under the International Big Cat Alliance. BRICS nations reiterated support for reform of United Nations (UN) and agreed to address challenges posed by climate change while also making sure that the there is a just, sustainable and affordable transition to a low- carbon and low emission economy (Livemint, 2023).

3. Shanghai Cooperation Organization (SCO)

SCO is an intergovernmental organization established in 2001 with the goals of strengthening relations among members, encourage cooperation in different areas such as politics, trade, education, energy etc., maintaining peace and stability in the region and promoting fair and democratic international political and economic order. It comprises of nine members – the Republic of India, the Islamic Republic of Iran, the Republic of Kazakhstan, the People's Republic of China, the Kyrgyz Republic, the Islamic Republic of Pakistan, the Russian Federation, the Republic of Tajikistan, the Republic of Uzbekistan (SCO, 2024). Till date the SCO has mainly focused on regional security issues such as religious extremism, regional terrorism and ethnic separatism and regional development (UN, 2024). The twenty third SCO summit was held in 2023 under chairmanship of India with the theme – "Towards a SECURE SCO". SECURE stands for security, economic development, connectivity, unity, respect for sovereignty and territorial integrity and environmental protection. Secure SCO term was derived from the acronym coined by Indian Prime Minister at Qingadao summit held in 2018. Here At the 23rd summit, leaders called for a

more multipolar and global world order in the global interest. Two joint statements regarding cooperation in countering radicalization and second in digital transformation were adopted but India refused to be part of Belt and Road Initiative (BRI) of SCO members' economic strategy statement. Its opposition arises from inclusion of projects in Pakistan Occupied Kashmir which India considers a violation of its sovereignty (Ministry of External Affairs, 2024).

4. East Asia Summit (EAS)

EAS was formed in 2005 as an ASEAN initiative to provide platform for high level dialogue where key Indo -pacific partners meet to discuss political, economic and security issues pertaining to the region in order to advance regional cooperation. It has eighteen members including ten ASEAN countries of Brunei, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Vietnam along with India, China, Australia, New Zealand, Japan, Russia, Republic of Korea and USA. (Government of Australia, 2024). The six priority areas for regional cooperation in EAS are: ASEAN connectivity, environment and energy, finance, education, natural disaster management and global health issues and pandemic diseases (Ministry of External Affairs, 2018). Regional Comprehensive Economic Partnership (RCEP) was proposed in 2012 by EAS but India dropped out of the agreement citing negative impact on medium, small and micro enterprises (MSMEs), dairy and farming sector (Haider and Raghavan, 2021).

Table 1.2 – Recent engagements of India and China in various forums

Inter-	Meeting	Year	Place	Outcome
national				
Forum				
G-20	18 th	9-10	India	The summit declaration showed
	Summit	September		unanimous consensus on various
		, 2023		issues like Russia- Ukraine war,
				sustainable development*, food
				security** and launch of "Global
				Biofuel Alliance" (GBA) ***.
BRICS	15 th	22-24	South	Summit was marked with the
	Summit	August,	Africa	expansion of the grouping with
		2023		the introduction of six new
				members. Nations agreed for
				collaboration in space

				technology and research and protection of endangered big cats under the "International Big Cat Alliance". They reiterated support for reform of UN and agreed to address challenges posed by climate change.
SCO	23 rd	4 July,	India	New Delhi declaration was
	Summit	2023	(Virtual)	signed which called upon the
				international community to
				come together to oppose the
				activities of separatist, terrorist
	41-			and extremist groups.
EAS	18 th	6-7	Indonesia	Discussed strategic issues
	Summit	September		including climate action,
		, 2023		Ukraine invasion, destabilising
				activities in the South China Sea,
				and the Korean Peninsula. Issued
				a joint statement on maintaining
				and promoting ASEAN Region
				as an Epicentre of growth.

^{*&}quot;17 Sustainable Development Goals (SDGs) were adopted by the United Nations in 2015. They are a universal call to action to protect the planet, end poverty and ensure that all people enjoy peace and prosperity by 2030". (https://www.undp.org/sustainable-development-goals).

1.2 India- China relations evolution

1.2.1 Historical Ties

India and China have coexisted since ancient times as the world's two oldest civilizations. These countries enjoy strong historical and cultural links. China and India collectively account for greater than thirty seven percent of the world population with about 1.4 billion and 1.3 billion populations respectively. Territory wise China is the world's fourth largest country and India is the seventh largest country in the world. India lies at the centre of South Asia and China lies at the centre of East Asia (Singh, 2005).

The written records of contact between both countries can be traced back to at least second century B.C. Buddhism arrived in China from India in the first century A.D and

^{**&}quot;All people, at all times, have physical and economic access to sufficient safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life is defined as food security". (https://www.worldbank.org/).

^{***}GBA is a multistakeholder alliance aimed to facilitate development and deployment of biofuels and position them as key to energy transition and contribute to jobs and economic growth. (https://mopng.gov.in/).

aided in the increase of people to people contact especially through trade. There are records of numerous monks and scholars like Fa Xian and Kumarajiva who travelled India and translated Sanskrit texts into Chinese. The decline of Buddhism in India and the spread of colonialism in both the countries led to decline of cultural exchanges. The respective national freedom struggles had people searching for answers and led to resumption of contacts and feelings of solidarity. The "Hindi-Chini Bhai Bhai" phase of 1950s helped in strengthening of these ties (Indian Embassy, Beijing). Historically, their cultural interactions have been of greater importance than their economic interactions. Trade, commerce and cultural contacts between both nations flourished via the "Silk Road". Chinese merchants used it to sell porcelain, silk, tea and other products to India and bought Indian jewels, pepper, horses, perfume etc. This road played an important role in shaping cultural and economic ties between the two nations (Singh, 2005). India and China have experienced a rollercoaster of relations starting from the 1950s to lows of deep hostility in 1960s and 1970s to highs of reconciliation in the 1980s. The demise of Soviet Union led to readjustment of relations (Arif, 2013).

1.2.2 Political relations

After India's independence in 1947, the first decade of relationship between both nations was peaceful and harmonious. India established diplomatic relations with China in 1950. The Sino- Indian agreement on trade was signed in 1954 which expired due to the outbreak of war in 1962. The bilateral relations improved over time with the resumption of diplomatic relations in 1976. The restoration of diplomatic relations helped in the rapid development of India- China economic relations (Singla, 2015).

The annexation of Tibet by China in 1950 and India's sheltering of the Dalai Lama in 1959 inserted elements of frustration and distrust in their diplomatic relationship (Fang, 2013). China began to see India as a threat to its leadership of third world given its leading role in non-aligned movement. Both countries shared similar worldviews but tensions were brought forth on matters to achieve their core strategic interests. This is clearly reflected in their border dispute. It represents a common interest regarding territorial integrity and its unequivocal pursuance by both sides will lead to

confrontation between the two. Their shared belief of civilizational significance and the prior status of great powers further complicates this relationship (Maddison, 2003).

The landmark visit of Prime Minister Rajeev Gandhi in 1988 symbolised the advent of improvement in bilateral relationship. The agreement on the Maintenance of Peace and Tranquillity along the Line of Actual Control on the India- China border Areas was signed during the Prime Minister Narasimha Rao's visit to China in 1993. The "Confidence- Building Measures in the Military Field along the Line of Actual Control in the India- China Border Areas" was signed in 1996. These developments signalled beginning of improvement in bilateral relations.

Indian and Chinese leaders have visited China and India respectively over time and these visits have brought value and substance to bilateral ties because of agreements on various issues addressed during these visits.

Table 1.3 – Bilateral visits by political leaders and agreements signed

S. No.	Leaders	Year	Agreements Signed	
1	Prime	2003	1. Signed the "Declaration on Principles for Relations	
	Minister		and Comprehensive Cooperation".	
	Atal Bihari		2. Appointment of "Special Representatives" (SRs) to	
	Vajpayee		explore the framework of boundary settlement.	
			3. MOUs signed on expanding border trade with	
			designation of Changgu of Sikkim and Renqinggang	
			in Tibet as venue for border trade and use of Nathu	
			La in border trade.	
			4. Signed a "protocol of phytosanitary measures" for	
			exporting mangoes from India to China.	
			5. MOUs signed on simplifying visa procedures,	
			renewable energy, ocean science and technology and	
			cultural exchanges.	
2	Premiere Wen Jiabao	2005	1. Agreement on "guiding principles for settlement of boundary dispute".	
			2. Agreement on implementation of "confidence	
			building measures" along the Line of Actual Control in border areas.	
			3. Agreement on assistance and cooperation in custom	
			matters.	
			4. MOUs on civil aviation, "phytosanitary protocol"	
			for grape and bitter gourd export from India to	
			China, ministries of water resources of both	
			countries and signed protocol on "India- China film	
			cooperation commission".	

3	President	2006	1. Protocol to establish "Consulates-General" at
	Hu Jintao		Guangzhou and Kolkata to facilitate greater
			engagement between India and China.
			2. Agreement for "Promotion and Protection of
			Investments" to facilitate bilateral investment.
			3. Signed protocol on "Phytosanitary Requirements"
			for exporting rice from India to China.
			4. MOUs signed for cooperation in agriculture
			research.
4	Premier	2010	1. Established a "Strategic and Cooperative
	Wen Jiabao		Partnership for Peace and Prosperity".
			2. For enhancement of economic development and
			cooperation, the two sides agreed to establish a
			"Strategic Economic Dialogue".
			3. Set bilateral trade target of 100 billion US\$ by 2015.
			Agreed to take measures to reduce India's trade
			deficit with China including support for Indian firms
			participating in China's trade fairs, enhancing trade
			facilitation, faster completion of phytosanitary
			negotiation on agricultural products.
			4. Agreed to expand cooperation in investment,
			finance, infrastructure, IT and environmental
			protection. Constituted an "India- China CEO's
			forum" to make recommendations for expansion of
	DM.	2000	trade and investment cooperation.
5	PM	2008	1. Signed MOUs on cooperation between the Planning
	Manmohan		Commission of India and National Development and Reform Commission of China, railway
	Singh		ministries of both nations.
			2. MOUs on land resource management, land
			administration and resettlement and rehabilitation,
			on cooperation in culture, geosciences and
			traditional medicine.
			3. MOUs on "phytosanitary protocol" for export of
			tobacco leaves from India to China.
6	PM	2013	1. Reaffirmed commitment to take forward strategic
	Manmohan		and cooperative partnership for peace and
	Singh		prosperity.
			2. Both sides agreed to look into prospects of "bilateral
			RTA".
			3. "Border defence cooperation agreement" signed
			with the objective of strengthening stability on the
			border. It is built upon previous agreements signed
			in 1993, 1996 and 2005 which recognize the
			principle of mutual and equal security.
			4. MOUs signed on "cooperation on trans- border
			rivers".

			5. Agreement to "deepen cooperation and coordination in various multilateral forums" such as G20, BRICS to jointly tackle various global issues e.g. food and energy security, international terrorism and climate change.
7	President Xi Jinping	2014	 Redefinition of bilateral engagement as "Closer Developmental Partnership". Sixteen agreements signed in various sectors including trade, railways, space, pharma, sister city arrangements and establishment of industrial parks. MOUs signed to open Nathu La route for Kailash Mansarover yatra. Establishment of sister city relations between Mumbai and Shanghai Ahmedabad and Guangzhou to enhance people to people exchanges.
8.	PM Narendra Modi	2015	 Protocol for establishment of consulates in Chennai and Chengdu. MOUs on "increasing cooperation in the sphere of multilateral trade negotiations at WTO". MOUs on education exchange programs, cooperation in mining and mineral sector, establishment of "India- China" think tank forum, geo sciences, establishment of states/provincial leaders forum. Agreement on establishing sister cities relation between 1) Chennai and Chongquing Hyderabad and Quingdao Aurangabad and Dunhuang. Outline for space cooperation during 2015-2020.
9	President Pranab Mukherjee	2016	1. Ten MOUs in the field of education and research for faculty and student exchange as well as collaboration in research and innovation in higher education signed.

Source: Embassy of India in China, Ministry of External Affairs

1.2.3 Summit Level Talks

India and China participated in summit level talks with the aim of exchanging views on comprehensive issues of bilateral and global importance and explain their respective visions and priorities for national development in view of the present and future international situation. The two informal summits were held between the Prime Minister Narendra Modi of India and President Xi Jinping of China in 2018 and 2019 respectively and provided for free, direct and candid exchange of views.

Table 1.4 - India-China Summit level talks and their outcome

Summit	Year	Outcome
Wuhan Summit	2018	 Agreed to increase efforts to use the established mechanisms to give broadest possible platform for their bilateral relationship. Urged Special Representatives to intensify efforts in finding a solution to the boundary question and guided their respective militaries to use agreed upon confidence building measures for management of border affairs. Agreed to take forward bilateral trade and investment in a balanced way by taking benefit of complementarities between the two economies. Agreed to jointly contribute in finding solutions to global problems such as food security, sustainable development, combating diseases and digital empowerment etc and pooling in their resources and expertise to do so. Committed to cooperate on counter terrorism. Helped in creating an understanding that the future of India China relations is based upon mutual respect for each other's development aspirations and wisely managing differences with mutual sensitivity.
Chennai Summit	2019	 Discussed ways to strengthen bilateral interaction in order to reflect their growing role on the global stage. Agreed to strengthen and support the rules based multilateral trading system. Discussed ways to tackle global development challenges including climate change, achieving sustainable development goals and the common threat of terrorism. With historical maritime contacts context, both sides agreed to establish sister state relations between Tamil Nadu and Fujian province. With 2020 marking 70 years of establishment of India-China relations, the two sides designated 2020 as Year of India-China Cultural and People to People Exchanges. Agreed to establish a High – level Economic and Trade dialogue mechanism with the objective of achieving higher trade and commercial relations.

Source: Ministry of External Affairs

The two leaders appreciated the opportunity provided by informal summits in promoting mutual understanding and deepening of dialogue process. They had agreed for a third informal summit but the bilateral relations were adversely impacted because of military standoff incidents along the Line of Actual Control (LAC) in Eastern Ladakh in April-May 2020.

The Galwan valley fight served as a tipping point in India-China relations (Gokhale, 2021). Their border troops have been engaged in a border standoff in eastern Ladakh since May 2020. A violent clash in Pangong lake area of Ladakh, led to deployment of soldiers as well as heavy weaponry along the border by both the countries over time. Several rounds of military and diplomatic talks have only resulted in partial disengagement of troops until now (AIR, 2022).

The two leaders do visit each other's countries to attend various multilateral summits and also meet on the sidelines of various summits held outside both countries. India's PM and Chinese President held an informal conversation during the BRICS summit in Johannesburg, South Africa in August, 2023 where they exchanged views on current situation of India- China relations and other issues of common interest. They stressed on improving India-China relations which serves common interests of both nations and is conducive for peace, development and stability of the region and the world (Economic Times, 2023).

Both nations have more than thirty dialogue mechanisms covering various issues but the frequency of meetings is impacted because of current state of bilateral relations due to border issues and travel restricted imposed because of Covid-19. Some of the other mechanisms involved are:

- 1. Special Representative (SR) on India-China Border Question established in 2003. Its 22nd round of talks was held in 2019. A Working Mechanism for Consultation and Coordination on India-China Border Affairs (WMCC) was established during 15th round of SR talks in 2012. From 2020, both nations have held dialogue through WMCC and Senior Commander's Meeting for disengagement in border areas along LAC in Eastern Ladakh. Discussions for complete disengagement are undergoing.
- 2. High Level Dialogue Mechanism on Counter Terrorism and Security held its first meeting in 2016.
- 3. Furthering people to people contact, India- China Think Tank Forum is established. Its fourth meet was held in 2019.

1.2.4 Economic ties

India and China are the world's largest developing economies and their continuous growth has turned them into dynamic emerging markets and the engines of growth of Asian markets. Indo-Chinese trade has seen a steady increase since the turn of the new century but there is still room for improvement (Xiao, 2015). A natural synergy existed between India and China in the last decade with India acting as the back office of the world (Huchet, 2008). Indo- Chinese economic ties are considered as one of the building blocks of their reproachment and it has remained same irrespective of other areas of conflict amongst them. Bringing forth this point is the fact that despite border skirmishes and military standoff, the bilateral trade surpassed \$125 billion mark in 2021(The Economic Times, 2022). From 2009, China has been the biggest import partner country of India but the same importance is not matched for Indian exports to China which is reflected in the burgeoning trade deficit between the two nations and it shows that the trade is more in favor of China than of India which has resulted in unbalanced economic relations between the two giants (The Economic Times, 2024).

Trade with China has offered advantages such as the availability of low-cost items in India but it has also resulted in India's largest ever trade deficit with any other country in the world. India's trade deficit has two major concerns: one is the size of the deficit and second is the steep rise of the deficit over the years. Trade deficit has been rising over the years with only slight decline in 2019 (first time decline since 2005) and further decline in 2020 due to Covid-19 pandemic but since it has been rapidly rising and crossed 100 billion US\$ mark in 2022. The growth of trade deficit could be attributed to two factors. First the narrow basket of commodities exported to China and second the market access obstacles for products in which India is competitive such as agriculture, pharmaceuticals etc. over time, India's predominant exports of cotton, iron ore, copper, aluminum have been outnumbered by Chinese exports of machinery, telecom equipment, fertilizers and organic chemicals (Embassy of India, Beijing, 2024).

India China economic ties are molded through various dialogue mechanisms:

1. Joint Group on Economic Relations, Science and Technology (JEG): established in 1988 to discuss trade cooperation issues.

- 2. Strategic Economic Dialogue (SED): established in 2010 to discuss macro-economic cooperation.
- 3. NITI Ayog- Development Research Centre of China (DRC) Dialogue: established in 2015 to discuss global economic cooperation issues.
 Some of the other institutional dialogue mechanisms include Joint Working Group on Information and Communication Technology and High Technology, Joint Study Group and Joint Task Force on Regional Trading Agreement (RTA), India China Joint Working Group on Agriculture and Joint Working Group on Industrial Park Cooperation.

1.3 Review of Literature

This section relates to the discussion and analysis of various studies done on the theoretical framework of India's trade ties with China. It reviews the work of different authors on the subject area. The review of literature introduces the framework for the proposed research which encompasses the main focus of the research described in this thesis.

This section is divided into following parts:

- 1.3.1 Trends and patterns of India's trade with China.
- 1.3.2 Trade competitiveness between India and China.
- 1.3.3 Trade potential between India and China.
- 1.3.4 Issues and challenges faced by Indian stakeholders while trading with China.

1.3.1 Trends and Patterns of India's Trade with China

Singh (2005) highlighted the importance of bilateral trade between India and China. The study found that trade has outpaced the political confidence building measures, fostering peace and transformation in border areas and supporting border negotiations. The rise in bilateral trade has led to the emergence of new trends with both countries evolving into investors not only with one another but also with the rest of the regions

rather than remaining merely as the recipients of foreign direct investment. In this context, the increase in energy sector deficit and the corresponding competition in gaining access to new markets posed threat to sustenance of increase in bilateral trade. Ghoshal (2010) found that China has gained an edge over India in economic development, has increased its reach in South Asia owing to its economic and strategic influence in the region. It has deepened its economic ties with Pakistan, Bangladesh, Nepal, Sri Lanka, Maldives, and Myanmar by providing cheap loans, investment in infrastructure, port building and its "ask no question policy". India needs to improve its economic relations with neighbors to widen its growth and maintain harmony in the region. The competition between two nations is extended to Central Asia for its oil and natural gas as both nations have high dependence on imports of oil and natural gas. Here again India is at a disadvantage due to geographic barriers and stiff Chinese competition in the area. India needs to come up with a strategy to remove bottlenecks and facilitate trade in Central Asian region.

Despite rivalry, the growth of bilateral trade relations between India and China presents a ray of hope. Ansari and Khan (2011) studied India's trade relations with China and found that liberalization led to significant growth of Indo China trade which was higher than the world trade growth. Initially India's trade lagged behind China's but in the later time period it even surpassed China. Over time India's exports to China increased rapidly and it became second largest export destination for India. The study found great potential for trade in chemicals, manufactures and agricultural products for India. India's focus on export of imports manufactured goods and primary products were not beneficial from long term perspective. India did not enjoy favorable balance of trade with China and it needed to take immediate steps to improve India's exports to China.

Beretta and Lenti (2012) analyzed India and China's complementary and competitive positioning in the world economy. The study finds that India's comparative advantage is concentrated in traditional sector and some manufacturing sectors. China has specialized in mass export of cheap goods and is competitive in export of electronic goods. It suggests that there is scope for enhanced bilateral trade as both countries are not trading at a high level as is expected. Both nations can expand trade in those areas where there is no overlap in comparative advantage thus exploiting their own

comparative advantages. Both countries complement each other in some areas. Both can exchange their experiences and learning with each other. The study suggests India to increase the competitiveness of its manufacturing sector and China could serve as a model for India to follow in this sector. India could serve as a guide for China in developing its services sector. India could increase export of software to China and China could increase export of hardware to India.

Raghuramapatruni (2012) found that the unique characteristics of young population, skilled manpower, high GDP, lower per capita income etc. of both the economies made them important players in the world economy. Their bilateral trade increasingly came to be recognized as an instrument for fostering closer ties between both countries which could also impact the growth rate of world economy. Trade grew rapidly in the last decade but the trade balance was more favorable towards China. While both countries competed for sale of their exports, there were numerous areas where complementarities could be formed in order to maximize commercial benefits. In order to obtain full benefits of India China trade, remaining trade constraints and barriers needed to be removed.

Devadason (2012) examined the existence of unutilized market potential between India and China and it is attributed to their diversification of the trade structures primarily from the export perspectives. Both nations are found to have high level of intra industry trade with the rest of the world as compared with one another. Thus, they enjoy the fundamentals required to adopt similar trade with each another. It found the competition in manufacturing sector between both countries to be limited because of the differences in the quality of products traded by them. Both enjoy comparative advantages owing to product concentration/ diversification and product competitiveness (price and quality based). These differences give rise to complementary strengths ("factory of the world" for China and ("knowledge center" for India) which, if exploited, could give rise to complementary trade.

Zhou (2014) compared the economic growth of China and India and finds that competition between them is not a zero-sum game rather it is mutually complementary and win – win cooperative. Both countries have their own experiences for reference

and drawbacks to improve upon. The peaceful development of India and China would be the major events of 21st century. The study suggests both countries to increase cooperation in place of confrontation. It further suggests that India should let go of the mentality of containing China and instead divert resources from military expenditure to infrastructure development in order to reduce domestic poverty and gain more benefits from cooperation with China. Whalley (2015) found evidence of expanding economic relationship between both nations. Their bilateral trade witnessed an increase at an accelerating rate from 1995 to 2007. They witnessed dramatic increase in bilateral foreign direct investment (FDI) but it increased from a relatively small base. Both countries had reservations on strategic issues like relationship with Pakistan but still presented common positions on issues ranging from WTO negotiations to climate change policies. Thus, realizing benefits of deepened economic cooperation both sidesinitiated discussions for FTA and Comprehensive Economic Cooperation (CECA).

Singla (2015) analyzed India's trade performance with China and found that India-China trade relations are marked by fast rise of merchandise exports and are not distributed across various commodity groups. Indian exports basket to China is very concentrated as the share of top six commodity groups ranged more than fifty percent. Indian exports are mainly dominated by natural resource based raw materials or semi manufactured products. It suggested that India needed to diversify its exports basket and shift towards technologically advanced goods exports.

Burange and Kelkar (2016) analyzed quantitative and qualitative change in India's merchandise exports performance in post liberalization period. The study finds that for the time period under study Indian exports increased at the rate of 15.67 per cent per annum which is mainly fueled by sectors such as mineral products, animal and vegetable fats, arms and ammunition etc. The share of non-fuel primary and resource intensive manufactured products in Indian exports decreased while share of medium and high skill technology intensive manufactured products increased. This shows improvement in the quality of Indian exports. It also found increase in exports of new products over time. The study finds support for growth led export hypothesis and observes direct causality from export to FDI. It also finds favorable impact of

government's export promotion policies on investment. The study finds slow but sustainable growth of Indian exports in both quantitative and qualitative terms.

Khan and Ahmad (2017) studied export pattern and competitiveness of India China and found significant growth in products with higher comparative advantage in the export basket of both the countries. After China's accession to WTO, its export structure changed from labor intensive to capital intensive products and this change was disruptive in nature. This change in export structure was a gradual process for India though it was observed post liberalization. India lagged behind China in this change in export structure. India and China were found to engage more in inter industry trade rather than intra industry trade because there was lesser number of products in which they enjoyed comparative advantage. India was found to have significant trade deficit with China. The advantageous sectors in global market were showing considerable amount of trade potential in bilateral trade also. There was need of institutional reforms to enhance trade benefits of the country as a whole.

Tantri and Kumar (2018) found that China appeared to be more advanced than India in the matters of trade facilitation. Trade facilitation constituted an integral element of trade reforms. Usually, a one size fits all policy was adopted in the context of trade facilitation at the macro level which often overlooked sector specific needs. The two initiatives taken by India and China signified shift in policy priorities towards trade facilitation. The One Touch initiative of China providing one stop export related outsourcing services showed that trade facilitation was not the prerogative of government alone and private sector could also act as a facilitator. The Grape net initiative of India was a sector specific instrument aimed to reduce transaction costs in exports of grapes from India to European Union and integrated all stakeholders involved in the process.

Li (2018) found that both countries had high export similarities and faced competition but also enjoyed trade complementarities. Both coexist and different kinds of products were traded between them with China mainly exporting manufactured goods to India and mainly importing primary and semi-finished products from India. The economic and trade cooperation between India and China faced more opportunities and challenges

with the implementation of One Belt, One Road initiative. The study suggested both countries to make use of trade complementarities and strengthen trade of products with comparative advantage, seek common ground and link regional development strategies and strengthen trade negotiations.

Jain (2018) examined the factors aiding and hindering China's economic penetration in South Asia. It found that China's economic involvement in the region increased over the years owing to its growing economic stature, capability to finance infrastructure projects under Belt Road Initiative (BRI) and the strategy of smaller countries in the region to balance India. The Chinese engagement in the region is of concern to India especially because of CPEC project and its impact to its territorial integrity and national sovereignty. China's economic inroads in the region is threatened by security risk to CPEC project and the challenge to prove to partner nations that its economic assistance is not a debt trap. The BRI partners have to ensure that there are no hidden costs involved. China's economic prosperity and stability would determine the future of Chinese investments.

Qaddos (2018) analyzed Sino Indian border conflict which culminated into military standoff at Doklam plateau and its impact on their bilateral relations. The Sino Indian relations affect the geopolitics, geo-economics and connectivity in the South Asian region. India and China collaborate in multiple areas but they have not yet resolved their border issues. This standoff did not result in a fully-fledged war mainly because China's geo economic interests, in the form of its policy of promoting regional connectivity with respect to BRI, prevailed over the geo political concerns. The study suggests India and China to resolve their territorial disputes as it not only affects their bilateral relations but also the peace and security in the South Asian region.

Langhammer (2019) analyzed China's trade policy performance in the wake of China-USA trade war and considered it to be a tech war. It found that China's exports success in the past could be attributed to unfair trade practices but the increase in its competitiveness presently can be assigned to skills and entrepreneurial mentality. China needed to improve transparency in its subsidy policy, state interference, role played by state run enterprises, prevalence of non-tariff barriers and implementation of

intellectual property rights. China's trade policy did improve relative to western standards but needs to work towards reduction in state interference. Its high competitiveness in digital economy could be attributed to its strong entrepreneurial spirit.

Dwesar and Kesharwani (2019) studied marginal intra industry trade between India and China. The study found that India and China were still trading majorly in different commodities and were more involved in inter industry trade. Major exports of India to China were primary in nature like raw materials and semi-finished products. Chinese exports to India primary products, secondary and manufactured goods also. Intra industry trade did increase in overall trade but the proportion of Intra industry trade did not increase and was inconsistent in the last decade. The trade deficit between India and China was another point of concern as it increased substantially especially after 2014 when Indian exports to China declined and imports increased. In the last decade the trade deficit decreased for the first time in 2018-19. It also studied the nature of commodities being traded between India and China and found that India still imported certain finished products from China and suggested that India needed to build its competitiveness in industrial products. The study stated that both countries were set to become major world economies in the future so enhancing trade relations would be beneficial to both in the long run. The future pattern of bilateral trade would depend on a number of factors such as government policies, WTO negotiations, exports competitiveness, global trade environment etc.

Panda and Baruah (2019) outlined factors impacting India – China relations. It stated that recent political overtures for rapprochement were unsustainable as it was affected by externalities like China – USA relations. It laid out three factors that could hamper India- China relation. First their respective foreign policy ambitions to secure energy resources clashed. Second, the challenge to create sustainable economic partnership in the wake of mutual distrust and difference in perceptions as is reflected in India's opposition to BRI initiative. Third was the increased competition in the maritime domain to gain dominance. The resumption of harmonious relations was thus not sustainable. In its pacific outreach program, India needed to engage more with quad countries and promote regional connectivity with ASEAN nations.

Zhang and Sun (2019) studied the China India relationship and outlined three types of factors affecting the relation. First were the structural factors including geopolitical factors, international status and geographical features. Second were the hard factors which included border conflicts, Tibet issue, water disputes and relations with Pakistan which were sensitive matters and not easily solvable. Third were the soft factors which included trade imbalance, visa issues, strategic differences, difference on issues at international stage and different notions of history. The influence and importance of these factors changed over time and lately geopolitical factors affected the bilateral relations more which led to strategic competition. Both the countries had not yet achieved the status of leaders of world politics and not realized the idea of Asian Century and this increased premature competition would make it harder to do so. In order to maintain security and protect interests of both countries and Asia as a whole, China and India needed to work on the hard and soft factors, improve bilateral cooperation on varied issues and areas and establish a more stable geopolitical relationship.

Hassan (2019) analyzed the growing competition between India and China in the strategically important Indian Ocean. Both nations compete to create their regional hegemony and maintain a stronghold in the area. Indian naval presence in Iran, Indonesia and Africa posed a threat to both China and Pakistan. China is actively countering Indian efforts by investing heavily in Africa and building a naval base there, acquiring strategic ports in Sri Lanka, developing China-Pakistan Economic Corridor, developing naval linkages with Bangladesh, Maldives and Myanmar. India is comfortably placed in the region despite having only thirty per cent of Chinese naval capability. Rani (2020) analyzed the impact of US – China trade war and found that trade war between United States and China posed threat to free trade system. Many countries could opt for trade protectionist policies to protect their domestic industries from foreign competition. Trade war will also impact India adversely as evidenced from decline in rupee value and stock market downfall but it could create opportunities for itself if India approaches this matter in a planned manner. India needs to formulate a plan in order to provide an impetus to its economy and also preserves its relationship with both nations as both are important trade partners of India. There is opportunity for

India to replace US exports to China and Chinese exports to US. It needs to identify products which India can export to China and reduce its trade deficit. China too is opening up its market for Indian exports by lifting ban on certain India products like rapeseed meal and basmati rice which it can now export to China. India needs to be prepared to take advantage of this situation.

Dar and Mehta (2020) examined the trade relations between India and China, identifying inefficiencies in Indian companies due to inadequate social and physical infrastructure. India's primary exports to China consist of consumer products and manufactured goods, while China mainly exports high-tech products, industrial goods, and telecom equipment to India. The study highlights the need for greater coordination between the Indian government and industry, similar to what has occurred in China. It also points out potential areas for collaboration between the two nations, such as technology, small and medium-sized enterprises and greenfield investments. The trade imbalance is attributed to a lack of cooperation between the government and industry in India, along with India's limited range of products for export to China. The study suggests that India could benefit from identifying products where it has a comparative advantage. Drawing lessons from the economic relationship between China and Japan, where strong economic ties have existed despite poor political relations, India could also attract Chinese investment in manufacturing, much like Vietnam. This approach could help address the trade deficit and create new export opportunities to other countries.

Ranjan (2020) analysed India-China trade relations and their impact on India's GDP. The study reveals that China has become one of India's top three trading partners, with India serving as one of China's largest consumer markets. Despite this, India consistently faces a trade deficit with China, even though the COVID-19 lockdown temporarily benefited Indian traders. To mitigate the pandemic's impact and minimize supply chain disruptions, India needs to strategically plan its medium- and long-term policies. Addressing domestic challenges such as developing high-end technology, improving infrastructure and strengthening multilateral institutions is crucial for preparing the economy for potential political and economic actions by China in the post-COVID-19 era. India should revisit its foreign trade policy to promote trade based

on comparative advantage. Identifying and investing in sectors with significant spillover effects and enhancing critical infrastructure, such as ports, telecommunications, and roads, are essential steps to boosting trade. To counter the influx of cheap Chinese products in the Indian market, India can use countervailing duties, anti-dumping measures, safeguard duties, and other trade barriers. These measures could help reduce the trade deficit with China.

Rakshit and Basishtha (2020) analyzed the resilience of Indian economy in the face of Covid-19 pandemic and its impact on different sectors, bilateral trade relations between India and China and the role of public health system in dealing with the outbreak. The study found that the pandemic has severely disrupted agriculture, manufacturing and services sector in India. It has adversely impacted supply chain networks. Similar is the case with trade with China. Outbreak disrupted manufacturing activities in China and the rest of world which hurt Indian exports significantly. The study recommends easy monetary policy to stimulate the financial sector, emphasize on corporate social responsibility to mitigate effects of pandemic and adequate monetary support for people from all walks of life by the government. Given the status of India's poor health care system, adequate government support is required to ensure quality healthcare for people.

Kumar (2021) outlined the challenges faced by bilateral trade between two countries because of differences in trade basket, changing growth trajectories of both nations and global trade environment for trade. India mainly exports primary products and China exports capital goods which adds value to its exports. Tariff and non-tariff barriers also hinder bilateral trade. India's growth indicators reflect thirteen years divide they have in starting reforms. China is moving towards a consumption-based economy and India intends to increase production of merchandise goods. This presents opportunity for India to reduce its trade deficit by bringing in Chinese investment. With growing protectionism, agreements like RCEP could provide alternate market for exports from developing countries. The study suggests India to diversify its export basket keeping in mind the objective of sustainable development owing to dangers of climate change. India should be cautious in lending keeping its debt levels in check, not give up its global position in services while focusing on manufacturing and developing trade

infrastructure and logistics. India should sustain its domestic consumption, gain better market access from China and RCEP could provide a mechanism by which trade with China could be more accountable.

Ogden (2022) reviewed India China relations in the wake of being beset with issues such as territorial disputes and wider diplomatic tensions. It finds India-China relations as having elements of concurrent benefits and liabilities because they are marked with complex issues which have converged and diverged over time. The dynamics of increase in economic, diplomatic and military powers appears to dictate their prevailing nature of relations. Currently border issues and quest for supremacy in regional influence has led to erosion of cooperation between two sides on global issues and has tilted relations to negative side of double-edged sword. The study suggests that increase in diplomatic efforts to resolve border issues are important to maintain balance in relations. Political willingness and enhanced people to people exchange are important to remove distrust between two countries. Increased economic and military cooperation will create a sense of shared destiny and interdependence between India and China and will be a useful bond in times of tension and conflicts. Kalirajan (2022) states that any trade agreement between India and China will not lead to reduction in trade imbalance for India if such a policy is pursued without addressing the "behind the border constraints" for India. These constraints include poor infrastructure and inefficient and weak institutions which inhibits streamlining of tariff structures and will not help in reduction of trade deficit.

1.3.2 Trade Competitiveness Between India and China

Chakraborty (2013) analyzed the post reform process performance of India and China and found that reforms generated benefits in both countries and the country which adopted the reforms earlier reaped the benefits earlier too, in this case it is China. India has started to reap the benefits in the latter half of the reforms process and it is possible that their development status may converge in the future. The study found lack in competitiveness of Indian products as compared of Chinese products but is optimistic of improvement of competitiveness in the future especially in technology intensive products category. The study compared the sources of export growth for both nations

and found world trade effect and competitiveness effect as determining factors of export growth for India and China respectively. It was mainly through price competitiveness that China was able to grow its exports in the world market as compared to India.

Krishna and Kumar (2015) analysed global competitiveness of Indian exports. It found that India managed to achieve export diversification but has failed to capture a large market share in any export product category in world. India failed to improve its existing market share in developed economies and diversified into other developing economies. The study lists loss of global competitiveness due to infrastructure deficit, strong rupee and high wage growth. This combined with slower global demand growth adversely impacted Indian exports performance. Even those products where India enjoys competitive advantage e.g. textiles and leather was found to have performed poorly. The study suggests identifying those sectors where India enjoys natural competitive advantage and providing them with necessary infrastructure and skills. These sectors could accelerate India's integration with global production networks. The study further suggests reviewing the workings and performance of organizations related to export promotion e. g. export promotion councils and other agencies like Federation of Indian Export Organization (FIEO) etc. because of India's evident inability to increase its share in global markets.

Taneja *et al.*, (2015) analyzed Indian trade deficit with China and suggested ways to counter it. The study found Indian exports to be heavily concentrated in few low value-added products mainly primary products. Indian mainly imported capital and intermediate goods which formed base of industrialization process and should not be curtailed. India could manufacture products where China is losing its cost advantage because of changing demographic structure to boost its exports and take advantage of its low labor costs and demographic dividend. India is suggested to improve its labor productivity to do so. The paper suggested that India needs to diversify its exports basket and focus on increasing its overall exports in order to realize its untapped exports potential. There was need to improve access of Indian exports to Chinese market by removing barriers to trade relating to tariffs, regulations and other complexities. India should take remedial measures on improving investment flows from China to promote its exports growth.

Ahmad *et al.* (2018) found that both countries performed well in manufacturing sector exports since 2000. China enjoyed comparative advantage in greater number of products as compared to India. Despite structural and institutional differences both India and China maintained upward moving trend with respect to growth of exports between them and that with the rest of the world. Both were found to be complementary and competitive in bilateral and global market but China enjoyed more influence in both markets. There was wide scope of intra industry trade between both countries but it was dependent upon India's efforts to become a competitive economy. The kind of products in the export's basket revealed that both were well integrated with the world economy and trade was more influenced by global factors as compared to domestic factors.

Ghosh et al. (2019) finds that India exports agriculture and manufactures with recent shift towards intermediates whereas China exports manufacturing sector products predominantly finished equipment goods. Both countries export those products to one another in which they have a revealed comparative advantage but Chinese exports are more diversified as compared to India. The study suggests that India needs to diversify its exports, shift away from exporting intermediates to Chinese industries in order to accommodate the changing nature of China's industrial structure and improve market access for commodities with competitive advantage. Chakraborty and Henry (2019) analyzed the impact of Chinese imports on product variety of Indian firms. The study finds significant effects of product drop from competitive pressures in domestic market. Most of these firms belong to lower half of firm size distribution. Chinese firms forced firms to drop their marginal products and focus on core products. This result is found strongest for firms producing intermediate products. Study also finds evidence of firm level factor reallocation and significant productivity effects. Product scope is found to be positive when firms import intermediate products. The emergence of China as an important trade partner of India has influenced production patterns of Indian firms.

Ahmadi (2022) analyzed India's comparative advantage in trade with China and found that India has more intensity to import and China has more intensity to export in bilateral trade. China exports diversified manufacturing products and India exports primary products. Trade balance is possible through right policies favoring economic

integration, increased people to people contact, investment, technology transfer and FDI promotion. Efforts should be made to remove tariff and non-tariff barriers responsible for poor trade growth and performance between two nations.

1.3.3 Trade Potential Between India and China

Batra (2006) analyzed the world trade flows and used it to predict trade potential for India. The economic size, geographical proximity, historical and cultural similarity positively impact bilateral trade. The study finds India's trade potential is highest in Asia Pacific region followed by Western Europe and North America. Country wise India has highest potential for trade with China followed by UK, Italy and France. With China there is tremendous trade potential which can be increased with removal of trade barriers and constraints. Countries in Commonwealth of Independent States (CIS) region does present with potential for expanding trade with India. Regarding trade agreements, in SAARC it has highest trade potential with Pakistan, in ASEAN with Philippines and Cambodia and in Gulf Cooperation Council with Qatar, Oman and Kuwait.

Boillot and Labbouz (2006) describes asymmetrical but dynamic expansion of trade between both countries since 90s. It finds that in case of expansion of bilateral trade between India and China, trade would be in favor of China which appeared unsustainable from India's point of view. On the other hand, the scenario of joint upsurge of both countries at world stage appeared more probable considering the models of specializations and industrial transformation adopted by both nations. By 2015, China would be largely ahead of India (services excluded) with a somewhat insignificant bilateral trade flow between both nations. Bhattacharya and Bhattacharyay (2006) studied the possibility of FTA between India and China and found that because of high tariff regime in India and low tariff regime in China an FTA would certainly go in favor of China at least in the short run. It might result in partial reduction in consumer prices especially more for Indian consumers than the Chinese consumers. This would result in higher welfare gains to Indian consumers. It suggests that India and China should start with a PTA for selected products and gradually move towards an FTA. Study assumes tariffs as the only barrier to trade and does not take into account non-

tariff barriers which have more trade distortion power than tariff barriers. India- China FTA will increase regional cooperation and build linkages between east and south Asia thus paving way for the formation of Asian Economic Community.

Ekanayake *et al.* (2010) analyzed the impact of Regional Trade Agreements (RTAs) on trade creation and trade diversion flows among Asian economies. The study found that real GDP of both importers and exporters positively influence bilateral trade while population influences it negatively. The statistically significant distance variable lent support to hypothesis that transport and other distance related costs are important determinants of trade flows in these economies. The positive and statistically significant relative factor endowment variable suggests that bilateral trade flows are related positively to inter- country differences in the level of technological advancement. The performance of variables measuring the trade creation and trade diversion effects of trade agreements suggests that multilateral trade agreements tend to enhance more trade as compared to bilateral trade agreements.

Mishra *et al.* (2015) analysed India's trade relation with other BRICS countries. The study finds that the external sector reforms increased the volume and growth rate of India's trade with BRICS nations. It also finds positive relation between Gross National Product (GNP)/per capita GNP and volume of trade of the nation. Distance is found to negatively influence trade among BRICS nations but other variables like inflation, exchange rate and import-GDP ratio are found to not play a major role in influencing foreign trade. The study further suggests India to simplify its import export procedures and reduce trade barriers, increase investment in infrastructure and technological advancement to sustain trade relations with BRICS and other countries.

Panda *et al.* (2016) studied the bilateral trade flow of India and China and find that both countries trade predominantly with geographically closer nations. India's trade flows are mainly with countries having low per capita income but high GDP whereas China trades with countries having high per capita income. Common language also impacts Chinese trade flows. Accounting for the 2007 financial crisis, being part of a common colony emerged as an important influencer of trade for India.

Yao and Whalley (2017) found that the 2008 financial crisis affected China more negatively than India. Though India was more dependent on the domestic market it recovered faster than China. The bilateral trade volume increased rapidly after the crisis but India diversified its exports market and the market share of China in India's exports declined. The bilateral trade commodity structure changed. India enjoyed comparative advantage in services trade. Post crisis both countries enhanced cooperation in bilateral FDI, partnership in climate change policy, WTO negotiations and possible RTA. Their bilateral relationship was mainly dual. Both enjoyed different comparative advantage in different sectors thus potential for economic cooperation was huge. To the rest of the world, India China dueled for exports market access and import of natural resources. The bilateral trade costs increased after the crisis which showed there was still potential for enhanced economic cooperation.

Rasoulinezhad and Jabalemeli (2018) studied the similarities of trade integration in BRICS member states and their trade partners comprised of five UN defined regional groups from Asia, Africa, America and Europe. The study finds that Russia's trade integration follows H-O framework because of its excessive dependence on natural resources and the rest of BRICS countries follow Linder hypothesis. China dominates the BRICS trade flows which has led to stronger impact of Chinese Yuan on trade with partner countries from different regions as compared to the impact of other BRICS member states' national currencies. Geographical distance is found to have a weaker negative impact on trade patterns of India and China than on other countries as they appear to have better transport infrastructures. The study finds higher level of trade integration of India and China with different regions of the world.

Irshad and Xin (2018) analysed Pakistan's bilateral trade and trade potential with FTA and RTA partner countries especially China. The study finds that their bilateral trade is positively affected by WTO, religion, GDPs, common border and trade openness in both countries. It is negatively affected by inflation, language and geographical distance. The overall PTA effect is found to be negative but significant but the study has found immense trade potential of Pakistan with China by most of the estimation techniques. The study suggests that Pakistan industry should adopt new measures to

boost exports and there is need to diversify exports to China in order to bring about a reasonable equality in bilateral trade relations.

Zhang *et al.* (2019) found that Chinese exports to India were affected by price competition and trade protection measures by India from 2008-2012. Indian exports to China were determined by trade structure and Chinese import demand trait of high-quality products that is non price competition. The declining Chinese exports performance during recession were attributed to price competition, low trade complementarities, appreciation of bilateral exchange rate and trade protection measures against China. In the same period the major impediment for Indian exports was found to be the quality competition in Chinese imports market.

Khayat (2019) analyzed bilateral trade, imports and exports between GCC countries and six developed nations. The study finds GDP per capita and population as significant factors affecting trade between GCC countries and developed countries- Italy, Japan, Russia, USA, Spain and Germany. Distance is found to negatively impact trade. The study suggests that trade barriers between countries should be eradicated in order to boost trade flow between nations. The GCC countries should invest in industrial development; focus on diversification of economy, quality of exports and technical education. Countries should focus on such trade policies which remove trade barriers and improve trade openness which could improve bilateral trade between these nations.

Kubendran (2020) studied India's trade relation with other BRICS countries. It found bidirectional causality for Indian exports and other BRICS nations' imports and no causality between India's imports with BRCS exports. The study also found favourable unidirectional causality between India's economic size and other BRICS nations' volume of trade. Short run test results strongly support India's trade with BRICS nations. The study found that in the long run trade is significantly associated with per capita GDP differential, GDP, per capita GDP, trade openness and exchange rate except inflation and trade agreement. All the variables have positive coefficient to the volume of trade of BRICS nations except distance, per capita GDP differential and distance. This indicates positive impact on the Indian economy in the long run. The study suggests India should strengthen its trade relations with BRICS nations promote "Make

in India", "Special Economic Zone" in BRICS countries and initiate second generation reforms to reap potential benefits from global economy.

Dhami *et al.* (2020) studied India's trade potential with the rest of the BRICS countries i.e. BRCS. The study finds that India has definite trade potential with Brazil, Russia and South Africa. India's bilateral trade is significantly and positively affected by GDP, per capita GDP and trade openness. Distance between trading partners is found to negatively influence India's bilateral trade. There exists considerable potential at individual country basis. The study suggests that India should emphasize on trade from emerging economies which are liberalizing their markets for economic expansion as they could form important destinations for exports.

Lohani (2020) studied India's trade flows with BRICS countries and its top merchandise export partner countries. Traditional arguments of gravity model are found to be valid for India so common language and common border are found to positively influence trade but distance is found to have a negative impact on it. The study finds that trade creation effect contributed to Russia and China but is of lesser advantage for India, Brazil and South Africa. It suggests that Indian government negotiate trade dialogues in order to remove trade barriers and increase market access. This will boost exports and trade relationship among BRICS countries should be addressed on priority basis.

Singh and Padhi (2020) analyzed India's trade relationship with European Union (EU), North American Free Trade Agreement (NAFTA) and ASEAN trade blocs. The study found that distance negatively affected trade flows for EU and NAFTA but positively and insignificantly for ASEAN. GDP is found to be negative and significant for affecting trade flow between India and EU but is negative and insignificant for ASEAN and NAFTA. Size and distance are found to be main factors impacting trade flows between India and trade blocs. The study recommends India focus on developing jointly strengthening policies with these trade blocs. India should increase its trade engagement with ASEAN and its per capita income so that it further leads to increase in trade through various agreements and policies.

Abafita and Tadesse (2021) studied the patterns of global coffee trade flows and identified the major determinants of global coffee trade. Exporter GDP, importer GDP, common border, cultural variables like common colonizer, colonial link and common language were found to enhance coffee trade. Also, depreciation in exporter country exchange rate, infrastructure and amount of arable land in exporting country significantly enhanced global trade. On the other hand, physical distance, global financial crisis and importer country tariff were found to impede coffee trade. RTA variable was found to have no significant impact on bilateral coffee trade. The coffee exporting countries were found to be under exporting as compared to coffee market needs so there exists trade potential to be exploited.

Rai *et al.* (2021) analysed India's trade with The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) nations since its establishment. The study finds that per capita GDP, per capita GDP differential, trade-GDP ratio and GDP show positive association with overall trade. Trade flows are found negatively linked with distance and tax. The study finds that India's trade with other BIMSTEC nations corresponds with existing literature that states that countries with similar GDP/GDP per capita engage in higher bilateral trade. A common shared border is found favourable for trade within the bloc even before the establishment of FTA. The study suggests that India needs to simplify its export-import strategies and trade barriers. Investment in infrastructure and its expansion, technology advancement is needed for India to sustain trade links with its trading partners.

Sandhu and Kaur (2023) studied India's trade potential with China and find that India's trade with China is positively impacted by GDP, per capita GDP, common border, preferential trade agreement and population of India. India's trade with China is negatively affected by relative factor endowment and distance between them. Difference in language is not found to adversely impact trade.

1.3.4 Issues and Challenges Faced by Indian Stakeholders While Trading with China

Obstfeld and Rogoff (2000) identified main components of trade costs which raise the cost of exporting and it adversely impacts export capacity and exports volume between nations. The main components of trade costs outlined are- transportation costs relating

to physical movement of goods, tariffs and non-tariff barriers restricting trade, time delays and uncertainties involved in goods movement, costs related to obtaining information about exports markets, costs incurred due to differences in legal and regulatory procedures and costs related to conversion of one currency into another. Suarez-Ortega (2003) analysed the factors impeding a firm's international expansion and the perception of exporters and non-exporting firms towards export barriers. It finds that more difficult and complex export activity is perceived to be, lower will be the firm's level of export involvement. Also, the firm's perception of export barriers decrease as the firm moves further in the export development process.

Saini (2009) aims to identify and assess the impact of non-tariff measures (NTMs) and the cost of compliance (COC) expenditure by exporters. It finds that EU and USA are the most restrictive region/country accounting for about three fourth of total NTM incidences. The most frequently used NTMs were product and production process standards, technical regulations and conformity assessment for technical barriers. The average COC as percentage of turnover is found to be inversely related to firm size. Some of the common issues about NTMs are stringent social compliance measures, import duty among others. NTMs are also seen as promoting efficiency and competitiveness within industry. The financial crisis is found to have reduced export order and the impact is more severe on high end fashion garments where market and product diversification is unlikely because of ever changing customer preferences.

Lau et al. (2009) explored the main determinants of competitiveness in the textile and apparel industries of China and is conducted at the firm level. It finds government policies and related industry infrastructure as the most important determinant of competitiveness followed by domestic demand. It suggests that to foster competitiveness on a more sustainable basis, improvement in industry infrastructure can foster industry performance. Also, more resources should be utilized to enhance domestic competitiveness of local enterprises. Siringoringo et al. (2009) studied factors affecting the export performance of small and medium enterprises (SMEs). They found main determinants including product quality, competition, the lengthy duration of export documentation processes and export barriers levied by destination countries. Extra impairments faced by SMEs included delays in transportation, low production

capabilities, communication barriers and hindrances created by government agencies. Furthermore, issues such as unofficial fees during export document processing, inefficient production costs and the inability to supply products on time contribute to the challenges. To effectively address these barriers, it is essential to train SME management with adequate training and information in areas such as production, logistics and international market dynamics which will help improve their export performance.

Dethier *et al.* (2011) examined the impact of business climate on growth and productivity of firms in developing countries. They find that a good business climate favours growth by encouraging investment and higher productivity. The following variables are found to have significant impact on enterprise performance: infrastructure, security, finance, regulation and competition. Chittithaworn *et al.* (2011) identified the factors affecting business success of SMEs and help reduce the risk of failure. It examined eight factors influencing SMEs business success i.e. SME characteristics, products and services, management and know how, the way of doing business and cooperation, customer and market, external environment, strategy and resources and finance. The study found that the most significant factors affecting their business success are customer and market, resources and finance, SMEs characteristics, the way of doing business and external environment.

Jalali (2012) examined the relationship between export barriers and export performance of Greek firms targeting exports to Iranian market. The study identified eighteen variables categorized into six dimensions. It identified operational dimension, financial dimension, environmental dimension, legal dimension, source dimension and logistic dimension as effective export barriers to export performance.

WEF (2014) report finds that within the BRICS nations, India lags significantly behind China and South Africa on enabling trade index. High trading costs are observed in India which are largely due to complex and elevated tariff barriers which are among the highest globally. Despite this, India enjoys strong air and sea connectivity and a developed rail network. However, inefficiencies arising from poor administration and corruption hinder the system's effectiveness. India has made considerable progress in

infrastructure development, particularly in airport facilities but port infrastructure remains underdeveloped. Given that most trade occurs via sea routes, enhancing maritime infrastructure is essential for further streamlining the export process and improving overall trade efficiency.

Kahiya and Dean (2015) analysed influence of export barriers with stages of development of exports. The study finds that marketing barriers, resource constraints, export-procedure barriers and knowledge and experience barriers are dependent on stages of export development and vary according to it. The differences in export barriers mainly occurs between the early and advanced stages of a firm's development which contradicts the hypothesis that as firms progresses through export stages, the impact of barriers should decrease. Instead, they find that while early-stage firms face significant barriers, advanced-stage firms encounter different, potentially less severe barriers which suggests a more complex relationship between export stages and the influence of these barriers.

Sitharam and Hoque (2016) analysed the internal and external factors affecting the performance of small and medium enterprises in South Africa. It revealed that technological advancement would improve the performance of the firms and the firm viewed competition as the major hurdle faced by them which bore a significant association with the firm performance. Crime and corruption are also found to affect business performance. The study recommends that SMEs need to prepare for domestic and international competition and collaboration between them could be one way to confront competition.

Nag and Chatterjee (2018) analysed the factors influencing business environment of a country and specially in the case of India and China. It finds different factor structures for India and China. In both nations, infrastructure support and governance are found to play major role in shaping the business environment but in case of India, regulatory dynamics are found to play a major role. The study finds these factors causing basic differences in business environment in both countries. Viswanathan and Jha (2019) identified important factors that influence international market selection for Indian construction firms by examining their market entry choices. It found that the firms

preferred those countries that had high market potential and a low-risk rating. Geographic and cultural distance is not a barrier to Indian firm's market selection. At the firm level, the firm size is not a deciding criterion for international market selection and also the experienced construction firms show more willingness to participate in international market selection. The study compared the results with other developing countries and found that the results vary from country to country.

Noureen and Mahmood (2022) studied the effect of trade costs and time delay on bilateral export growth. They found that trade costs follow a declining trend globally but this rate of decline is low for developing economies. The costs associated with non-tariff barriers are the major contributors to this slow decline as compared to those associated with tariff barriers. The transportation costs, infrastructure quality, exchange rate volatility and uncertainty in time delays make exports non-competitive for a country in the world market. The massive trade costs faced by exporters are one of the main reasons for slow and sometimes decreasing exports especially for the developing countries.

1.4 Rationale and Research gap

India and China are two of the largest developing economies of the world accounting for more than thirty per cent of the world's population and being among the top five economies worldwide. The most of literature reviews focused on the impact of economic recession of 2007 on the trade performance of the two economies of India and China under study and others do not include the most recent developments happening at the global level such as corona virus induced pandemic, US-China trade war etc. and in both countries' bilateral relations such as recent flare ups in border disputes. The studies also show that the increase in bilateral trade over the years is significantly marked by the growth of India's trade deficit with China. No specific analytical study has been found which analyzes India's trade with China in the wake of these developments at the global and bilateral level. This study is conducted on the topic "India's Trade Ties with China since 2001" to overcome the research gap. Bilateral trade happened between India and China prior to 2001 but in 2001 China became a part of the multilateral trading system by becoming member of World Trade

Organization (WTO). The study intends to undertake a rigorous economic analysis of India's trade ties with China. The study conducts a comprehensive analysis to deeply analyze the consistency and composition of bilateral trade and make forecast of future bilateral trade between India and China.

1.5 Research Objectives

The study aims to analyse India's trade ties with China. India and China are two important world economies as is reflected in the size of their population, size of the economy and growing importance at the world stage. China is the number one import partner and number two export partner of India. India's trade with China has consistently increased over the years and China has emerged as its leading trade partner despite political differences as reflected in border disputes. This trade relation is characterized by the growth of trade deficit for India which has persistently increased over the years. Various factors are attributed to the increase in deficit ranging from the quality and technology composition of India's exports to unfair trade practices and lack of market access provided by China to Indian products. The present study has focused on economic aspect of India's ties with China with emphasis on trends and patterns of trade and identification of products in which India enjoys competitiveness and also identification of issues affecting Indian trade with China.

The main objectives of the study are:

- 1. To analyze the trends and patterns of bilateral trade between India and China.
- 2. To assess the trade competitiveness between India and China.
- 3. To study the trade potential between India and China.
- 4. To study the issue and challenges faced by Indian stakeholders while trading with China.

1.6 Data Sources

The study has been based on primary and secondary data. The primary data has been collected through survey method. The secondary data has been compiled from a variety of sources such as yearbooks publishing statistical data with respect to trade e.g. World Bank, International Monetary Fund (IMF), World Trade Organization (WTO) and though various online data sources, magazines, textbooks and websites etc.

Major data sources are as follows:

- Data on commodity composition of India's trade with China has been collected from United Nations Commodity Trade Statistics Database (UNCOMTRADE) and Trade Map.
- Data on direction of trade for India and China has been collected from IMF,
 Directory of Trade statistics Yearbook and Trade Map.
- Data on different variables like Gross Domestic Product, Population, Per Capita Income has been collected from UNCOMTRADE-WITS (World Integrated Trade System).

1.7 Research Methodology

This study aims at performing an empirical analysis of India's trade with China. Secondary data has been used for this purpose for the reference time period of 2001 to 2023. The data has been taken from various authentic sources such as UNCOMTRADE, United Nations Conference on Trade and Development (UNCTAD), World Bank, World Trade Organization (WTO) and International Monetary Fund (IMF).

Following statistical techniques have been used in this study:

1. Compound Annual Growth Rate (CAGR)

CAGR of India's import, export and trade with China is compared with the CAGR of China's export, import and trade with India.

CAGR = (Value final / Value initial)
$$^{1/t}$$
 – 1 (where t= number of years)

2. Percentage share

A comparative analysis of percentage share of India in China's exports, imports and trade with the percentage share of China in India's exports, imports and trade.

- 3. Bilateral exports and imports at 2-digit product level for India and China.
- 4. Trade Intensity Index (TII)

Trade Intensity Index (TII) reflects a country's significance in the world trade. TII is mathematically obtained as following:

$$Tji = \frac{Xji}{Xjt} / \frac{Xwi}{Xwt}$$

Where X_{wi} , X_{ji} are the values of world exports and country j's exports to country i. X_{jt} and X_{wt} are total exports of country j and total world exports respectively. Trade intensity is influenced by politico-historical links, economic complementarity and geographical proximity. An index of more than one shows a bilateral trade flow that is larger than expected given the partner country's importance in world trade. Similarly, an index of less than unity indicates a bilateral trade flow that is smaller than expected given the partner country's significance in world trade. The index value of zero signifies no trade association between two partner countries.

The trade intensity index is restated into export and import intensity indices to look at the patterns of exports and imports. Following Kojima (1964) and Drysdale (1969), the TII is restated as following:

a) Export Intensity Index (EII):

Export Intensity Index is written as follows:

$$Eji = \left[\frac{\frac{Xji}{Xj}}{\frac{Mi}{Mg - Mj}}\right] * 100$$

Here Xji = Export of country j to country i;

Xj = global exports of country j;

Mi = global imports of country i;

Mg = total global imports;

Mj = global imports of country j.

b) Import intensity Index (III)

Import intensity Index is restated as follows:

$$IMji = \left[\frac{\frac{Mji}{Mj}}{\frac{Xi}{Xg - Xj}}\right] * 100$$

Here Mji = Imports of country j to country i;

Mj= global imports of country j;

Xi= global exports of country i;

Xg= total global exports;

Xj= global exports of country j.

Export intensity index greater than 100 shows that country j is exporting more to country i than expected from its share in total world trade and vice versa. Similarly, import intensity greater than 100 indicates country j's imports as higher than expected given its share in global trade. Same is true in case of opposite scenarios.

5. Export Similarity Index (ESI) and Import Similarity Index (ISI)

Two countries usually have an uncommon pattern of trade specialization in relation to the rest of the world. Usually trade of some product between countries grows swiftly than the average of the world export or import. However, this does not reflect clearly a common inclination among countries and to what limit the results are guided by the performance of individual countries.

The export/import similarity index provides useful information on individual export/import patterns from country to country.

a. Export Similarity Index (ESI):

ESI
$$(j, k) = Sum [min (X_{ij}, X_{ik})],$$

where X_{ij} , X_{ik} are industry i's export shares in countries j and k 's exports.

b. Import Similarity Index (ISI):

ISI
$$(j, k) = Sum [min (X_{ij}, X_{ik})],$$

where X_{ij} , X_{ik} are industry i's import shares in countries j and k 's imports.

The export, import similarity indices vary between 0 and 1. Zero indicates complete dissimilarity and 1 indicates identical export/import composition.

6. Trade Complementarity Index (TCI)

The Trade Complementarity Index can provide useful information on the extent to which one country's export pattern complements the import pattern of another country. This could be beneficial in consideration for future trade prospects as higher the complementarity, the more advantageous the prospects for a successful trade arrangement. Thus, TCI can provide vital information on prospects for intraregional trade as changes over time explain whether the trade profiles are becoming more or less harmonious.

The trade complementarity between two countries k and j can be defined as:

$$TCI_{ij} = 100*(1 - Sum (|M_{ik} - X_{ij}|/2),$$

where M_{ik} is the share of good i in all imports of country k and X_{ij} is the share of good i in global exports of country j. The index is zero when no trade occurs between two countries and the index takes value of 100 when export and import shares match exactly.

7. Revealed Comparative Advantage Index (RCA)

The Revealed Comparative Advantage index, given by Balassa (1965), is an important method to measure intensity of a country's comparative advantage and disadvantage in a particular industry. The RCA indices are based on actual data so they do not capture the future potential comparative advantage/disadvantage of a country but indicate changes in comparative advantage/disadvantage over time. This measure helps assess the export potential of a country. The RCA index can be defined as:

$$RCA = [(X_{aj} / X_{tj}) / (X_{aw} / X_{tw})]$$

where, X_{aj} = Export value of commodity a by country j;

 X_{tj} = Total export value by country j;

X_{aw}=World export value of commodity a;

 X_{tw} = Total world exports value.

If RCA index value is higher than 1, then the country has comparative advantage in export of those commodities and if the RCA value is less than unity, then a country has comparative disadvantage in export of those commodities.

It is imperative to notice that the RCA indices are quite robust and are insensitive to variations in growth and business cycles across trading partner countries. These changes influence the numerator and denominator in the RCA index formula. In similar vein, the index is sensitive to discriminatory market access barriers against exports of a particular country but is insensitive to market access barriers as long as these barriers are against all exporters of a particular product line. This index can be used not only to identify those products in which it enjoys comparative advantage and disadvantage but also help target those industries which currently exhibit disadvantage but have the potential to achieve export competitiveness over time. This can be obtained by

categorizing a country's export structure, based upon HS 6-digit product lines into six broader product groups based upon their relative *RCA* profile.

In the order of their relative comparative advantage position, these groups are-

a) Competitively Positioned Product Lines

These product lines have RCA's greater than unity and show consistent improvement over time because of promising trade conditions. The decision criteria used to select products under this category is:

- RCA index of a product line, "i", is > 1 in the average time period of 2018-2022 i.e. (RCA_{i (avg 2018-2022)}>1.
- Difference between RCA index of product line "i" i.e. $RCA_{i \text{ (avg 2018-2022)}}$ and its first five years average RCA is positive, i.e., $RCA_{i \text{ (avg 2018-2022)}}$ $RCA_{i \text{ (avg 2001-2005)}} > 0$.

b) Threatened Products Lines

These product lines have RCA's greater than one but indices decline over time because of adverse domestic environment and/or global competitive pressures. The decision principle to select products under this group is as follows:

- RCA index of a product line, "i", is > 1 in the average time period of 2018-2022
 i.e. (RCA_{i (avg 2018-2022)}>1.
- Difference between RCA index of product line "i" i.e. $RCA_{i \text{ (avg 2018-2022)}}$ and its first five years average RCA is negative, i.e., $RCA_{i \text{ (avg 2018-2022)}}$ $RCA_{i \text{ (avg 2001-2005)}}$ < 0.

c) Emerging Products- Tier I & Tier II

These product lines exhibit RCA indices that are less than unity but their relative global position in the export market is improving. These product lines signal towards commodity with future export potential. To provide a meaningful analysis, the "Emerging Product Group" is sub-divided into two groups in terms of their RCA position within this broader group. The selection criterion used to group these product lines is given as:

Tier I

• It includes those product line where, RCAi (avg. 2018-2022) <1, but equals to or > 0.5 in the average period of 2018-2022.

• Difference between the RCA averages of 2018-2022 and 2001-05 is positive for the concerned product lines i.e., RCAi (avg. 2018-2022) - RCAi (avg. 2001-05) > 0.

Tier II

- It includes product line where, RCAi (avg. 2018-2022) ≤ 0.5 .
- Difference between the RCA averages of 2018-2022 and 2001-05 is positive for the concerned product line, i.e., RCAi (avg. 2018-2022) RCAi (avg. 2001-05) > 0.

d) Weakly Positioned Products-Tier 1 & Tier II

RCA indices of these product lines are <1 and deteriorating due to discouraging global and domestic reasons. The "Weakly Positioned Product Group" is subdivided into two groups based on their relative level of revealed comparative disadvantage. The selection criterion used to group these products is as follows:

Tier I

- RCAi (avg. 2018-2022) < 1, but equal to 0.5 or > 0.5 in the same period.
- Difference between the RCA average of 2018-2022 and 2001-05 is negative for the concerned product line, i.e. RCA_i (avg. 2018-2022) RCA_i (avg. 2001-05) < 0.

Tier II

- It includes product line where, RCAi (avg. 2018-2022) < 0.5.
- Difference between the RCA averages of 2018-22 and 2001-05 is positive for the concerned product line, i.e., RCAi (avg. 2018-2022) RCAi (avg. 2001-05) < 0.

This framework helps to identify the strengths and weaknesses of India's export profile and to analyse the degree of competitiveness of Indian exports. The data set used in this study is exports data (2001-2022) at HS 6-digit commodity classification drawn from UNCOMTRADE database.

8. Gravity Model

The bilateral trade flow analysis between countries is conducted with the aid of an empirical tool termed the gravity model of trade. Gravity model is compared to "Newton's law" of gravity. The model defines that bilateral trade among the countries is directly proportional to economic size of the countries and negatively proportional to their distance. The origin of the use of gravity approach to modelling trade dates back to the works of Tinbergen (1962) and Linneman (1966). The model equation of gravity model is specified as equation (1):

$$Tradeij = \frac{\alpha(GDPi*GDPj)}{Distanceij}$$
 (1)

here $Trade_{ij}$ denotes bilateral trade between country i and j. GDP_i and GDP_j are the respective national incomes of the two countries under consideration and $Distance_{ij}$ measures geographical distance between two countries. α is the constant of proportionality.

The linear gravity model is obtained by taking the log of equation (1) which is shown by equation (2).

$$Log(Tradeij) = \alpha + \beta 1 log(GDPi.GDPj) + \beta 2 log(Distanceij) + \mu ij$$
 (2)

In equation (2), α , β_1 , β_2 are the coefficients which are to be estimated and u_{ij} represents chance events and any other disturbance that could affect the bilateral trade flows. Equation (2) forms the base equation for gravity model. There are other variables which could affect bilateral trade flows which should be taken into consideration while studying the trade flows. Dummy variables are used to test the impact of particular variables e.g., speaking same language, common land border sharing and trade agreement etc. (Dhami *et al.*, 2020).

9. Survey Methodology

In order to capture the stake-holders view on issues and challenges faced by Indian stakeholders while trading with China, primary data collection based on survey methodology was conducted. Respondents were the Indian exporters exporting and importing with China only. To narrow down the list to Indian exporters exporting to China, a list was collected from Federation of Indian Exporters Organisation (FIEO). Based on Cochran's method a sample size of 384 respondents was determined. An online survey was conducted with exporters; to collect the data and 120 successful responses were received based on questionnaire.

SAMPLING DESIGN PROCESS

SAMPLING FRAME	SAMPLE	POPULATION SURVEY
•EXPORTERS TO CHINA •384	•EXPORTERS RESPONDED •120	•SUCCESS RATIO •31.25%

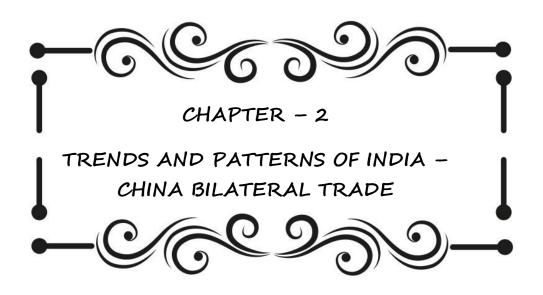
1.8 Design of Study

The study consists of seven chapters.

- Chapter 1: Includes the introduction, objectives, data sources and research methodology chosen for the topic under study.
- Chapter 2: Contains the review of literature on the study.
- Chapter 3: Pertains with the trends and pattern of India's trade with China.
- Chapter 4: Pertains to assess the trade competitiveness between India and China by using Revealed Comparative Advantages to identify commodities for trade between them.
- Chapter 5: Studies the trade potential between India and China using the gravity model of trade.
- Chapter 6: Focuses on study of the issue and challenges faced by Indian stakeholders while trading with China.
- Chapter 7: Relates to summary and conclusions of the study.

1.9 Summary

In nutshell, it has been observed from the literature that China has emerged as an important trade partner of India over the years of the time period under study. This trade relation is heavily skewed in favour of China. To add to this imbalance is their regional aspirations especially reflected in border disputes but trade has persisted none the less. India has taken several measures to address the situation but the trade imbalance persists. India and China are important global players in the world economy and India strives to maintain a healthy and equitable relation with China. This study understands the trends and patterns of trade between two countries since China's entry into WTO and identifies products in which India enjoys comparative advantage which can be pursued to boost bilateral trade. It assesses the trade potential between two countries and identifies main issues negatively impacting India's trade with China and suggests remedial measures.



CHAPTER-2

TRENDS AND PATTERNS OF INDIA - CHINA BILATERAL TRADE

This chapter assesses the trends and patterns of bilateral trade between India and China. This chapter constitutes the overview of India and China in general and trade performance in particular. Trade between two nations has been recognized as one of the major drivers of economic development and an important contributor to economic integration. Countries have been trading with each other and coexisting over the centuries by facilitating the smooth flow of goods and services (Panda *et al.*, 2016).

2.1 Background

India and China have been popular to comparison in the field of economics research for a long time because both are two most populous countries in the world which adopted different models of development since the 1950s (Wu and Zhou, 2006). The economic progress of India and China have a great influence on the global economy. They are two rapidly growing powers which have made positive economic contribution to the world economy even though they differ in strength, timing and development processes of their economic take-off and the political systems governing the two nations. At the present age of globalization, the relationship between India and China bears an important place in the global economy (Kumar and Shah, 2019). Establishment of WTO and the growing popularity of RTAs has provided the base for the free movement of goods and services between countries based on the free trade principle and transformed the world into a global village (Singh, 2014).

2.2 Overview of India- China trade ties

India and China share numerous similarities. In the initial years of their formations as a nation, both nations exhibited little consideration for foreign trade with the adoption of inward-looking import substitution policies with the focus on self- reliance and self-sufficiency. The importance was laid on setting up of those industries which were important for employment generation and supporting growth.

India's trade policy instruments included restrictive licensing, imports through state trading agencies, quantitative restrictions and high tariffs on imports. It evolved on inward looking import substitution framework. Foreign trade was assigned a very limited role in the context of economic development. The emphasis was on the development of heavy industries with the prominent role accorded to public sector companies. In the mid-1950s, India deployed import licensing and high import duties to reduce unspecified imports especially from the private sector in the face of balance of payment issues. The bulk of foreign exchange was used for the government imports of heavy machinery, food, equipment and technology. The devaluation of rupee in 1966 did not provide the sought-after external assistance needed to boost economic growth. The import licensing system led to loss of export competitiveness and created technological backwardness in industries. The economic liberalization of 1991 was undertaken when the Indian economy was facing unprecedented foreign exchange crisis.

China followed a highly regimented import plan and its exports were planned in accordance with its import requirements. The conventional trade policy instruments such as quotas, tariffs and licenses had limited role in China because the trade restricting planning system was based on quantity decisions and not on the behavioural response to price. This resulted in technological backwardness and inefficiency in production. China initiated economic reforms with the adoption of "open door" policy in 1978. China's entry into WTO required it to comply with economic reforms which resulted in trade liberalization at an unprecedented level. The resultant foreign market access increased its export growth to very high levels (Bhat, 2012).

China joined WTO in 2001 and has since emerged as a rapidly growing market and competitor with a relatively lightly protected economy. China has risen as a major player in the world trading order and has strong interest in reforms at WTO. These developments would not have been possible earlier when its leaders were uninterested in world trading system and its share in global trade was minimal as its economy was inward oriented and dominated by central planning (Ianchovichina and Martin, 2006).

Indo-China relations have undergone changes over the past three decades but in order to attain the objective of peace and stability in the region both nations are cooperating and helping each other in diverse areas such as trade and economic development (Saran, 2017). Improvements in trade and diplomatic relations led to strong economic growth in India and China. Their bilateral relationship is little complex with past mistrust involved but the trade aspect of the relation is enhanced continuously. They should maintain good bilateral relations for their economic development (Marelli and Signorelli, 2011).

Table 2.1 shows the comparison of India and China on key demographic and macroeconomic parameters for the 2022.

Table 2.1- Demographic And Macroeconomic Indicators of India and China (2022)

S.	Indicators	India	China
No.			
1	Land Area (sq. km)	29,73,190.00	94,24,702.90
2	Population (billion)	1.42	1.41
3	Population ages 65 and above (% of total	7	14
	population)		
4	Population ages 15-64 (% of total	68	69
	population)		
5	Literacy rate, adult total (% of people ages	76	97
	15 and above)		
6	Life expectancy at birth total (years)	67	78
7	HDI (2023)	0.64	0.79
8	HDI (2023) Rank	134	75
9	GDP (current US\$)	3.42 trillion	17.96 trillion
10	Merchandise Trade (percentage of GDP)	30.74	33.92
11	FDI, net inflows (percentage of GDP)	1.5	1
12	Trade (percentage of GDP)	45.67	37.30
13	GDP growth (annual %)	7.2	3
14	GDP per capita (current US\$)	2410.9	12,720.20
15	Global Competitiveness Index 2019 Rank	68	28

Source: World Bank, UN Development Programme (UNDP), World Economic Forum (WEF)

The above table compares the performance of both countries on key parameters. India is the seventh largest country and China is the third largest country in the world area wise. Table 2.2 shows that China is approximately 2.9 times bigger than India area wise. India and China are the two most populated countries of the world. India with its

population of 1.42 billion and China with the population of 1.41 billion account for about 35.31 per cent of the world population. India surpassed China in terms of population in 2023 as Chinese population reached its peak and experienced decline in 2022 (The Wire, 2023)¹. China is also shown to have a significantly higher elderly population of ages 65 and above as it is almost double of that of India at 14 per cent as compared to India's 7 per cent. The working population of India (15-64 age group) comprises 68 per cent of the population and 69 per cent for China. By 2020, India had one of the youngest world populations with the median age of 28 as compared to 37 years in China. Ensuring overall social wellbeing of population is a necessary requirement for reaping the benefits of demographic dividend (Business Today, 2023)².

India's demographic dividend will reach its highest point around 2041 when the share of working age population in the age group of 20-59 years is expected to reach 59 per cent of the total population (Economic Survey, 2019). On the demographic indicators, China performs better than India as its adult literacy rate and life expectancy at birth is higher than that of India at 97 per cent and 78 years respectively as compared to India's adult literacy rate of 76 per cent and life expectancy at birth to be 67 years. In Human Development Index report (2023), China outperformed India with the higher score of 0.79 with rank 75 out of 193 countries whereas India scored 0.64 with rank 134 out of 193 countries. HDI is the statistical composite index comprising of parameters of healthy life, decent standard of living and knowledge (UNDP, 2024). On the economic front, Chinese economy is almost five times the size of Indian economy with China reporting its GDP at 17 trillion US\$ and India's GDP at around 3 trillion in 2022. China also reports a higher percentage share of merchandise trade as percentage of GDP at 33.92 per cent as compared to India's value at 30.74 per cent. Thus, China appears as significantly bigger economy and better integrated in world trade as compared to India but in recent years India has made significant strides in its growth process. It is reflected in other parameters such as the net FDI inflows (%GDP) which is 1.5 per cent as

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¹ https://thewire.in/society/india-china-highest-populated

https://www.businesstoday.in/india-at-100/story/inclusive-india-2047-empowering-the-demographic-dividend-395359-2023-08-24

compared to 1 per cent for China and the share of trade (%GDP) has grown to 45.67 per cent as compared to China's at 37.30 per cent for year 2022.

The reopening of Chinese economy after the lockdown under Xi Jinping's Zero Covid policy, showed that the country suffered the biggest fall in exports in the last three years with exports declining from 340 billion \$ in December 2021 to 284 billion \$ in May 2023. Imports declined 12.4 per cent from previous year signalling low domestic demand. The Chinese economy suffered from deflation and high rates of unemployment in this period (The Hindu, 2023)³. China recorded a foreign investment deficit of 11.8 billion \$ for the first time in 2023 (Aljazeera,2023)⁴. India still lags behind China as its economic output per person lags behind China's at 2410.9 \$ as compared to China's at 12,720.20 \$. China ranked higher than India in Global Competitiveness Index 2019 with 28th rank as compared to India's 68th rank. The report assessed the ability of nations to provide high level of prosperity to its people which in turn depends on productive utilization of a nation's resources (World Economic Forum, 2020).

2.3 India- China bilateral trade

India is a large and rapidly growing market for China. India's growth has lagged behind China's but it is now accelerating to reach China's levels. India is thus central to China's future. So, while historical issues and strategic differences persist between India and China, the incentives for deepening economic cooperation become ever more powerful on both sides (Whalley, 2015).

Table 2.2- India China Bilateral Trade (US\$ Thousand)

	India's trad	e with China	China's trade with India					
Year	Export	Import	Export	Import				
2001	922542	1827549	1895833	1699093				
2002	1531604	2619849	2671164	2273871				
2003	2567162	3615126	3343225	4251377				
2004	4098514	6051257	5936008	7678030				
2005	7183792	10167061	8934277	9766216				

³ https://www.thehindu.com/news/international/explained-on-chinas-economic-slowdown/article67295075.ece ⁴https://www.aljazeera.com/economy/2023/12/22/after-bumpy-recovery-chinas-economy-faces-serious-headwinds-in-2024

CAGR	14.23%	21.12%	21.76%	11.74%
2022	15084401	102249180	118501523	17482817
2021	23036597	87535136	97510656	28137336
2020	19008267	58798825	66719472	20977286
2019	17278833	68402093	74825299	17985879
2018	16503442	73845717	76880637	18850037
2017	12500767	71890425	67925121	16333354
2016	8914967	60479988	58920648	11748712
2015	9539517	61641108	58262004	13395985
2014	13434251	58230546	54217422	16358691
2013	16416825	51635444	48432411	16970270
2012	14729317	54140455	47677452	18797191
2011	16717786	55483025	50536416	23372279
2010	17439991	41249116	40913958	20846313
2009	10370052	30613371	29666560	13714289
2008	10093927	31586024	31585381	20258886
2007	9491978	24575772	24051380	14617156
2006	7829168	15639064	14581297	10277449

Source- Author calculations based on UN COMTRADE database

India's exports to China registered compound growth rate of 14.23 per cent and its imports from China grew at 21.12 per cent in the time frame of 2001 to 2022. For the same time period, China's exports to India grew at 21.76 per cent and its imports from India grew at the rate of 11.74 per cent in the concerned time period. India's imports from China registered a higher growth rate than its exports to China. In other words, China's exports to India grew more than its imports from the country.

140000000
120000000
80000000
40000000
20000000
0
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22
India Export to China Import from China
China Export to Indiat China Import from India

Figure 2.1- Bilateral exports and imports between India and China (2001-2022)

Source- Author calculations based on UN COMTRADE database

Figure 2.1 provides graphical representation of growth of bilateral exports and imports between India and China. It shows that China's exports to India grew at the highest rate while imports from India registered lowest growth rate. For India the growth rate of imports is significantly higher than its exports to China. This trend has continued over the years of study which translates to trade deficit for India in its trade with China and it has persistently grown over the years.

Bilateral trade between India and China continued to be robust from 2001 to 2004 as China emerged as the driving force of intra-regional trade in Asia. Tariff concessions granted to India under the Bangkok Agreement provided a boost to bilateral trade (Economic Survey, 2003-04). India mainly exported iron and steel, plastics, iron ore, machinery and instruments and imported electronic goods, pharmaceutical products, chemicals, coal, coke and briquettes, silk yarn and fabrics in this time period (Economic Survey, 2004-05). India continued impressive growth in trade with China in 2006 and exported mainly ores, ash, slag, organic chemicals and iron and steel and imported other machinery, organic chemicals and electrical machinery (Economic Survey, 2005-06). China emerged as India's largest trading partner in 2008. India's exports to China did register a decline after the global financial crisis of 2008 which led to unprecedented fall in global trade volume (Economic Survey, 2008-09). From 2009-10 to 2012-13, India witnessed decline in exports of primary products because of decrease in share of ores and minerals in exports and increase in share of textiles, engineering goods and chemical and related products. Deceleration was witnessed in world trade and growth in 2012 which also led to decline in India's exports (Economic Survey, 2012-13). The Eurozone crisis and Chinese slowdown in 2013 also adversely impacted India's exports performance. India's trade deficit with China increased concurrently from 2012-13 to 2017-18. India's major exports comprised of copper, cotton yarn, refined and copper alloys unwrought, Petroleum items, other fixed vegetable fats & oils, granite, aluminium ores, cyclic hydrocarbons, cotton, polymers and iron ore. Its imports consisted of telephone sets including mobiles, automatic data processing machines, diodes & other semi-conductor devices, chemical fertilisers and electronic devices (Economic Survey, 2017-18). 2018 and 2019 witnessed increase in trade protectionism and slowdown in global output which adversely impacted exports performance of countries such as India (Economic Survey, 2018-19). In 2020, Covid-19 pandemic triggered the global recession leading to suspension of economic activities, supply chain disruptions and volatility in international commodity prices. In 2021, China's share in India's imports decreased reflecting increased diversification of India's import sources (Economic Survey, 2021-22). The decline in China's share in India's imports continued in 2022 (Economic Survey, 2022-23).

Figure 2.2 shows India's trade balance and total trade with China from 2001 to 2022. India's total trade with China has increased over the years but as India's imports have grown more than its exports, it registers a negative trade balance. Thus, India exhibits trade deficit with China which has increased over the years of study.

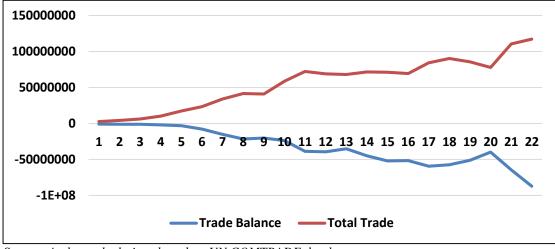


Figure 2.2- India's Trade Balance with China (2001-2022)

Source- Author calculations based on UN COMTRADE database

The annual growth rate of total trade between India and China remained healthy up to 2007 but after that it was adversely affected by the global financial crisis of 2008-09 and declined rapidly (Singla, 2015). As shown in table 2.3, India's exports to China grew at a positive rate from 2001 to 2007 but declined in 2008 and 2009 to 6.34 per cent and 2.73 per cent on year-on-year basis respectively. The growth rate of India's exports to China exceeded its imports growth rate in 2002 and 2003 but the imports registered higher yearly growth rate till 2008. China's exports and imports from India turned negative in 2009 because of the world financial crisis though they recovered later. The export growth of India with respect to China is fluctuating in nature. India's exports to China registered negative year on year growth rate in 2011, 2012 and revived

in 2013 but again turned negative in 2014. 2015 and 2016. These upward and downward movements show weak export link of India and China (Ahmad *et al.*, 2018).

Indian exports registered positive but fluctuating growth rates from 2017 to 2021 and negative growth rate in 2022. Covid-19 induced lockdown and restriction on transportation and trade of commodities helped reduce India's trade deficit with China as India's imports from China registered lower and negative growth rate as compared to positive growth rate of exports in 2019 and 2020 (Ranjan, 2020). Despite a prolonged border standoff between India and China, the bilateral trade increased 43.3 per cent from 2020 to reach 125.66 billion US\$ in 2021 with trade deficit remaining in favour of China at 69 billion US\$. This has been a constant source of friction between both nations as India complains of lack of access to its sectors such as pharmaceuticals.

Table 2.3- Rate of Growth of India China Bilateral Trade (%)

Year	India Export	India Import	China Export	China Import
	to China	from China	to India	from India
2001	-	-	-	-
2002	66.02	43.35	40.90	33.83
2003	67.61	37.99	25.16	86.97
2004	59.65	67.39	77.55	80.60
2005	75.28	68.02	50.51	27.20
2006	8.98	53.82	63.21	5.23
2007	21.24	57.14	64.95	42.23
2008	6.34	28.53	31.32	38.60
2009	2.74	-3.08	-6.08	-32.30
2010	68.18	34.74	37.91	52.00
2011	-4.14	34.51	23.52	12.12
2012	-11.89	-2.42	-5.66	-19.57
2013	11.46	-4.63	1.58	-9.72
2014	-18.17	12.77	11.94	-3.60
2015	-28.99	5.86	7.46	-18.11
2016	-6.55	-1.88	1.13	-12.30
2017	40.22	18.87	15.28	39.02
2018	32.02	2.72	13.18	15.41
2019	4.70	-7.37	-2.67	-4.58
2020	10.01	-14.04	-10.83	16.63
2021	21.19	48.87	46.15	34.13
2022	-34.52	16.81	21.53	-37.87

Source- Author calculations based on UN COMTRADE database

Due to Covid-19, India- China trade declined in 2020 which was the lowest since 2017. In first half of 2021, India saw increase in demand for Chinese medical equipment due to devastating impact of second wave of Covid-19 pandemic (AIR, 2022)⁵. In 2022, India-China trade amounted to \$135.98 billion out of which India had a trade deficit of about \$101 billion making it the first instance of Indian trade deficit with China crossing the 100-billion-dollar mark (Financial Express, 2024)⁶. This occurred despite continuing bilateral tensions over military standoff along the Line of Actual Control (LAC) (The Hindu, 2024)⁷.

Table 2.4- Share of India and China in world trade (%)

Year	China's Share in	China's Share in	China's Share in	India's Share in	India's Share in	India's Share in
	World	World	World	World	World	World
	Exports	Imports	Trade	Exports	Imports	Trade
2001	4.34	3.87	4.10	0.72	0.80	0.76
2002	5.07	4.47	4.77	0.78	0.87	0.83
2003	5.85	5.36	5.60	0.79	0.94	0.87
2004	6.52	5.97	6.24	0.83	1.05	0.95
2005	7.37	6.22	6.79	0.97	1.33	1.15
2006	8.10	6.46	7.27	1.01	1.45	1.24
2007	8.85	6.78	7.80	1.06	1.55	1.31
2008	8.96	6.93	7.93	1.14	1.93	1.54
2009	9.73	7.97	8.84	1.43	2.11	1.78
2010	10.45	9.11	9.78	1.46	2.29	1.88
2011	10.49	9.51	9.99	1.67	2.52	2.10
2012	11.14	9.83	10.48	1.57	2.64	2.11
2013	11.70	10.33	11.02	1.78	2.47	2.13
2014	12.43	10.37	11.40	1.68	2.43	2.06
2015	13.90	10.15	12.02	1.61	2.36	1.99
2016	13.31	9.89	11.59	1.64	2.22	1.93
2017	12.94	10.35	11.64	1.68	2.50	2.09
2018	12.92	10.85	11.87	1.68	2.59	2.14
2019	13.36	10.84	12.09	1.73	2.51	2.12
2020	14.78	11.61	13.19	1.57	2.08	1.83
2021	15.18	11.92	13.54	1.78	2.54	2.16
2022	14.60	10.71	12.62	1.84	2.89	2.37

Source- Author calculations based on UN COMTRADE database

⁵ https://newsonair.gov.in/News?title=Bilateral-trade-between-India%2c-...

⁶ https://www.financialexpress.com/business/defence-indias-growing-trade-imbalance-with-china-is-a-strategicvulnerability-3409284/

⁷ https://www.thehindu.com/business/Economy/india-china-bilateral-trade-hit-a-new-record-in-2023-envoy/article67822802. ece

India's exports did register growth but not at the same pace as that of China's because both countries followed different trade instruments in order to achieve growth. India is yet to be able to match with China's export competitiveness in the global markets (Bhat, 2012). In 2013, China toppled USA to earn the top spot as the world's largest trading nation and India became the 15th largest trading nation. As these emerging nations become progressively visible in world trade it becomes relevant to understand the dynamics of trade between these two economies (Panda et al., 2016). As shown in table 2.4, China's share in world trade stood at around 4 per cent and India's share was less than 1 per cent. In 2011, China's share in world exports, imports and trade increased over time and it contributed almost 10 per cent in of world trade whereas India showed slow integration with global economy as its share in world exports, imports and total trade accounted for around 2 per cent. In 2021, same trend continues with higher share of China in world trade as compared to India. China's share in world trade was around 14 per cent and India's share was around 2 per cent in 2021. Though India's share in 2022 did show minor improvement in 2022 but China has jumped way higher than India in global trade integration as is reflected from their respective share in world trade. China has demonstrated capacity as the exporter of manufacturers and established its place as the workshop of the world (Singla, 2015). India's rigid labour laws, restrictive trade policies, lower labour force participation and productivity, and encouragement of small-scale companies have been important factors in explaining India's underperformance relative to China in the growth of total trade (Malhotra, 2019).

Table 2.5- Share of India and China in bilateral exports, imports and trade (%)

Year	India's share in China' s Exports	India's share in China's Imports	India's share in China's trade	China's share in India's exports	China's share in India's imports	China's share in India's trade
2001	0.71	0.70	0.71	2.10	3.61	2.91
2002	0.82	0.77	0.80	3.06	4.56	3.86
2003	0.76	1.03	0.89	4.32	4.99	4.69
2004	1.00	1.37	1.18	5.40	6.11	5.80
2005	1.17	1.48	1.32	7.16	7.22	7.19
2006	1.50	1.30	1.41	6.46	8.78	7.84
2007	1.97	1.53	1.78	6.51	11.24	9.35
2008	2.21	1.79	2.02	5.55	10.00	8.38

2009	2.47	1.36	1.97	5.87	11.49	9.25
2010	2.59	1.49	2.08	7.91	11.78	10.29
2011	2.66	1.34	2.03	5.55	12.00	9.45
2012	2.33	1.03	1.72	5.09	11.07	8.85
2013	2.19	0.87	1.57	4.88	11.08	8.48
2014	2.31	0.83	1.64	4.23	12.68	9.22
2015	2.55	0.80	1.81	3.61	15.77	10.87
2016	2.78	0.74	1.91	3.42	16.96	11.24
2017	2.99	0.89	2.05	4.23	16.20	11.41
2018	3.08	0.88	2.07	5.09	14.50	10.84
2019	3.00	0.87	2.03	5.35	14.28	10.68
2020	2.58	1.02	1.89	6.90	15.98	12.09
2021	2.90	1.05	2.08	5.83	15.35	11.46
2022	3.30	0.64	2.16	3.33	13.96	9.90

Source- Author calculations based on UN COMTRADE database

As evident from Table 2.5, India's share in China's exports, imports and trade stood at around 0.7 per cent in 2001 while China's share in India's exports, imports and trade was more than 2 per cent in the same year. After China became member of WTO in 2001, bilateral trade picked up but India's share in China's trade remained less than China's share in its trade. In 2005, China's share in Indian trade exceeded 7 per cent and it crossed 10 per cent in 2010. During this time period, China's share in India's imports exceeded its share in India's exports. India, on the other hand, contributed around 2 per cent in China's trade and its share in China's imports remained less than its share in China's exports.

In 2015, China's share in India's imports reached more than 15 per cent while India's share in China's imports remained less than 1 per cent. India's share in China's imports increased in 2020 as it increased iron and steel imports from India in an effort to pull the economy out of coronavirus indued downturn (Nikkei Asia, 2021)⁸. In 2021, China's share in India's exports and imports declined and this continued in 2022. Despite the decrease, India's share in China's exports is about 3 per cent with share in imports less than 1 per cent and share in total trade is around 2 per cent in 2022. China's share in India's exports is around 3 per cent only whereas the share in India's imports is around 14 per cent in 2022. China accounts for about 10 per cent of India's trade. This clearly shows that China is an important trade partner for India but the same cannot

⁸ https://asia.nikkei.com/Economy/Trade/China-steel-imports-surge-150-in-2020-on-economic-stimulus-boost

be said for India as it is reflected by share of both countries in each other's exports, imports and total trade.

2.4 Direction of Trade

The analysis of direction of trade shows the relative importance of each country in their trade. As shown in fig 2.3, the analysis for the year 2022 shows that the top five importers for India's exports are Unites States of America followed by United Arab Emirates, Netherlands, China and Bangladesh accounting for 17.72%, 6.92%, 4.09%, 3.33% and 3.06% respectively. The following countries have around two per cent share in India's exports. For the bilateral analysis, China is the third largest importing market for India's exports signifying its importance for Indian trade.

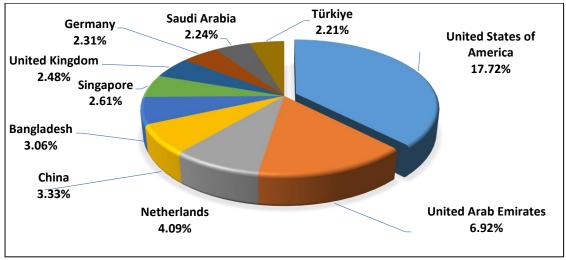


Figure 2.3- Top ten export destinations for India (2022)

Source- Author calculations based on UN COMTRADE database

For the imports analysis, we find top ten import partner countries of India as shown in fig 2.4. Here we find that in the year 2022, China accounted for almost 14 per cent of India's imports making it the largest import partner for India. This is followed by imports from United Arab Emirates, United States of America, Saudi Arabia and Russian Federation accounting for 7.35%, 7.07%, 6.31% and 5.55 per cent respectively.

Together they emerge as top five import partner countries of India followed by Iraq (5.33%), Indonesia (3.91%), Singapore (3.33%) and Republic of Korea (2.83%) for the year 2022. The export import destination analysis highlights the importance of China for India's trade. China is an important market for India's exports but accounts for only

about 3 per cent of its exports share. On the other hand, China is the source of about 14 per cent of imports required by India to meet its industry requirements and it is the largest import partner of India.

Australia Korea, Republic of Korea 2.68% 2.83% **Singapore** China 3.33% 13.96% Indonesia 3.91% **United Arab** Iraq **Emirates** 5.33% 7.35% **Russian Federation** Saudi Arabia **United States of America** 5.55% 6.31% 7.07%

Figure 2.4- Top ten import partner countries of India (2022)

Source- Author calculations based on UN COMTRADE database

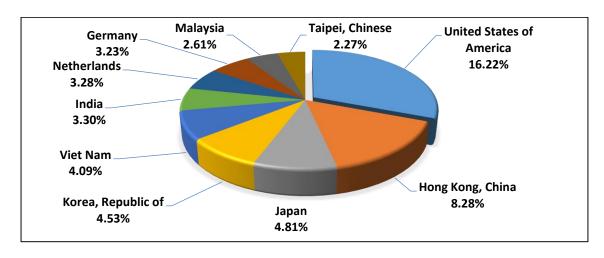


Figure 2.5- Top ten export destinations for China (2022)

Source- Author calculations based on UN COMTRADE database

The top ten importing partners of China as shown in Fig 2.5 shows that United States of America (16.22%), Hong Kong, China (8.28%), Japan (4.81%), Republic of Korea (4.53%) and Viet Nam (4.09%) are the top five export destinations for China. India is the sixth largest export destination for China accounting for 3.30 per cent of Chinese exports. The exports share is almost similar for Netherlands (3.28%) and Germany (3.23%) followed by Malaysia (2.61%) and Taipei, Chinese (2.27%).

The top ten import partners of China are depicted in Fig 2.6 which shows that Taipei, Chinese is China's largest import partner accounting for 8.77 per cent of Chinese imports. It is followed by Republic of Korea (7.35%), Japan (6.79%), United States of America (6.59%), Australia (5.23%). China is shown as the 6th largest import partner of China. Trade between China and China can be explained by the reimport activity. Re-imports refer to the imports of goods in the same state as previously exported by the country. In this case, the country of origin of the goods is the compiling country itself, which is reflected as a country's trade with itself (WTO). The remaining three top ten import source nations for China are Russian Federation (4.20%), Germany (4.10%), Malaysia (4.05%) and Brazil (4.03%). India is not among the top ten import partners of China. For the year 2022, India is found to be at 32nd position of import partner nations accounting for 0.64 % of China's imports.

Brazil Taipei, Chinese Malaysia 4.03% 8.77% 4.05% Germany. 4.10% Korea, Republic of Russian 7.35% **Federation** 4.20% Japan China 6.79% 4.52% Australia **United States of America** 5.23% 6.59%

Figure 2.6- Top ten import partners of China (2022)

Source- Author calculations based on UN COMTRADE database

The above analysis shows that has been an important trade partner for India being a significant source of its imports and an important exports market. On the other hand, India does not enjoy a relatively important place in China's trade as it has comparatively lower share in China exports and imports basket. This leads to deepened analysis of India -China bilateral trade using various indices.

2.5 Export, Import and Trade intensity between India and China

Trade intensity is defined as the share of trading partner in a country's trade and the world trade share with the same partner. The natural trading partner theory reveals that geographically closer nations tend to have more trade because they share close proximities. The trade intensity analysis is extended for export and import intensity analysis too.

Table 2.6 shows India and China's export, import and trade intensity with one another. India's export intensity with China from 2001 has been less than 100 but it showed an upward trend till 2005 when it increased 100 which showed that India's export intensity with China was more than expected. Thereafter it continued the downward trend and remained less than 100 over the years. The exports intensity remained less than expected especially after the 2009 financial crisis. The export intensity slightly improved during covid-19 phase because of increased demand in iron and steel from China (SCMP, 2021)⁹ but thereafter it declined. The table clearly shows that India has low export orientation towards China. India does not enjoy a favourable export intensity with China.

Table 2.6- India-China bilateral trade intensity

Year	India	India	India	China	China	China
	Export	Import	Trade	Export	Imports	Trade
	Intensit	Intensity	Intensity	intensity	intensity	intensity
	y with	with	with	with	with	with
	China	China	China	India	India	India
2001	53.91	82.45	0.53	85.10	93.19	0.86
2002	67.77	89.27	0.67	90.04	93.78	0.92
2003	79.92	84.58	0.78	76.76	122.28	0.79
2004	89.42	92.99	0.88	89.27	153.34	0.92
2005	113.56	97.02	1.12	82.82	141.28	0.86
2006	98.61	107.18	0.98	96.85	117.71	1.01
2007	94.45	125.65	0.94	118.50	131.66	1.24
2008	78.52	110.39	0.78	106.33	142.98	1.12
2009	72.08	116.37	0.72	107.65	85.98	1.14
2010	84.84	111.10	0.86	103.14	91.58	1.12
2011	56.85	112.52	0.58	95.53	72.06	1.04
2012	50.39	97.85	0.51	79.39	58.37	0.88
2013	46.05	92.98	0.47	79.63	43.09	0.89
2014	39.81	100.28	0.41	85.34	43.40	0.95
2015	34.76	111.62	0.35	97.21	42.65	1.07

⁹https://www.scmp.com/economy/china-economy/article/3118725/indian-iron-ore-exports-china-surged-2020-indias-own-needs

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2016	33.79	125.34	0.34	112.89	39.12	1.24
2017	39.80	123.08	0.40	107.42	45.84	1.18
2018	45.74	110.37	0.46	106.19	45.82	1.17
2019	48.07	105.10	0.48	106.55	43.56	1.17
2020	58.22	106.26	0.59	109.65	55.23	1.23
2021	47.64	99.14	0.48	100.52	50.02	1.13
2022	30.23	93.83	0.30	101.98	29.89	1.11

Source- Author calculations based on UN COMTRADE database

In 2001, China has less than expected export intensity with India but it continued increasing over the years and it crossed the threshold in 2007. China enjoyed favourable export orientation towards India till 2010. After the 2009-10 financial crisis the import intensity diminished but it recovered from 2016 onwards and China has enjoyed favourable export intensity with India since then. China has high export orientation towards India.

As shown in table 2.6, India's import intensity with China shows the demand for Chinese products in Indian market. India's import intensity with China has increased over the years though it being less than 100 in 2001 but it exceeded expectations in 2006 which continued till 2011. Import intensity did decline in 2012 and 2013 but it recovered thereafter. In the wake of 2019 covid crisis, India's import intensity with China did register a decline.

On the other hand, China's import intensity with India registered an increase from 2001 onwards and exceeded expectations from 2003 onwards which continued till 2008. From 2009, China's import intensity has continuously decreased though it did increase relatively in 2020 and 2021 but even in that time period, it has remained below expectations given the close proximities shared by both nations.

India's trade intensity with China was 0.53 in 2001 which increased to 0.88 in 2004. It became greater than 1 in 2005 but the following years it has persistently remained less than 1. This shows that India's trade flow to China has been less than expected given the partner country's importance in world trade.

On the other hand, China's trade intensity with India, since 2001, has been close to 1 which continued increasing till 2005 and it became more than 1 in 2006. During this time period, China's trade with India exceeded expectations given India's importance

in world trade. This continued till 2011 and for the next three years the trade intensity dropped but remained close to 1. From 2015 onwards, China's trade intensity with India has been more than expected given the partner country's significance in world trade.

The above analysis shows that China's export, import and trade intensity with India has exceeded India's export, import and trade intensity with China over the time period under study.

2.6 India's export and import similarity with China

Next, we analyse the export and import similarity index of India with China. This index provides information on individual export and import pattern between countries. Two nations usually have a unique pattern of trade specialization as compared to the rest of the world and the trade of some product grows gradually than the world trade of that product. The index is limited as it does not show common inclination between countries and is guided by the export, import performance of individual countries.

2.6.1 Export Similarity Index (ESI)

ESI highlights whether two countries export similar products and compete with each other in global markets. Table 2.7 shows Export Similarity Index (ESI) between India and China during 2001 to 2022 for top twenty exports of India at 2-digit level classification and the corresponding industry exports of China. Export similarity shows the similarity of export products of two nations which make them competitors of each other.

India's top exports are mineral fuels, pearls and stones, nuclear reactors, electrical machinery equipment, organic chemicals, vehicles, pharmaceutical products, cereals, iron and steel, aluminium, apparel, chemical products, cotton, fish, sugar, textiles and rubber products The ESI for all product categories is close to zero for India. The top twenty exports of India do not enjoy export similarity with the exports of China in the global market. This shows that India is not a competitor for China's exports in the global market.

Table 2.7- Export Similarity Index between India and China (2001-2022)

2022	0.02	0.01	0.00	90.0	0.03	0.04	0.00	0.02	0.00	0.02	0.01	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.01	0.01
2021	0.01	0.01	0.06	0.05	0.02	0.04	0.01	0.02	0.00	0.02	0.01	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.01	0.01
2020	0.01	0.01	0.07	0.05	0.02	0.03	0.01	0.01	0.00	0.02	0.01	0.02	0.02	0.02	0.01	0.00	0.00	0.00	0.02	0.01
2019	0.02	0.01	0.07	0.05	0.02	0.03	0.00	0.02	0.00	0.02	0.01	0.03	0.02	0.02	0.01	0.01	0.00	0.00	0.01	0.01
2018	0.02	0.01	0.00	0.04	0.02	0.03	0.00	0.02	0.00	0.02	0.01	0.02	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01
2017	0.02	0.01	0.06	0.03	0.02	0.03	0.00	0.02	0.00	0.02	0.01	0.03	0.02	0.03	0.01	0.01	0.01	0.00	0.01	0.01
2016	0.01	0.01	0.05	0.03	0.02	0.03	0.00	0.02	0.00	0.02	0.01	0.03	0.02	0.03	0.01	0.01	0.01	0.00	0.01	0.01
2015	0.01	0.01	0.05	0.03	0.02	0.03	0.00	0.02	0.00	0.02	0.01	0.03	0.02	0.03	0.01	0.01	0.01	0.00	0.01	0.01
2014	0.01	0.03	0.04	0.03	0.02	0.03	0.00	0.02	0.00	0.02	0.01	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01
2013	0.02	0.02	0.04	0.03	0.02	0.03	0.00	0.02	0.00	0.02	0.01	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01
2012	0.02	0.02	0.04	0.04	0.02	0.03	0.00	0.02	0.00	0.03	0.01	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01
2011	0.02	0.01	0.04	0.04	0.02	0.03	0.00	0.02	0.00	0.02	0.00	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01
2010	0.02	0.01	0.04	0.04	0.02	0.02	0.00	0.02	0.00	0.02	0.01	0.03	0.02	0.02	0.01	0.01	0.01	0.00	0.01	0.01
2009	0.02	0.01	0.04	0.05	0.02	0.02	0.00	0.01	0.00	0.02	0.01	0.03	0.01	0.03	0.01	0.01	0.01	0.00	0.01	0.01
2008	0.02	0.01	0.04	0.04	0.02	0.03	0.00	0.04	0.00	0.03	0.01	0.03	0.02	0.02	0.01	0.01	0.00	0.00	0.01	0.01
2007	0.02	0.01	0.04	0.03	0.02	0.03	0.00	0.03	0.00	0.03	0.01	0.04	0.02	0.03	0.00	0.01	0.00	0.00	0.01	0.01
2006	0.02	0.01	0.04	0.03	0.02	0.02	0.00	0.03	0.00	0.03	0.01	0.04	0.02	0.03	0.00	0.01	0.00	0.00	0.01	0.01
2005	0.02	0.01	0.04	0.03	0.02	0.02	0.00	0.02	0.00	0.02	0.01	0.05	0.02	0.03	0.00	0.01	0.01	0.00	0.01	0.01
2004	0.02	0.01	0.04	0.03	0.02	0.02	0.00	0.02	0.00	0.02	0.01	0.05	0.02	0.04	0.00	0.01	0.01	0.00	0.01	0.01
2003	0.03	0.01	0.04	0.03	0.02	0.02	0.00	0.01	0.01	0.02	0.01	90.0	0.02	0.04	0.00	10.0	0.01	0.00	0.01	0.01
2002	0.03	0.01	0.03	0.03	0.02	0.02	0.00	10.0	10.0	0.02	10.0	90.0	0.02	0.04	0.00	0.02	10.0	0.00	0.01	0.01
2001	0.03	0.01	0.04	0.03	0.02	0.02	0.00	0.01	0.00	0.02	10.0	0.07	0.02	0.04	0.00	0.01	0.01	0.00	0.01	0.01
Product Label	Mineral fuels	Natural or cultured pearls	Nuclear reactors, boilers	Electrical machinery	Organic chemicals	Vehicles other than railway	Pharmaceuti cal products	Iron and steel	Cereals	Articles of iron or steel	Aluminium	Articles of apparel	Plastics	Articles of apparel	Miscellane- ous chemical products	Cotton	Fish and crustaceans	Sugars	Other made- up textile articles	Rubber and articles thereof
Product Code	127	17.	184	58,	129	187	'30 P	172	110	.73	92.	,62	139	19,	138	152	,03	11,	0 89.	.40 I
	_			_	_	_	_	_	_	_	_	_	_	_	_	_	_	_		_

Source- Author calculations based on UN COMTRADE database

Table 2.8- Import Similarity Index between India and China (2001-2022)

2022	0.20	0.04	0.10	0.07	0.02	0.03	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.01	0.01
2021	0.15	0.03	0.10	0.08	0.02	0.03	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
2020	0.13	0.02	0.12	0.09	0.02	0.03	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
2019	0.16	0.03	0.11	0.09	0.03	0.03	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00	0.01
2018	0.16	0.03	0.10	0.09	0.03	0.03	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00
2017	0.13	0.01	0.11	0.08	0.03	0.03	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00
2016	0.11	0.01	0.10	0.09	0.03	0.03	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.01	0.01	0.00	0.00
2015	0.12	0.01	0.09	0.08	0.03	0.03	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.02	0.01	0.00	0.00
2014	0.16	0.02	0.07	0.07	0.03	0.03	0.00	0.00	0.01	0.01	0.02	0.01	0.01	0.00	0.00	0.01	0.02	0.01	0.00	0.00
2013	0.16	0.01	0.06	0.07	0.03	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00	0.01	0.02	0.01	0.00	0.00
2012	0.17	0.01	0.00	0.07	0.03	0.02	0.01	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00
2011	0.16	0.01	0.07	0.08	0.03	0.02	0.01	0.00	0.02	0.01	0.01	0.01	0.01	0.01	0.00	0.01	0.01	0.01	0.00	0.00
2010	0.14	0.01	0.07	0.08	0.03	0.02	0.01	0.00	0.02	0.01	0.02	0.01	0.00	0.01	0.00	0.01	0.02	0.01	0.00	0.00
2009	0.12	0.01	0.09	0.09	0.03	0.02	0.01	0.00	0.03	0.01	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00
2008	0.15	0.01	0.07	0.09	0.03	0.01	0.01	0.00	0.02	0.01	0.01	0.01	0.00	0.01	0.00	0.01	0.02	0.01	0.01	0.00
2007	0.11	0.01	0.08	0.10	0.03	0.02	0.01	0.00	0.02	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.02	0.01	0.00	0.00
2006	0.11	0.01	0.08	0.10	0.03	0.02	0.00	0.00	0.03	0.01	0.02	0.01	0.01	0.01	0.00	0.01	0.03	0.01	0.00	0.00
2005	0.10	0.01	80.0	0.09	0.04	0.02	0.01	0.00	0.04	10.0	0.02	0.01	10.0	0.01	0.00	0.01	10.0	10.0	0.00	0.00
2004	60.0	0.00	0.08	0.09	0.04	0.02	0.01	0.00	0.03	0.01	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
2003	0.07	0.00	0.09	0.09	0.04	0.02	0.01	0.00	0.02	0.01	0.02	0.01	0.00	0.00	0.00	0.01	0.01	0.01	0.00	0.00
2002	0.07	0.00	80.0	80.0	0.04	0.02	0.01	0.01	0.02	0.01	0.02	0.01	0.00	0.01	0.00	0.01	0.01	0.01	0.00	0.00
2001 2	0.07	00.00	90.0	0.08	0.03	0.01	0.00	0.01	0.02	0.01	0.02	0.01	0.01	0.01	0.00	0.00	0.01	0.01	0.00	0.00
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Product Label	Mineral fuels	Natural or cultured pearls	Electrical machinery	Nuclear reactors, boilers	Organic chemicals	Plastics	Animal, vegetable or microbial fats	Fertilisers	Iron and steel	Inorganic chemicals	Optical, photographi c,	Miscellaneou s chemical products	Copper	Aluminium	Ships, boats	Vehicles other	Ores, slag and ash	Articles of iron or steel	Salt; sulphur.	Edible fruit and nuts
Product Code	127	17.	.85	'84	129	.39	115	'31	27.	.78	06,	138	.74	92,	.89	.87	126	173	125	80.
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Source- Author calculations based on UN COMTRADE database

2.6.2 Import Similarity Index (ISI)

ISI highlights whether two countries import similar products and compete for resources in global markets. Table 2.8 shows Import Similarity Index (ISI) between India and China during 2001 to 2022 for top twenty imports of India at 2-digit level classification and the corresponding industry imports of China.

The top imports of India are mineral fuels, pearls and stones, electrical machinery, nuclear reactors, organic chemicals, plastic products, animal/vegetable fats, fertilizers, iron and steel, inorganic chemicals, optical/surgical equipment, chemical products, aluminium products, cooper, ships, vehicles, ores, slag and ash, plastering materials and edible fruits and nuts. The ISI for these products is almost zero for India which signifies that India does not have same import pattern as that of China. India enjoys low import similarity with China which shows difference in import needs of two nations.

2.7 Trade Complementarity between India and China

The trade complementarity can be analysed with the use of Trade Complementarity Index (TCI) which shows to what extent one country's export pattern complements the import pattern of the other country. Higher the complementarity, higher the trade prospects between two countries. It helps identify the extent of trade possibilities between India and China based on their existing trade patterns.

Table 2.9- Trade Complementarity Index of India and China

Year	TCI India	TCI China
2001	58.26	59.20
2002	56.55	58.76
2003	58.33	59.27
2004	62.08	58.42
2005	62.88	57.01
2006	62.94	56.83
2007	63.23	58.14
2008	67.43	56.03
2009	67.07	57.41
2010	67.07	56.59
2011	69.47	56.43
2012	69.66	52.95

2013	68.43	51.91
2014	69.71	53.70
2015	66.54	60.39
2016	65.51	62.55
2017	66.56	62.07
2018	69.65	59.98
2019	70.26	60.96
2020	67.67	61.44
2021	70.41	60.67
2022	74.44	57.16

Source- Author calculations based on UN COMTRADE database

The Trade Complementarity Index lies in the range of 0 to 100. If TCI is zero, a country's exports will have no impact on the imports of the other nation. If TCI comes out to be 100, the imports composition of one country matches perfectly with the exports of the other country. Table 2.9 shows TCI for India and China for the years 2001-2022 respectively. TCI for India as exporter was 58.26 in 2001 which increased to 69.47 in 2011 and it reached 74.44 in 2022. Trade complementarity of India with China has increased over the period of time signifying increased complementarity between select Indian exports and corresponding Chinese imports. TCI for China with India as importer was 59.20 in 2001, 56.43 in 2011 which increased to 60.67 in 2021 but declined to 57.16 in 2022 for select Chinese exports and the corresponding Indian exports. The TCI values are high in terms of absolute values for both countries. The higher the value of the index towards 100, the higher the adequacy of one country's export supply in meeting partner country's imports

2.8 Summary

India and China are the seventh and third largest countries in the world and two of the most populous countries accounting for about 35.31 per cent of the world population. On the economic front, China is five times the size of Indian economy with respective GDP of 17 trillion US\$ and 3 trillion US\$. India's growth has lagged behind China's over the years but is now accelerating to reach its levels. China recognizes India as a large and rapidly growing market and is central to its future. Various historical and strategic issues persist between both nations but the incentives for deepening economic cooperation between both nations have become ever more powerful on both sides. India's total trade with China has grown over the years but India's imports have grown

more than its exports to China. India exhibits substantial trade deficit with China which has increased over the years of study. In 2022, India-China trade amounted to \$135.98 billion out of which India had a trade deficit of about \$101 billion. This is the first instance of Indian trade deficit with China crossing the 100-billion-dollar mark. India exhibited slow integration with global economy. Its share in world exports, imports and total trade accounts for around 2 per cent as compared to China's share of about 14 per cent in world trade. China has jumped higher than India in global trade integration as is reflected from their respective share in world trade.

China is an important market for India's exports but accounts for only about 3.33 per cent of its exports share. On the other hand, China accounts for about 14 per cent of imports required by India and it is the largest import partner of India. For China, India is found to be at 32nd position of import partner nations in 2022, accounting for 0.64 % of China's imports. India does not enjoy a relatively important place in China's trade as it has comparatively lower share in China exports and imports basket. China's export, import and trade intensity with India is more than India's export, import and trade intensity with China over the time period under study. The top twenty exports of India do not enjoy export similarity with the exports of China in the global market. This shows that India is not a competitor for China's exports in the global market. India lacks import similarity with China which shows difference in import needs of these two countries. The study also finds high complementarity between Indian exports and Chinese imports implying higher trade prospects for India with China.

India—China relationship has changed significantly in recent years because of their growing economic interactions but the trade imbalance leaves India vulnerable to supply chain disruptions and economic coercion. This becomes a strategic vulnerability and it is high time to reverse it (Financial Express, 2022). Government of India has taken various steps to reduce import dependency which has resulted in decline in imports of mobile handsets, electronics components, computer hardware and peripherals and fertilizers in 2022-23 as compared to 2021-22. Government is encouraging Indian businesses to diversify their supply chains and explore alternative suppliers (Ministry of Commerce & Industry, 2023).

China emerged as India's largest trading partner in 2024 with China's imports to India crossed 100 billion \$ mark. This is achieved at the same time of heightened border tensions and the accompanying negative public sentiment in India towards China. As a result, India is leaning towards other countries such as USA, Australia, France and Japan and away from China as is reflected in decisions such as ban on Chinese applications, increased scrutiny of Chinese investments in Indian companies and opposition to China's Belt and Road Initiative. Despite geopolitical tensions, trade between both nations persist. India imports many critical products from China such pharmaceuticals, telecom and smartphone parts and advanced technology components even though India has increased efforts to boost domestic industry with initiatives like "Make in India" and "Aatmanirbhar Bharat". India- China relations steer a delicate balance between realistic economic interests and rising geopolitical tensions (Upadhyay, 2024). India needs to focus on diversification of its trade partners, reducing dependence on Chinese imports and improving its export competitiveness. Reversing the trade deficit and nurturing a more balanced trade relationship with China will be vital for ensuring long-term economic stability and reducing strategic risks in the future.



CHAPTER-3

TRADE COMPETITIVENESS BETWEEN INDIA AND CHINA

3.1 INTRODUCTION

In this chapter, an analysis of India's trade competitiveness with China at the HS-2digit and HS-6-digit level has been conducted. This chapter identifies India's competitiveness for different product lines at the HS 6-digit level code in order to identify those product lines in which India is gaining, losing or maintaining its competitiveness while trading with China. It is generally recognized that trade is essential for growth and growth in turn, is useful for achieving economic development. In the last two decades, the composition and volume of global trade has undergone significant changes owing to trade liberalization, technological advancements and rising income as being the main determinants of this change. The success of southeast Asian economies against the backdrop of rapidly changing global export pattern presents a strong case for pursuing an export led growth strategy which will ultimately lead to improve economic conditions of a country. Given a country's current export structure and its past macroeconomic performance, pursuing an export-led growth strategy would require changes in its export specialization patterns and a major structural transformation of the economy. Openness in trade and patterns of specialization are interconnected variables (Mahmood, 2004).

This chapter analyzes comparative advantage/disadvantage of India's exports with China by using the Revealed Comparative Approach (RCA) at the HS 6-digit. This can provide a unique insight into the opportunities and challenges that India's export sector faces as it attains rapid integration in the global markets. The demand and supply conditions play an important role in changing the comparative advantage profile of a country. The objective of analyzing the comparative advantage profile is to identify those export categories in which India is gaining, maintain or losing its comparative advantage. This is obtained by following the "stages of comparative advantage" given by B. Balassa and the technological classification of products given by S. Lall. An effort has been made to analyze the extent to which India's exports product lines have undergone a shift in their comparative advantage by moving away from labour intensive

production activities to technology-based production. This analysis will help to understand if past specialization patterns have undergone any change or if they have been reinforced over time because of internal and external forces at work.

This chapter highlights RCA ranking of product lines differentiated on the basis of technological classification which will help determine the extent to which India's export specialization has shifted natural resource intensive products to high value-added technology intensive products. It also throws light on top RCA ranking product lines at HS 6-digit level by India to China.

3.2 Comparative Advantage of India's Export Products to China: Aggregate Analysis at HS 2- Digit Classification

There are numerous ways to classify products by technology. Some methods distinguish between resource based, scale intensive, labour intensive, differentiated and science-based manufactures. Such a method is difficult to use because of unclear analytical distinctions and overlap between categories. Lall (2000) improves upon these methods and the following classification of manufactured exports 1) Resource-Intensive (RI) 2) Low-technology Intensive (LTI) 3) Medium technology Intensive (MTI) 4) High technology intensive (HTI).

Table 3.1: Technological classifications and RCA of India's exports with China at HS 2-digit level (2022)

HS	Product Categories	Technological Classification	RCA
Code			
01-05	Animal and Animal Products	Resource-Intensive	0.37
06-15	Vegetable Products	Resource-Intensive	0.61
16-24	Food Stuffs	Resource-Intensive	0.07
25-27	Mineral Products	Resource-Intensive	6.42
28-38	Chemicals and Allied	Medium Technology Intensive	0.50
	Industries		
39-40	Plastics/Rubbers	Resource-Intensive	1.02
41-43	Raw Hides, Skins, Leather	Low Technology Intensive	0.05
	and Furs		
44-49	Wood and Wood Products	Resource- Intensive	0.06
50-63	Textiles	Low Technology Intensive	0.04
64-67	Footwear/ Headgear	Low Technology Intensive	0.28
68-71	Stone/Glass	Resource-Intensive	0.07
72-83	Metals	Low Technology Intensive	1.12

84-85	Machinery/ Electrical	High Technology Intensive	5.87
86-89	Transportation	Medium Technology Intensive	0.26
90-97	Miscellaneous	High Technology Intensive	0.27
98-99	Service	Not Specified	0.00

Source- Author Calculations based on UN COMTRADE database and S.Lall, 2000 (Technological Classification)

Using the above classification, India's exports to China are categorized into four categories: 1) Resource Intensive 2) Low Technology Intensive 3) Medium Technology Intensive 4) High Technology Intensive as shown in table 3.1. Table 3.1 shows the analysis of product categories at HS 2-Digit code for the year 2022 and it leads to interesting observations. It shows that 6 product groups out of 15 industries are resource intensive, 4 product groups are low technology intensive, 2 product groups are medium technology intensive and 2 product groups with their RCA ranking exports are high technology intensive. One industry is not classified.

Out of these 15 product groups, India is found to enjoy comparative advantage in four product groups where the RCA value is greater than 1. Two product groups are resource intensive and two product groups are technology intensive in which India enjoys comparative advantage for the 2-digit product groups for the year 2022. These product groups are: Mineral products (HS 25-27), Plastics/Rubbers (HS 39-40), Metals (HS 72-83) and Machinery/ Electrical products (HS 84-85). In the remaining 11 product groups, India is found to be at comparative disadvantage in its trade with China for 2022.

Figure 3.1 shows the performance of product groups classified into four groupings based on their technology component for the year 2001 to 2022 using the RCA approach. From observation, we find that India's resource intensive products and low technology products have performed better than medium and high technology products over time as they exhibit comparatively higher RCA values in this time period. Resource intensive products tend to be labour intensive and simple but there are sections which use scale, capital and skill intensive technologies (e.g. modern processed foods). Their competitive advantage arises generally from local availability of natural resources, they do not lead to important issues of competitiveness but segments with technology and skill intensive technologies do raise competitiveness issues. Low technology products appear to have well diffused, stable technologies which are

primarily embodied in the capital equipment with relatively simple skill requirements. (Lall, 2000 classification).

Figure 3.1: Technological Classification of India's exports with China (2001-2022) (using RCA approach)

Source- Author calculations based on UN COMTRADE database

The medium technology products make up the heartland of industrial activity in mature economies comprising of scale and skill intensive technologies in intermediate products and capital goods. They comprise of complex technologies with advanced skill needs, lengthy learning period, moderately high levels of Research and Development (R&D) and complex technologies. The high technology products have highly advanced and fast changing technologies requiring high R&D investments and main emphasis is on product design. These products require sophisticated infrastructure, specialized technical skills and close interaction between firms, research institutions to reach best practice technical efficiency (Lall, 2000). The efficient and effective application of all useful resources that the economy can avail helps determine its competitive advantage. From the above figure, we observe that India's manufacturing moved from resource based and labour intensive to low technological based manufacturing of products.

3.3 Comparative Advantage of India's Export Products to China: Aggregate Analysis at HS 6- Digit Classification

The RCA profile of different product groups exported from India to China, at HS 6-digit product classification, for the time period 2001 to 2022 is analysed. Table 3.2

shows the RCA profile and product grouping between India and China for the time period 2001 to 2022 for HS 6-digit product classification. Table 3.2 shows that in the first category comprising of 3696 product lines, 220 of them (5.95%) have RCA greater than unity and increasing. This places them in the category of "Competitively positioned" (CP) product group in the first category of Animal and Animal products (HS 01-05).

Table 3.2- RCA Profile and Product Grouping at HS 6-Digit level (2001-2022)

HS	Product	СР	TP	EP (TI)	EP	WP	WP	Grand
Code	Categories			` /	(TII)	(TI)	(TII)	Total
01-05	Animal &	220	22	66	1078	-	2310	3696
	Animals	(5.95%)	(0.59%)	(1.78%)	(29.17%)		(62.5%)	(100%)
	product							
06-15	Vegetables	242	22	44	2090	-	2882	5280
	products	(4.58%)	(0.42%)	(0.83%)	(39.58%)		(54.58%)	(100%)
16-24	Food Stuffs	-	-	-	1452	-	1518	2970
					(48.89%)		(51.11%)	(100%)
25-27	Mineral	198	22	44	814	22	1584	2684
	Products	(7.38%)	(0.82%)	(1.64%)	(30.33%)	(0.82%)	(59.02%)	(100%)
28-38	Chemical &	946	66	594	7722	44	6732	16104
	Allied	(5.87%)	(0.41%)	(3.69%)	(47.95%)	(0.27%)	(41.80%)	(100%)
	Industries							
39-40	Plastic/	22	-	22	2640	-	2090	4774
	Rubbers	(0.46%)		(0.46%)	(53.30%)		(43.78%)	(100%)
41-43	Raw Hides,	22	-	66	638	-	726	1452
	Skins,	(1.52%)		(4.55%)	(43.94%)		(50.00%)	(100%)
	leathers &							
	Furs							
44-49	Wood &	66	-	154	2398	-	1826	4444
	wood	(1.48%)		(3.46%)	(53.96%)		(41.09%)	(100%)
	products							
50-63	Textiles	330	44	88	10032	22	6974	17490
		(1.89%)	(0.25%)	(0.50%)	(57.36%)	(0.13%)	(39.87%)	(100%)
64-67	Footwear/	-	22	-	616	-	462	1100
	Headgear		(2.00%)		(56.00%)		(42.00%)	(100%)
68-71	Stone/ Glass	22	-	22	1914	-	2024	3982
		(0.55%)		(0.55%)	(48.07%)		(50.83%)	(100%)
72-83	Metals	132	-	132	5280	-	6094	11638
		(1.13%)		(1.13%)	(45.37%)		(52.36%)	(100%)
84-85	Machinery/	22	-	132	10780	-	7304	18238
	Electrical	(0.12%)		(0.72%)	(59.11%)		(40.05%)	(100%)
86-89	Transporta-	-	-	-	1342	-	1188	2530
00.5-	tion				(53.04%)		(46.96%)	(100%)
90-97	Miscellane-	22	-	44	4686	-	3322	8074
00.77	ous	(0.27%)		(0.54%)	(58.04%)		(41.14%)	(100%)
98-99	Service	-	-	-	-	-	22	22
							(100%)	(100%)

Source- Author Calculations based on United Nations Commodity Trade Statistics (UN COMTRADE) database. CP=Competitive Positioned Product; TP= Threatened Product; EM (TI) = Emerging Product Tier I; EM (TII) = Emerging Product Tier II; WP (TI) = Weakly Positioned Product Tier II; WP (TII) = Weakly Positioned Product Tier II

In case of Vegetable Products (HS 06-15), 242 product lines, constituting 4.58%, have been placed in CP product group. In case of Mineral Products (HS 25-27), 198 (7.38%) product lines out of 2684 total have been competitively positioned. Mineral products constitute the highest percentage of products allocated to CP product group. This is closely followed by Chemical and Allied industries (HS 28-38) with 946 product lines (5.87%) out 21604 total product lines in the competitively positioned category. Raw Hides, Skins, leathers & Furs (HS 41-43) and Textiles (HS 50-63) constitute CP product group with 22 product lines (1.52%) out of 1452 product lines and 330 (1.89%) out of 17490 product lines respectively. Metals (HS 72-83) comprise close to 1 per cent of its product lines in CP product category with 132 (1.13%) product lines out of 11638 product lines. Other industry groups falling in Competitively positioned product group classification are Plastics/Rubbers (HS 39-40) with 22 (0.46) product lines out of 4774 product lines, Wood and Wood products (HS 44-49) with 66 (1.48%) product lines out of 4444 product lines, Stone/Glass (HS 68-71) with 22 (0.55%) product lines out of 3982 product lines, Machinery/Electrical (HS 84-85) have 22 (0.12%) product lines out of 18238 product lines and Miscellaneous category (HS 90-97) with 22 (0.27%) out of 8074 product lines.

The profile of "Competitively positioned" product group brings to forefront the lack of inroads made by resource intensive industries including Plastics/rubbers (HS 39-40), Foodstuffs (HS 16-24) and Stone/glass (HS 68-71) which obtain their competitive strength from the availability of raw materials. Lack of competitively positioned product lines in Transportation (HS 86-89) industry reflects its cost disadvantage and lack of economies of scale and scope and absence of forward and backward linkages. The absence of CP product lines in Footwear/Headgear (HS 64-67) product group shows that it has not been able to enjoy benefits from the main driver of competitiveness in low technology intensive industry that is low wages.

In case of Threatened Products (TP) groups, there are six product groups which fall under this category. These product lines do exhibit competitive advantage but this

advantage is declining over time because of adverse domestic market environment and/or due to global competitive forces. It is observed that 0.59 per cent of Animal and Animal products (HS 01-05) i.e. 22 product lines out of 3696 product lines, 0.42 per cent comprising of 22 out of 5280 product lines in Vegetable products (06-15) category, 0.82 per cent consisting of 22 out of 2684 product lines from Mineral products (HS 25-27), 66 out of 16104 product lines making 0.41 per cent in Chemical and allied industries (HS 28-38) and 0.25 per cent comprised of 44 out of 17490 product lines in Textiles industry group (HS 50-63) form the constituents of TP group category. Their share is less than 1 per cent. The only exception is Footwear/headgear (64-67) product group which has 2.00 per cent product lines i.e. 22 out of 1100 in this category. The other product groups have CP products too but it is found that footwear/headgear industry is losing its competitive edge over the time period under study while analysing India's trade with China. India needs to make determined efforts to make sure that it sustains and enhances its export competitiveness and reverse this trend. There is need for product specific policy responses as it makes sense to target those Threatened products which have significant comparative advantage but are losing their competitiveness owing to internal and/or external factors.

The Emerging Product Group is further sub divided into two groups based on their RCA position within this broader group. These product lines exhibit underlying trends to become competitive in the future but demonstrate a comparative disadvantage at present. In the case of India and China, Raw Hides, Skins, leathers & Furs (HS 41-43) have the highest percentage of product lines in the Emerging Products Tier I (EPTI) category at 4.55 per cent followed by Chemical and allied industries (HS 28-38) at 3.69 per cent, Wood and wood products (HS 44-49) with 3.46 per cent of their product lines and Mineral products (HS 25-27) with 1.64 per cent product lines in this category. The other product groups: Vegetable products (HS 06-15), Plastics/Rubber (HS 39-40), Stone/glass (HS 68-71), Textiles (HS 50-63), Machinery/Electrical (HS 84-85) and Miscellaneous products (HS 90-97) have less than 1 per cent share in this category. Animal and animal products (HS 01-05) have 1.78 per cent and Metals (HS 72-83) have 1.13 per cent of product lines in this category. Foodstuffs (HS 16-24),

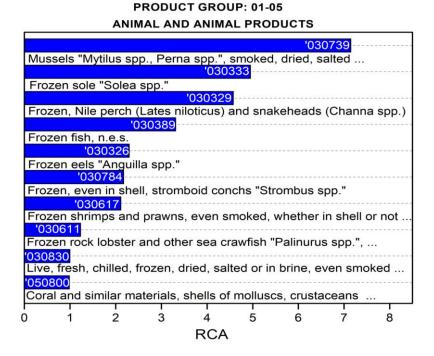
Footwear/headgear (HS 64-67) and Transportation (HS 86-89) have no products in this category exhibiting underlying lack of competitiveness.

The tier II of emerging products shows products lines which have the potential to become competitive but demonstrate greater comparative disadvantage than tier I. All the product lines with the exception of services, have significant share in this category. Plastics/ rubber (HS 39-40) with 53.30 per cent product lines, Wood and wood products (HS 44-49) with 53.96 per cent of product lines, Machinery/Electrical (HS 84-85) category with 59.11 per cent product lines, Textiles (HS 50-63) with 57.36 per cent, Footwear/Headgear (HS 64-67) with 56.00 per cent product lines, Transportation (HS 86-89) with 53.04 per cent product lines and Miscellaneous product group (HS 90-97) with 58.04 per cent of product lines exhibit highest potential with more than fifty per cent of product lines in this category. Overall technology intensive products be it low, medium or high-tech intensive product groups exhibit higher percentage of product lines in this category than the resource intensive products.

The weakly positioned product groups are at a comparative disadvantage and are divided into two tiers based on their relative level of revealed comparative disadvantage. Only three product groups Mineral products (HS 25-27) with 0.82%, Chemical and allied industries (HS 28-38) with 0.27% and Textiles (HS 50-63) with 0.13% of product lines fall in the Weakly Positioned Tier II (WPTII) category. All industry groups have product lines falling in tier II of Weakly Positioned product category (WPTII). The top five product groups with highest percentage of product lines in this category are Animal and animal products (HS 01-05) with 62.50%, Mineral products (HS 25-27) with 59.02%, Vegetable products (HS 06-15) with 54.58%, Metals (HS 72-83) with 52.36%, Foodstuffs (HS 16-24) with 51.11%, Stone/glass (HS 68-71) with 50.83% and Raw Hides, Skins, leathers & Furs (HS 41-43) with 50.00% of their product lines. The results show that there is need for timely assistance to these industries especially Mineral products (HS 25-27), Chemical and allied industries (HS 28-38) and Textiles (HS 50-63) which have product lines in both categories with respective share in tier two product lines at 59.02%, 41.80% and 39.87%, if they are to overcome their comparative disadvantage and become competitive. There is need to address the discouraging domestic and global reasons hampering their comparative advantage in trade. According to observations, India's revealed comparative advantage profile with China needs more efforts to make sure that India's economic growth increases its export competitiveness.

Figure 3.2.1 a show the performance of top ten products with highest RCA for the animal and animal products category in 2022. India enjoyed highest revealed comparative advantage in exports of Mussels followed by Frozen sole, Frozen Nile perch, Frozen snakeheads and Frozen eels in 2022. These are followed by Frozen stromboid conchs, Frozen shrimps and prawns, Frozen rock lobster and other sea crawfish and Live, fresh, chilled, frozen, dried, salted or in brine, even smoked, jellyfish and Coral and similar materials, shells of molluscs, crustaceans or echinoderms, cuttlebone, powder. From Table 3.3, we find that the export of Frozen sole has enjoyed comparative advantage consistently over the years in trade with China. Mussels' exports improved revealed comparative advantage since 2019. The exports of Frozen Nile perch and snakeheads followed similar path. Frozen fish exports have enjoyed revealed comparative advantage in trade with China.

Figure 3.2.1 - Top ten products with highest RCA for animal and animal products category (2022)

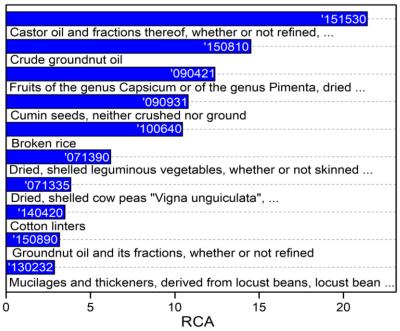


Source- Author calculations based on UN COMTRADE database

Figure 3.2.2 shows the performance of top ten products with highest RCA for vegetable products category.

Figure 3.2.2- Top ten products with highest RCA for vegetable products category (2022)

PRODUCT GROUP: 06-15 VEGETABLE PRODUCTS



Source- Author calculations based on UN COMTRADE database

In figure 3.2.2, we find that in the vegetable products category, India has highest revealed comparative advantage in the export of Castor oil, followed by Crude groundnut oil; fruits of the genus Capsicum or of the genus Pimenta, dried, neither crushed nor ground; Cumin seeds; Broken rice; Dried, shelled leguminous vegetables (excl. peas, chickpeas) and Dried, shelled cow peas. Cotton linters; Groundnut oil and Mucilage and thickeners, derived from locust beans, locust bean seeds or guar seeds are next in line to have enjoyed revealed comparative advantage in exports to China.

Table 3.3 shows the top ten products with highest revealed comparative advantage in each product grouping under study for the year 2022. The performance of top performing products is analysed for the years 2001 to 2022. The products considered under the study are analysed at HS 6-digit product classification.

Table 3.3: Top ten products with highest RCA values in product grouping (2022)

2022		7.15	4.95	4.57	3.31	2.29	2.17	2.11	1.13	0.84	0.82		21.41	14.51	12.38	10.79	10.44	6.20	3.64	5.00	1.97	1.36		96.0	0.32	0.21	0.16	0.13	0.11	0.07	0.07	0.03	0.03
																																	Н
2021		6.52	4.20	4.79	1.94	3.05	2.33	2.02	1.73	0.92	1.05			12.62			6.81	4.67	7.25	9.12	7.52	1.30		0.17	0.26	0.01	0.14	0.00	0.19	0.20	0.14	0.02	0.02
2020		1.49	6.90	7.28	3.38	4.54	0.23	2.24	1.56	69.0	1.14		26.05	28.97	18.26	16.89	0.28	0.63	1.23	3.03	16.89	2.54		0.00	0.17	0.09	0.18	0.00	0.13	0.24	0.16	0.04	0.02
2019		4.44	6.12	1.02	4.09	4.57	5.56	3.07	1.17	0.14	0.41		21.17	3.70	14.55	10.60	0.00	2.54	0.00	4.83	4.95	4.29		0.07	0.08	0.00	980	0.00	0.04	0.00	0.18	0.03	0.03
2018		10'0	68'1	1.09	3.15	3.25	0.00	76'0	1.14	0.00	<i>1</i> 7.0		23.85	3.41	3.86	0.03	0.00	0.29	0.00	4.29	3.84	3.86		00'0	0.05	00'0	90.0	0.00	0.14	0.00	0.18	0.02	0.00
2017		0.02	0.34	0.00	0.44	0.23	0.16	0.24	0.48	0.00	0.32		22.28	1.83	09.0	0.02	0.00	0.32	0.00	11.99	5.11	2.29		0.00	0.04	0.00	0.24	0.02	0.10	0.00	0.18	0.01	0.00
2016		0.01	0.43	0.04	0.70	1.20	0.00	0.17	0.31	0.00	0.23		20.31	1.38	0.19	80.0	0.00	0.00	0.00	12.77	3.32	2.52		0.00	0.04	0.00	0.77	0.00	0.02	0.00	0.11	0.00	0.00
2015		0.01	0.73	0.02	0.73	0.48	0.00	0.27	0.00	0.00	0.15		19.27	1.05	0.27	0.03	0.00	0.00	0.00	15.48	2.05	3.31		0.00	0.00	0.00	0.55	0.00	90.0	0.00	0.10	0.00	0.00
2014	cts	0.01	0.82	0.00	9.76	0.42	0.00	0.12	90.0	0.00	0.44		17.44	1.69	0.34	90.0	0.00	0.00	0.00	11.79	7.90	2.20		0.01	0.01	0.00	0.10	0.00	0.04	0.00	0.09	0.00	0.00
2013	ial Produ	0.04	2.93	0.07	1.42	1.09	0.00	0.13	0.59	0.00	0.48	roducts	20.94	0.00	0.15	0.10	0.00	0.00	0.00	13.11	2.94	4.01	ıffs	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00
2012	Animal and Animal Products	0.01	1.87	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.26	etable Pi	23.70	1.01	0.00	0.00		0.01	0.00	12.33	17.18	2.53	Food Str	0.00		0.00	0.00	0.00	000	0.00	90.0	0.00	0.00
2011	Animal a	0.00	3.34	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	-15: Veg	16.58	0.10	0.00	0.00	0.00	0.00	0.00	6.70	5.79	3.05	g 16-24:	0.00		0.00	2.11	0.00	0.07	0.00	0.03	0.03	0.00
2010	g 01-05:	0.00	1.73	0.07	0.00	0.00	0.00	0.00	0.01	0.00	0.17	Product Grouping 06-15: Vegetable Product.	21.34		0.00	0.00	0.00	0.00	0.00	7.77	0.29	3.24	Product Grouping 16-24: Food Stuffs	0.00	0.01	0.00	0.43	0.00	0.20	0.00	0.03	0.01	0.00
2009	Product grouping 01-05:	0.15	0.61	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.25	duct Gro	23.38	0.00	0.00	0.00	0.00	0.00	0.00	5.50	0.00	3.25	Product	0.00	0.00	0.00	0.00	0.00	0.07	0.00	0.03	0.11	0.00
2008	Product	0.04	0.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	Pro	11.82	95.0	0.00	0.00	0.00	0.01	0.00	3.89	2.88	4.70		0.00	0.13	0.00	0.00	0.00	0.33	0.07	0.04	0.27	0.00
2007		0.04	030	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.11		15.85	68.0	0.00	0.00	0.00	0.00	0.00	4.48	0.20	5.54		0.31	0.31	0.00	0.00	0.00	60.0	1.89	0.03	0.41	0.00
2006		0.04	0.92	0.00	0.00	0.00	0.00	0.00	0.02	0.00	0.04		18.53	0.00	0.00	0.00	0.00	0.00	0.00	3.94	0.05	5.34		0.00	0.00	0.00	0.33	0.00	0.14	0.00	0.01	0.28	0.00
2005		0.05					0.00						15.31	0.00		0.00								0.00		0.00		0.00		0.00			
2004		80.0	0.32	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.02		14.54	0.00	0.00	0.00	0.00	0.00	0.00	1.73	0.00	2.81		0.00	0.00	0.00	0.00	0.00	0.17	0.00	0.00	0.23	0.00
2003		0.18	0.29	000	0.00	0.00	0.00	0.00	0.00	0.00	0.00		6.14	3.77	0.00	0.00	0.00	0.00	0.00	99'1	0.00	3.02		0.00		0.00	0.00	0.00	0.01	0.05	0.00	0.19	0.00
2002		1.16	0.07			0.00		0.00		0.00			3.82				0.00		0.00		0.00			0.00								0.01	H
2001		0.50	0.01		0.00								3.69		0.00	0.00			0.00	0.18	0.00	4.18		0.00	0.12	0.00						0.00	H
Product Code		,030739	'030333			,030376	1030784	'030617	'030611	.030830				150810				.041390	1071335	140420	150890	130232		'230120	170199	170114			1230690	170191	,2002	160420	170113

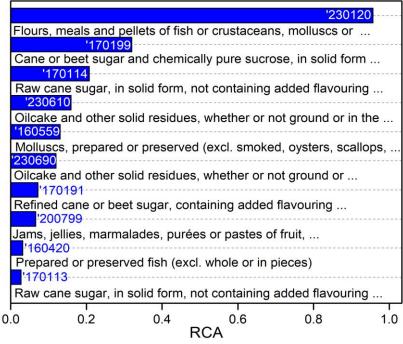
~		7	3	0	3								9																					
2022		30.02	20.33	10.90	10.13	8.85	3.20	2.16	1.87	1.55	1.49		10.86	7.84	7.55	6.07	5.76	5.57	4.64	3.47	3.41	2.81		1.82	0.36	0.27	0.26	0.24	0.21	0.18	0.14	0.14	0.11	
2021		30.19	27.62	13.37	16.82	6.75	2.80	89.0	0.83	0.33			16.54	8.70	6.52	3.87	689	8.25	2.89	1.33	5.51	4.27		1.89	0.26	1.00	0.04	80.0	0.15	0.08	0.10	0.26	0.04	
2020		31.02	34.54	11.41	18.82	60.6	2.45	1.26	1.29	0.43	4.43		15.96	10.03	3.70	6.28	6.43	9.84	1.90	0.00	6.44	5.65		2.38	0.28	2.09	0.00	0.40	0.23	0.11	0.07	0.45	90.0	
2019		29.13	30.58	10.00	16.52	9.22	1.63	1.71	1.48	0.44	3.06		16.62	2.75	4.28	7.09	7.23	9.26	1.55	0.00	4.98	2.05		3.41	0.25	0.12	0.00	60.0	0.24	0.01	0.04	0.28	0.04	
2018		40.31	29.34	10.59	19.71	10.84	1.30	2.12	1.32	0.42	2.36		14.98	3.22	3.88	7.62	4.87	8.39	68.0	0.00	4.80	0.53		3.39	0.29	0.00	0.00	0.00	0.21	0.01	0.06	0.27	0.06	
2017		38.21	31.01	9.81	14.76	9.78	1.45	1.87	1.27	0.45	2.72		16.17	4.59	3.00	7.09	4.00	11.51	99.0	0.00	5.12	1.10		3.37	0.17	0.00	0.00	0.00	0.22	0.01	0.14	0.24	0.07	
2016		35.69	28.71	10.23	13.71	10.00	1.45	1.07	1.13	0.31	2.29		14.38	5.58	2.16	5.31	2.74	11.68	0.87	0.00	5.56	0.82		1.90	0.10	0.00	0.00	0.01	0.31	0.01	0.16	0.23	0.13	
2015		43.87	28.75	8.08	13.53	9.17	1.67	6.79	0.63	0.29	0.16		10.96	7.24	2.31	3.38	2.65	15.06	0.62	0.00	7.03	1.43		1.56	80.0	0.00	0.00	0.11	0.29	0.02	0.12	0.44	0.14	
2014		37.48	28.41	5.59	13.66	7.43	1.39	96.0	0.25	0.26	0.20	stries	15.28	11.19	0.52	3.54	3.34	10.58	0.57	0.00	4.91	89'0		2.57	0.01	0.05	0.00	0.04	0.17	0.02	0.18	0.25	0.13	
2013	Products	34.43	27.79	5.74	5.45	6.53	1.68	76.0	80.0	0.15	0.50	ed Indu	16.28	13.90	0.00	1.01	1.06	9.70	0.10	0.00	3.39	0.17	ıbbers	1.99	0.03	0.00	0.00	0.01	0.04	0.03	0.10	0.33	0.18	
2012	Mineral Pr	33.93	28.74	5.60	4.07	7.67	0.54	0.51	0.10	0.31	0.01	and All	16.97	12.59	0.00	6.79	0.67	10.05	80.0	0.00	2.92	0.00	Plastics/Rubbers	1.78	0.00	0.00	0.00	0.00	0.04	0.03	0.02	0.46	0.16	
2011		39.51	21.71	5.61	5.34	6.28	0.38	0.42	0.10	0.07	0.00	ping		15.60	5.34	0.01	4.47	0.37	6.50	0.07	0.00	2.28	1.19		1.54	0.00	0.00	0.00	60.0	0.07	0.01	0.02	0.00	0.10
2010	Product Grouping 25-27:	47.28	21.78	4.05	3.74	7.98	0.18	0.28	0.13	0.02	0.02			16.71	3.30	000	3.28	0.22	3.53	0.29	000	2.20	2.32	Product Grouping 39-40:	1.68	0.00	0.00	000	0.05	0.03	0.00	0.00	0.00	60.0
5006	oduct Gr	45.47	21.20	2.83	3.51	4.24	0.47	0.20	0.12	000	0.31		13.17	4.05	0.00	2.58	0.01	4.90	0.18	0.00	2.93	2.89	oduct Gr	1.36	0.00	0.00	0.00	0.00	0.02	000	0.00	0.00	0.15	
2008	Pr	53.41	20.91	2.68	6.55	5.25	0.23	0.11	60.0	0.02	1.60		roduct G	12.45	3.38	0.00	3.43	0.04	2.74	0.26	0.00	2.02	68.0	Pr	2.94	0.00	0.01	0.00	0.01	0.01	0.02	0.00	0.00	0.10
2007		32.21	24.44	2.10	7.16	4.08	0.00	90.0			1.72	Ь	21.96	3.33	0.00	3.49	90.0	5.75	0.16	0.00	3.50	0.21		80.0	0.00	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.05	
2006		31.59	20.46	1.89	10.42	3.21	0.00	0.07	0.37	0.01	0.49		13.88	5.13	0.19	1.78	0.22	2.06	0.12	0.00		0.89		0.02	0.00	0.00	0.00	0.00	0.02	0.01	0.00			
2005		42.64	17.87	4.00	8.92	2.91	0.00	1.79			4.51		18.03	7.26	0.34	0.35	0.09	3.50	0.01	0.00	2.43	0.31		000	000	0.00	000	000		0.01		0.00		
2004		35.84	18.51	5.53	9.16	4.66		69.0		0.00	4.60		7.17	10.01	0.56	0.00	0.10	1.74	0.01	0.00	1.23	0.00		0.00	0.00	0.00	000	0.00	0.03	0.03				
2003 2		27.71	13.49	7.95 5	5.01	3.22	0.00	0.00			2.28 4		8.67	2.16	0.00	0.21	0.00	2.44	0.05	0.00	0.86			0.01	0.00	0.00	0.00	0.00	0.01	0.03 0	0.00	0.21 0		
2002 2		4.44	13.73		2.93 5	1.72		0.00			1.19 2		5.53 8	0.01	0.00	0.13 0	0.00	13.37 2	0.06		0.71 0	0.11 0		0.02	0.00	0.00	0.00	0.00	0.01	0.00				
2001 2		0.32	12.47 13	3.68 4.	0.57	1.94 1.	0.00	0.00			1.27		8.58 5.	2.75 0.	0.00	0.14 0.	0.00	0.00 13	0.05 0.	0.00	0 96.0	0.48 0		0.02	0.08 0.	0.00	0.00	0.00	0.20	0.00	0.00 0.0	0.09		
Product Code		. 252530	.251611	'251612	'252510	.252520	.250300	.250100	.250610	.252610	711097		1790671	330125	'280130	1291249	.290950	'283190	'292145	'292113	'292142	'291300		1400300	'401410	.400331	,400239	1390220	1390940	1300201	.391190	390519	1392069	

24.78 31.19 32.70 28.88 27.41 28.58 27.70 21.59 18.81 0.00	2001 2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
31.19 32.70 28.88 27.41 28.58 27.70 21.59 11 0.00 <							Pro	duct Gro	uping 64	1-67: Foc	otwear/ E	leadgear									
0.00 0.00 <td< td=""><td></td><td>32.70</td><td>28.88</td><td>27.41</td><td>28.58</td><td>27.70</td><td>21.59</td><td>18.81</td><td>15.62</td><td>18.04</td><td>20.16</td><td>20.36</td><td>15.31</td><td>16.45</td><td>18.59</td><td>17.72</td><td>16.82</td><td>20.67</td><td>27.26</td><td>26.99</td><td>22.80</td></td<>		32.70	28.88	27.41	28.58	27.70	21.59	18.81	15.62	18.04	20.16	20.36	15.31	16.45	18.59	17.72	16.82	20.67	27.26	26.99	22.80
0.00 0.00 <td< td=""><td></td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.01</td><td>0.00</td><td>0.00</td><td>0.03</td><td>0.03</td><td>0.01</td><td>0.05</td><td>0.06</td><td>0.11</td><td>0.24</td><td>0.37</td><td>0.21</td><td>0.14</td><td>0.40</td></td<>		0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.03	0.03	0.01	0.05	0.06	0.11	0.24	0.37	0.21	0.14	0.40
0.00 0.00 <td< td=""><td></td><td>0.00</td><td>0.00</td><td>0.01</td><td>0.00</td><td>0.04</td><td>0.03</td><td>0.02</td><td>0.01</td><td>0.03</td><td>0.03</td><td>0.17</td><td>0.32</td><td>0.41</td><td>0.40</td><td>0.18</td><td>0.12</td><td>0.11</td><td>0.15</td><td>60.0</td><td>90.0</td></td<>		0.00	0.00	0.01	0.00	0.04	0.03	0.02	0.01	0.03	0.03	0.17	0.32	0.41	0.40	0.18	0.12	0.11	0.15	60.0	90.0
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0.00 0.00 <td< td=""><td>-</td><td></td><td></td><td></td><td></td><td>1</td><td></td><td>Product</td><td>Groupin</td><td>ng 68-71:</td><td>Stone/Glass</td><td>Jass</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	-					1		Product	Groupin	ng 68-71:	Stone/Glass	Jass									
0.08 0.12 0.31 0.06 0.24 0.25 0.45 0. 0.07 0.03 0.07 0.06 0.10 0.06 0.79 0. 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0. 0.01 0.00 0.00 0.00 0.00 0.00 0. 0. 0.01 0.00 0.00 0.00 0.00 0.00 0. 0		0.00	0.00	0.00	0.00	0.00	0.00	0.55	0.19	0.24	08.0	0.26	19.0	1.65	1.38	1.99	0.18	0.22	3.29	11.12	5.81
0.00 0.07 0.03 0.07 0.06 0.10 0.06 0.79 0.9 0.00 0.03 0.23 0.23 0.03 0.23 0.0			0.31	90.0	0.24	0.25	0.45	0.39	86.0	0.15	0.41	0.47	0.49	0.57	09.0	0.36	0.18	0.29	0.46	9.64	9.02
0.00 0.00 <th< td=""><td></td><td>0.03</td><td>0.07</td><td>90.0</td><td>0.10</td><td>90.0</td><td>0.79</td><td>0.05</td><td>0.10</td><td>0.15</td><td>0.10</td><td>60.0</td><td>0.11</td><td>0.05</td><td>0.07</td><td>80.0</td><td>0.14</td><td>0.15</td><td>0.20</td><td>0.20</td><td>0.17</td></th<>		0.03	0.07	90.0	0.10	90.0	0.79	0.05	0.10	0.15	0.10	60.0	0.11	0.05	0.07	80.0	0.14	0.15	0.20	0.20	0.17
0.00 0.00 <th< td=""><td></td><td></td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.13</td></th<>			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13
0.00 0.01 0.00 <td< td=""><td></td><td></td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.62</td><td>1.27</td><td>1.77</td><td>1.85</td><td>1.03</td><td>1.18</td><td>1.44</td><td>1.32</td><td>0.02</td><td>0.13</td></td<>			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62	1.27	1.77	1.85	1.03	1.18	1.44	1.32	0.02	0.13
0.22 0.11 0.05 0.03 0.02 0.04 0.02 0.03 0.03 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.06 0.23 0 0.46 0.30 0.36 0.40 0.70 0.50 1.39 1.59 1. 0.00 0.00 0.00 0.00 0.00 0.01 0.00		0.00	0.01	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.01	0.02	0.00	0.04	0.01	0.07	0.08	80.0	0.14	0.19	0.12
0.00 0.00 0.00 0.00 0.00 0.01 0.06 0.23 0.23 0.23 0.23 0.24 0.20 0.00 0.00 0.00 0.01 0.00 <td< td=""><td></td><td>0.05</td><td>0.03</td><td>0.02</td><td>0.04</td><td>0.02</td><td>0.03</td><td>80.0</td><td>0.01</td><td>0.01</td><td>0.03</td><td>0.05</td><td>0.15</td><td>0.02</td><td>0.16</td><td>0.23</td><td>0.17</td><td>0.18</td><td>0.10</td><td>0.07</td><td>0.12</td></td<>		0.05	0.03	0.02	0.04	0.02	0.03	80.0	0.01	0.01	0.03	0.05	0.15	0.02	0.16	0.23	0.17	0.18	0.10	0.07	0.12
0.46 0.30 0.36 0.40 0.70 0.50 1.39 1.59 1. 0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.01 0.03 0.01 0.03		0.00	0.00	0.00	0.01	90.0	0.23	0.03	0.00	0.13	0.02	0.01	0.01	0.02	0.02	0.04	0.05	80.0	0.07	0.07	0.10
0.00 0.00 0.00 0.00 0.00 0.01 0.00 <th< td=""><td></td><td>0.36</td><td>0.40</td><td>0.70</td><td>0.50</td><td>1.39</td><td>1.59</td><td>1.23</td><td>7.26</td><td>0.84</td><td>0.74</td><td>0.70</td><td>0.78</td><td>0.27</td><td>0.12</td><td>0.15</td><td>0.16</td><td>0.17</td><td>0.17</td><td>0.07</td><td>0.07</td></th<>		0.36	0.40	0.70	0.50	1.39	1.59	1.23	7.26	0.84	0.74	0.70	0.78	0.27	0.12	0.15	0.16	0.17	0.17	0.07	0.07
0.00 0.00 0.00 0.00 0.00 0.01 0.01 0.03 0.00 <td< td=""><td></td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.01</td><td>0.01</td><td>0.37</td><td>0.02</td><td>0.01</td><td>0.03</td><td>0.04</td><td>0.00</td><td>0.00</td><td>0.01</td><td>0.00</td><td>0.00</td><td>0.01</td><td>0.01</td><td>0.04</td><td>90.0</td></td<>		0.00	0.00	0.00	0.00	0.01	0.01	0.37	0.02	0.01	0.03	0.04	0.00	0.00	0.01	0.00	0.00	0.01	0.01	0.04	90.0
0.00 0.00 0.00 0.00 0.00 0.03 0.01 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.03 0.04 0.04 0.04 0.05 0.04 0.00 <th< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>Produ</td><td>ict Grou</td><td>ping 72-8</td><td>33: Meta</td><td>ls</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>								Produ	ict Grou	ping 72-8	33: Meta	ls									
0.00 0.00 0.96 2.03 2.30 1.30 1.21 0.41 0.37 0.26 0.37 0.09 1.01 1.12 2.80 3.20 1.81 5.22 0.00 0.00 0.02 0.74 0.17 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00			0.00	0.13	0.01	0.13	0.03	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.93	13.31	10.06	8.63
0.26 0.37 0.09 1.01 1.12 2.80 3.20 1.81 5.22 0.00 0.06 0.02 0.74 0.17 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.00 0.04 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00			2.03	2.30	1.30	1.21	0.41	0.37	0.36	80.0	0.00	0.22	0.01	0.00	0.00	0.91	0.07	1.13	6.12	4.33	3.94
0.00 0.06 0.02 0.74 0.17 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.00 0.04 0.00 0.00 0.02 0.20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.01 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.34 0.35 0.00 0.00 0.00 0.00			1.01	1.12	2.80	3.20	1.81	5.22	6.16	2.09	2.66	3.08	1.39	1.48	1.80	2.95	2.24	3.35	3.55	2.86	2.24
0.00 0.00 0.01 0.00 0.04 0.00 0.00 0.02 0.20 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.78 0.36 0.00 0.64 0.82 0.37 0.00 0.60			0.74	0.17	0.00	0.00	0.00	0.00	0.00	0.00	0.14	80.0	0.00	0.00	0.00	0.38	0.21	0.07	1.21	1.67	1.47
0.00 0.00 <td< td=""><td></td><td></td><td>0.00</td><td>0.04</td><td>0.00</td><td>0.00</td><td>0.02</td><td>0.20</td><td>0.36</td><td>0.94</td><td>82.0</td><td>0.82</td><td>1.18</td><td>0.38</td><td>0.51</td><td>0.12</td><td>0.00</td><td>0.00</td><td>1.01</td><td>1.88</td><td>1.39</td></td<>			0.00	0.04	0.00	0.00	0.02	0.20	0.36	0.94	82.0	0.82	1.18	0.38	0.51	0.12	0.00	0.00	1.01	1.88	1.39
0.00 0.00 <td< td=""><td></td><td></td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.18</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.02</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.00</td><td>0.02</td><td>0.02</td><td>0.36</td><td>0.31</td><td>1.23</td></td<>			0.00	0.00	0.00	0.18	0.00	0.00	0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.02	0.02	0.36	0.31	1.23
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.0		0.00	0.05	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.03	0.21	0.40	0.44
090 000 60 000 780 790 000 980 000 000		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	0.51	0.71	0.25	0.38
20:0 00:0 20:0 20:0 00:0 00:0 00:0	0.00 0.78		0.00	0.64	0.82	0.32	0.00	69'0	1.30	2.98	0.04	0.22	0.00	0.08	0.00	0.07	0.00	0.59	1.80	1.33	0.29
760110 0.00 0.01 0.03 0.01 0.08 0.00 0.01 0.09 0.09		0.03	0.01	80.0	0.00	0.01	0.01	0.39	90.0	0.05	0.13	0.29	0.02	0.05	0.05	0.04	0.01	0.03	0.41	1.70	0.25

								1	1																	-									_
2022		4.71	1.69	1.26	1.09	96'0	0.82	0.81	99.0	9.65	0.55		0.10	0.08	0.07	90.0	0.04	0.03	0.03	0.02	0.02	0.02		1.21	09.0	0.37	0.35	0.24	0.19	0.15	0.13	0.12	0.12		0.00
2021		3.81	0.62	0.23	0.70	1.80	9.02	0.73	0.85	0.01	0.00		0.02	0.04	0.22	0.08	0.00	0.00	0.01	0.02	0.00	0.03		1.47	1.23	0.41	0.27	0.22	0.16	0.10	0.11	0.10	0.16		0.00
2020		1.92	0.00	0.00	0.01	1.06	0.00	0.77	0.49	0.00	0.00		0.00	0.00	0.16	0.02	0.00	0.00	0.02	0.02	0.00	0.03		1.41	0.83	0.50	1.06	0.25	0.00	0.11	0.08	0.19	0.16		0.00
2019		0.94	0.40	0.00	0.38	0.42	0.25	0.62	0.10	0.64	0.00		0.02	0.01	0.05	0.01	0.00	0.00	0.01	0.01	0.00	0.02		0.88	0.62	0.16	0.70	0.22	90.0	0.13	0.05	0.21	0.13		0.00
2018		1.22	0.16	0.00	0.44	0.44	0.01	0.46	0.21	000	000		0.01	90.0	60.0	0.02	000	0.01	0.01	000	0.00	0.02		0.85	1.22	0.20	0.71	0.21	0.05	0.13	0.20	0.17	0.48		0.00
2017		2.11	0.00	0.00	0.46	0.47	0.01	0.43	0.53	000	000		0.00	000	0.01	0.01	000	00.0	00.0	000	00.0	0.02		0.81	1.77	0.18	0.12	0.07	0.00	0.13	0.20	0.21	0.01		0.00
2016		1.67	0.00	0.00	0.00	0.37	0.00	0.38	0.23	0.18	0.00		0.10	0.00	0.03	0.01	0.00	0.00	0.00	0.00	0.00	0.02		0.89	1.14	0.16	0.14	0.00	0.01	0.20	0.31	0.30	0.05		0.00
2015		1.09	0.15	0.00	0.25	0.91	0.00	0.15	80.0	0.56	0.01		0.01	0.01	0.02	0.02	0.00	0.00	0.00	0.00	0.00	0.02		0.82	0.82	0.18	0.25	0.00	0.00	0.16	0.22	0.47	0.02		0.00
2014	1	0.44	0.19	0.00	0.40	0.70	60.0	0.13	0.00	0.06	0.06		0.00	0.00	0.09	0.01	0.00	0.00	0.00	0.00	0.00	0.03		0.70	0.54	0.12	0.22	0.00	0.00	0.00	0.27	0.58	0.02		0.00
2013	Electrical	0.44	0.07	0.00	0.83	0.15	0.00	80.0	0.00	0.32	0.15	tation	0.00	0.00	0.23	0.01	0.00	0.00	0.00	0.01	0.00	0.03	neous	0.66	0.74	0.06	0.25	0.00	0.00	0.00	0.24	0.40	0.02	ce	0.00
2012	Machinery/	0.19	0.00	0.00	0.95	0.08	0.09	0.09	0.00	0.12	0.26	Transportation	0.00	0.00	0.11	0.01	0.00	0.00	0.00	0.00	0.00	0.02	Miscellaneous	99.0	0.93	90.0	0.14	0.00	0.00	0.02	0.10	0.34	0.02	Product Grouping 98-99: Service	000
2011	84-85: Ma	0.26	0.00	0.00	0.98	0.08	0.00	0.07	0.04	0.01	0.14	86-89:	0.00	0.00	0.17	0.01	0.00	0.00	0.00	0.00	0.00	0.03	3 90-97:	0.52	0.89	0.05	0.14	0.00	0.00	0.00	0.13	0.44	0.01	98-9 gniq	000
2010	uping 84	0.17	0.00	0.00	0.44	0.09	0.00	0.04	0.00	0.00	0.08	Product Grouping	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.01	Product Grouping 90-97:	0.52	0.19	0.10	0.04	0.00	0.00	0.00	0.04	0.21	0.00	ict Grou	0.00
2009	Product Grouping	0.18	0.00	0.00	0.16	0.08	0.08	80.0	0.00	0.00	0.00	Product (0.00	0.00	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.01	Product	0.41	0.12	0.17	0.09	0.01	0.01	0.00	0.00	0.16	0.00	Prod	0.01
2008	Pro	0.04	0.00	0.00	0.01	0.06	98.0	0.05	0.00	0.03	0.00		0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01		0.48	0.12	0.31	0.06	0.01	0.00	0.00	0.03	0.16	0.01		0.04
2007		0.06	0.10	0.00	0.01	0.01	0.82	0.01	0.00	0.22	0.00		0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01		0.42	0.06	0.22	0.00	0.01	0.00	0.00	0.07	0.17	0.00		0.00
2006		0.01	0.00	0.00	0.04	0.01	82.0	0.01	0.00	0.03	0.02		0.01	000	00'0	000	000	000	0.01	000	000	000		69.0	0.05	0.15	0.52	0.00	0.00	0.00	0.16	80.0	0.03		0.01
2005		0.02	0.00	0.00	0.03	000	16'0	0.01	0.00	0.13	000		0.01	000	00'0	000	000	00'0	000	000	0.00	0.01		0.62	0.15	0.12	0.07	0.00	0.00	0.00	0.07	0.17	0.00		000
2004		0.00	0.00	0.00	0.01	0.00	0.78	0.04	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.00	0.00	0.01		0.72	0.00	0.05	0.04	0.00	0.00	0.00	0.14	0.23	0.01		0.00
2003		0.00	0.00	0.00	0.05	000	20.0	0.02	0.00	0.00	0.01		0.01	0.01	000	000	000	000	0.02	000	0.00	0.01		1.01	0.00	0.12	0.00	0.00	0.00	0.00	0.09	0.04	0.02	l	0.00
2002		0.00	0.00	0.00	0.00	0.00	90.0	0.01	0.00	0.13	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00		0.56	0.02	90.0	0.01	0.00	0.00	0.00	0.06	0.01	0.01		0.00
2001		0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00		0.00	0.00	0.00	0.00	0.00	0.00	0.03	0.00	0.00	0.00		0.53	0.00	0.07	0.04	0.00	0.00	0.00	0.02	0.14	0.02		000
Product Code		'844832	'844512	'845612	'844520	'844842	'842111	1840890	'846031	'846820	'844519		.860730	'860721	'870410	.820850	1880510	008098,	.871499	'871410	.880730	668028.		'902230	,960630	'920992	1960190	'903220	'903033	'901813	098096,	168096	,920999		666666

The table depicts that castor oil exports have enjoyed revealed comparative advantage from the beginning of the time period under study in 2001. Groundnut oil and cotton linters too have performed well and enjoyed comparative advantage over the years. Mucilages and thickeners, derived from locust beans, locust bean seeds or guar seeds, whether ... is another product in which India has enjoyed comparative advantage in trade

Figure 3.2.3- Top ten products with highest RCA for foodstuffs category (2022)
PRODUCT GROUP: 16-24
FOOD STUFFS



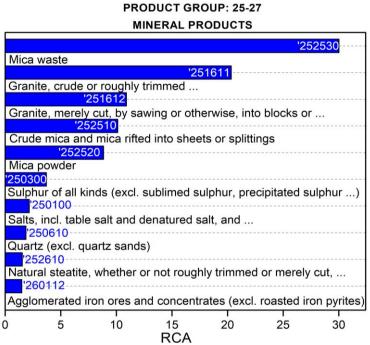
Source- Author calculations based on UN COMTRADE database

Figure 3.2.3 shows the performance of top ten products with highest RCA for foodstuffs category. Flours, meals and pellets of fish or crustaceans, molluscs or other aquatic invertebrates, enjoyed highest revealed comparative advantage for the year 2022 in the foodstuffs category exported to China. Cane or beet sugar and chemically pure sucrose, in solid form (excl. cane and beet sugar containing ...; Raw cane sugar, in solid form, not containing added flavouring or colouring matter (excl. cane ...; Oilcake and other solid residues, whether or not ground or in the form of pellets, resulting ...; Molluscs, prepared or preserved (excl. smoked, oysters, scallops, mussels, cuttle fish, squid, ...; Oilcake and other solid residues, whether or not ground or in the form of pellets, resulting ...; Refined cane or beet sugar, containing added flavouring or colouring, in solid form; Jams, jellies, marmalades, purées or pastes of fruit, obtained by cooking,

whether or not containing ...; Prepared or preserved fish (excl. whole or in pieces) and Raw cane sugar, in solid form, not containing added flavouring or colouring matter, obtained ...enjoy least comparative disadvantage in exports to China in this category.

Figure 3.2.4 shows the performance of top ten products with highest RCA for mineral products category. Here we find that top five products with highest revealed comparative advantage are Mica waste; Granite, crude or roughly trimmed (excl. already with the characteristics of setts, curbstones ...; Granite, merely cut, by sawing or otherwise, into blocks or slabs of a square or rectangular ...; Crude mica and mica rifted into sheets or splittings and Mica powder.

Figure 3.2.4- Top ten products with highest RCA for mineral products category (2022)

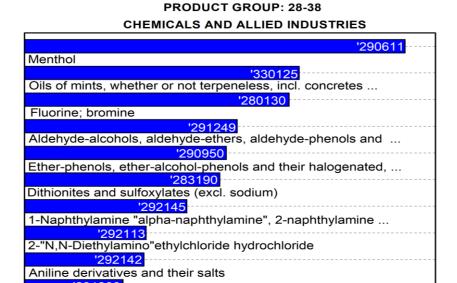


Source- Author calculations based on UN COMTRADE database

The top five products have performed consistently over the years and have enjoyed RCA from 2001 to 2022. These products are followed by Sulphur of all kinds (excl. sublimed sulphur, precipitated sulphur and colloidal sulphur); Salts, incl. table salt and denatured salt, and pure sodium chloride, whether or not in aqueous ...; Quartz (excl. quartz sands); Natural steatite, whether or not roughly trimmed or merely cut, by sawing or otherwise, into ... and Agglomerated iron ores and concentrates (excl. roasted iron

pyrites) which have fared relatively better in the later part of the time period under study.

Figure 3.2.5- Top ten products with highest RCA for chemical and allied industries category (2022)



RCA
Source- Author calculations based on UN COMTRADE database

10

Halogenated, sulphonated, nitrated or nitrosated derivatives

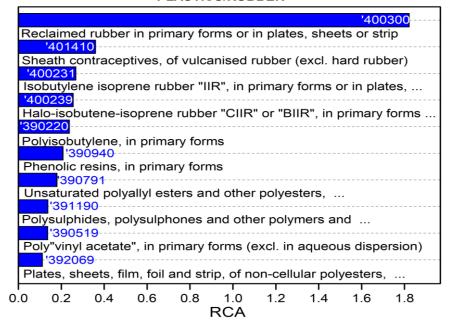
Figure 3.2.5 depicts the performance of top ten products with highest RCA for chemical and allied industries products category. The top ten product groups with highest revealed comparative advantage in the year 2022 are Menthol; Oils of mints, whether or not terpeneless, incl. concretes and absolutes (excl. those of peppermint ...); Fluorine; bromine; Aldehyde-alcohols, aldehyde-ethers, aldehyde-phenols and aldehydes with other oxygen function ...; Ether-phenols, ether-alcohol-phenols and their halogenated, sulphonated, nitrated or nitrosated; Dithionites and sulfoxylates (excl. sodium); 1-Naphthylamine "alpha-naphthylamine", 2-naphthylamine "beta-naphthylamine" and their derivatives...; 2-"N,N-Diethylamino"ethylchloride hydrochloride; Aniline derivatives and their salts and Halogenated, sulphonated, nitrated or nitrosated derivatives of cyclic polymers of aldehydes.

Table 3.3 shows that India has enjoyed revealed comparative advantage in trade of menthol, Oils of mints, whether or not terpeneless, incl. concretes and absolutes (excl. those of peppermint ...) and Dithionites and sulfoxylates (excl. sodium) from the start

of the time period under study till now. Aniline derivatives and their salts have also enjoyed almost similar comparative advantage over the years.

Figure 3.2.6- Top ten products with highest RCA for plastics/rubber products category (2022)

PRODUCT GROUP: 39-40 PLASTICS/RUBBER

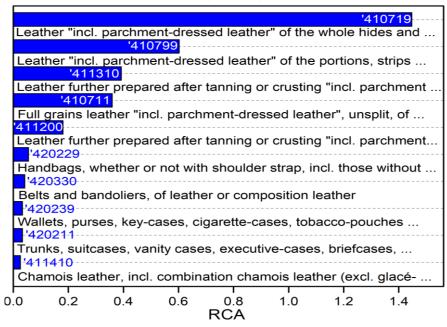


Source- Author calculations based on UN COMTRADE database

Figure 3.2.6 shows the performance of top ten products with highest RCA for plastics and rubber products category. The top ten products with the least comparative disadvantage are Reclaimed rubber in primary forms or in plates, sheets or strip; Sheath contraceptives, of vulcanised rubber (excl. hard rubber); Isobutylene isoprene rubber "IIR", in primary forms or in plates, sheets or strip; Halo-isobutene-isoprene rubber "CIIR" or "BIIR", in primary forms or in plates, sheets or strip; Polyisobutylene, in primary forms; Phenolic resins, in primary forms; Unsaturated polyallyl esters and other polyesters, in primary forms (excl. polycarbonates; Polysulphides, polysulphones and other polymers and prepolymers produced by chemical synthesis; Poly"vinyl acetate", in primary forms (excl. in aqueous dispersion) and Plates, sheets, film, foil and strip, of non-cellular polyesters, not reinforced, laminated. Reclaimed rubber in primary forms or in plates, sheets or strip is the only product in which India has enjoyed comparative advantage in exports to China and that from 2008 to the present. Remaining products have exhibited comparative disadvantage over the years.

Figure 3.2.7- Top ten products with highest RCA for raw hides, skins, leather and furs products category (2022)

PRODUCT GROUP: 41-43 RAW HIDES, SKINS, LEATHER & FURS



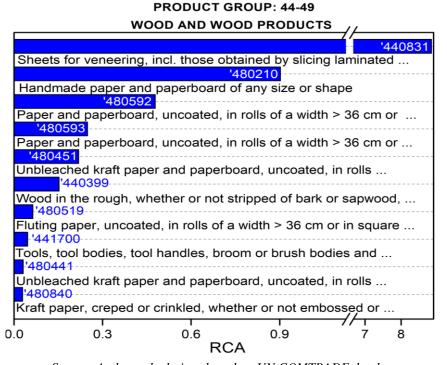
Source- Author calculations based on UN COMTRADE database

Figure 3.2.7 depicts the performance of top ten products with highest RCA for raw hides, skins, leather and furs products category. The top ten products are Leather "incl. parchment-dressed leather" of the whole hides and skins of bovine "incl. buffalo"; Leather "incl. parchment-dressed leather" of the portions, strips or sheets of hides and skins; Leather further prepared after tanning or crusting "incl. parchment-dressed leather", of goats; Full grains leather "incl. parchment-dressed leather", unsplit, of the whole hides and skins; Leather further prepared after tanning or crusting "incl. parchment-dressed leather", of sheep; Handbags, whether or not with shoulder strap, incl. those without handle, with outer surface; Belts and bandoliers, of leather or composition leather; Wallets, purses, key-cases, cigarette-cases, tobacco-pouches and similar articles of a kind; Trunks, suitcases, vanity cases, executive-cases, briefcases, school satchels and similar containers and Chamois leather, incl. combination chamois leather (excl. glacé-tanned leather subsequently.

As shown in table 3.3, Leather "incl. parchment-dressed leather" of the whole hides and skins of bovine "incl. buffalo" is the only product which has performed consistently

and exhibited revealed comparative advantage over the years of study. The trade of Leather "incl. parchment-dressed leather" of the portions, strips or sheets of hides and skins; Leather further prepared after tanning or crusting "incl. parchment-dressed leather", of goats has exhibited a mix of comparative advantage and disadvantage over the years. The remaining products show enjoying least comparative disadvantage over the period of study.

Figure 3.2.8- Top ten products with highest RCA for wood and wood products category (2022)

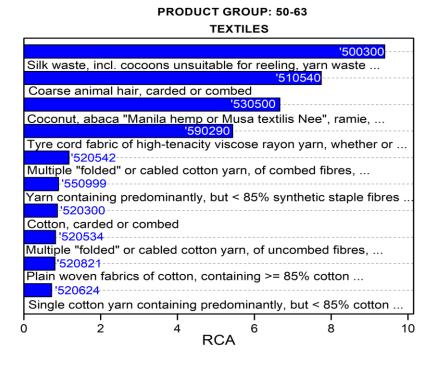


Source- Author calculations based on UN COMTRADE database

Figure 3.2.8 shows the performance of top ten products with highest RCA for wood and wood products category. The top ten products are Sheets for veneering, incl. those obtained by slicing laminated wood..., for plywood or for other, Handmade paper and paperboard of any size or shape, Paper and paperboard, uncoated, in rolls of a width > 36 cm or in square or rectangular sheets ..., Paper and paperboard, uncoated, in rolls of a width > 36 cm or in square or rectangular sheets ..., Unbleached kraft paper and paperboard, uncoated, in rolls of a width > 36 cm or in square or ..., Wood in the rough, whether or not stripped of bark or sapwood, or roughly squared (excl. rough-cut ..., Fluting paper, uncoated, in rolls of a width > 36 cm or in square or rectangular sheets

with ..., Tools, tool bodies, tool handles, broom or brush bodies and handles, of wood; boot or shoe ..., Unbleached kraft paper and paperboard, uncoated, in rolls of a width > 36 cm or in square or ...and Kraft paper, creped or crinkled, whether or not embossed or perforated, in rolls of a width. Table 3.3 shows that sheets for veneering, incl. those obtained by slicing laminated wood...is the only product with revealed comparative advantage in 2022 and it has performed so since 2011. The remaining products exhibit least comparative disadvantage in the year 2022.

Figure 3.2.9- Top ten products with highest RCA for textiles products category (2022)



Source- Author calculations based on UN COMTRADE database

Figure 3.2.9 shows the performance of top ten products with highest RCA for textiles sector products category. The top ten performing products in this product group are Silk waste, incl. cocoons unsuitable for reeling, yarn waste and garnetted stock; Coarse animal hair, carded or combed; Coconut, abaca "Manila hemp or Musa textilis Nee", ramie, agave and other vegetable textile ...; Tyre cord fabric of high-tenacity viscose rayon yarn, whether or not dipped in rubber or plastic; Multiple "folded" or cabled cotton yarn, of combed fibres, containing >= 85% cotton by weight ...; Yarn containing predominantly, but < 85% synthetic staple fibres by weight, other than that ...; Cotton,

carded or combed; Multiple "folded" or cabled cotton yarn, of uncombed fibres, containing \geq = 85% cotton by weight ...; Plain woven fabrics of cotton, containing \geq = 85% cotton by weight and weighing \leq = 200 g/m², ... and Single cotton yarn containing predominantly, but \leq 85% cotton by weight, of combed fibres.

India has enjoyed highest comparative advantage in trade of Silk waste, incl. cocoons unsuitable for reeling, yarn waste and garnetted stock in 2022 and it has continued since 2009. Another product with similar performance pattern is Coconut, abaca "Manila hemp or Musa textilis Nee", ramie, agave and other vegetable textile ... which has enjoyed revealed comparative advantage since 2009 to 2022. The first five products have enjoyed revealed comparative advantage in 2022 and the remaining five exhibit least comparative disadvantage in year 2022.

Figure 3.2.10- Top ten products with highest RCA for footwear/headgear products category (2022)

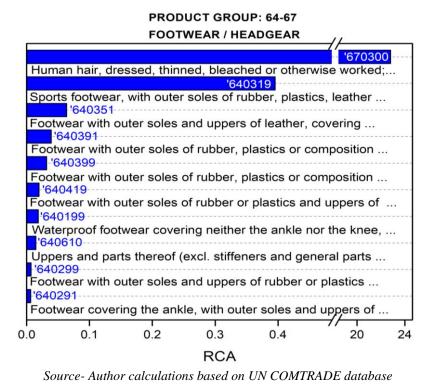


Figure 3.2.10 shows the performance of top ten products with highest RCA for footwear/headgear products category in the year 2022. The top ten performing products in this product group are Human hair, dressed, thinned, bleached or otherwise worked; wool, other animal hair or other ...; Sports footwear, with outer soles of rubber, plastics,

leather or composition leather and uppers ...; Footwear with outer soles and uppers of leather, covering the ankle (excl. incorporating a ...; Footwear with outer soles of rubber, plastics or composition leather, with uppers of leather, ...; Footwear with outer soles of rubber, plastics or composition leather, with uppers of leather ...; Footwear with outer soles of rubber or plastics and uppers of textile materials (excl. sports ...; Waterproof footwear covering neither the ankle nor the knee, with outer soles and uppers of ...; Uppers and parts thereof (excl. stiffeners and general parts made of asbestos); Footwear with outer soles and uppers of rubber or plastics (excl. covering the ankle or with ...and Footwear covering the ankle, with outer soles and uppers of rubber or plastics (excl. waterproof).

As shown in table 3.3, Human hair, dressed, thinned, bleached or otherwise worked; wool, other animal hair or other, is the only product in this category which has enjoyed revealed comparative advantage in export to China from 2001 to 2022. The remaining products have exhibited least comparative disadvantage in trade over the years of study.

Figure 3.2.11- Top ten products with highest RCA for stone/glass products category (2022)

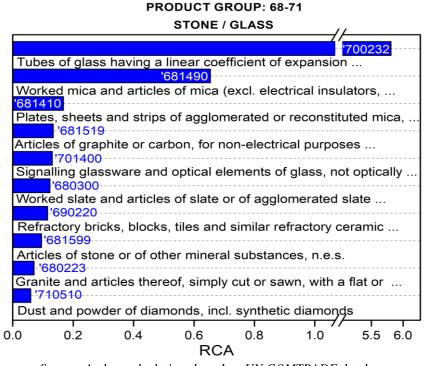


Figure 3.2.11 shows the performance of top ten products with highest RCA for stone/glass products category in the year 2022. The top ten performing products in this product group are Tubes of glass having a linear coefficient of expansion <= 5 x 10-6 per kelvin within a temperature ...; Worked mica and articles of mica (excl. electrical insulators, insulating fittings, resistors ...; Plates, sheets and strips of agglomerated or reconstituted mica, whether or not on a support ...; Articles of graphite or carbon, for non-electrical purposes (excl. carbon fibres and articles ...; Signalling glassware and optical elements of glass, not optically worked (excl. clock or watch ...; Worked slate and articles of slate or of agglomerated slate (excl. slate granules, chippings ...; Refractory bricks, blocks, tiles and similar refractory ceramic constructional goods containing, ...; Articles of stone or of other mineral substances, n.e.s.; Granite and articles thereof, simply cut or sawn, with a flat or even surface (excl. with a ...; Dust and powder of diamonds, incl. synthetic diamonds.

As shown in table 3.3, Tubes of glass having a linear coefficient of expansion $\leq 5 \text{ x}$ 10-6 per kelvin within a temperature is the only product in this category enjoying revealed comparative advantage in exports to China in year 2022. The remaining products have exhibited revealed comparative disadvantage in trade in the year 2022.

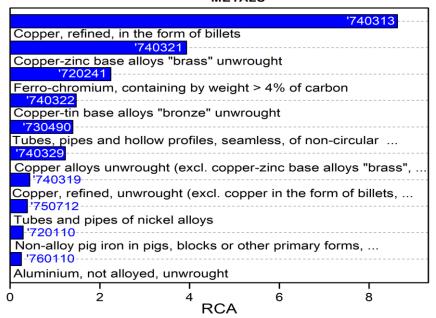
Figure 3.2.12 shows the performance of top ten products with highest RCA for metals category in the year 2022. The top ten performing products in this product group are Copper, refined, in the form of billets; Copper-zinc base alloys "brass" unwrought; Ferro-chromium, containing by weight > 4% of carbon; Copper-tin base alloys "bronze" unwrought; Tubes, pipes and hollow profiles, seamless, of non-circular cross-section, of iron or steel ...; Copper alloys unwrought (excl. copper-zinc base alloys "brass", copper-tin base alloys "bronze", ...; Copper, refined, unwrought (excl. copper in the form of billets, wire-bars, cathodes and sections ...; Tubes and pipes of nickel alloys; Non-alloy pig iron in pigs, blocks or other primary forms, containing, by weight, <= 0,5% of ... and Aluminium, not alloyed, unwrought.

The table 3.3 shows that the top six products enjoyed revealed comparative advantage in the year 2022. Out of these products, Ferro-chromium, containing by weight > 4% of carbon has had revealed comparative advantage in exports to China since 2004. The

remaining four products exhibit least comparative disadvantage over the time period under study.

Figure 3.2.12- Top ten products with highest RCA for metals products category (2022)

PRODUCT GROUP: 72-83 METALS

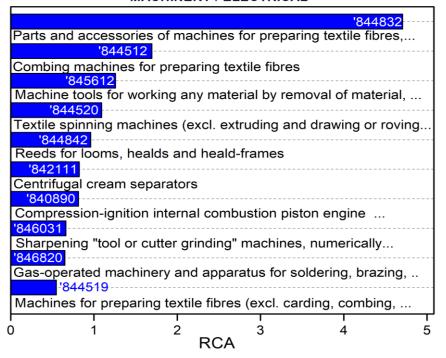


Source- Author calculations based on UN COMTRADE database

Figure 3.2.13 shows the performance of top ten products with highest RCA for machinery/electrical products category in the year 2022. The top ten performing products in this product group are Parts and accessories of machines for preparing textile fibres, n.e.s. (other than card clothing); Combing machines for preparing textile fibres; Machine tools for working any material by removal of material, operated by light or photon ...; Textile spinning machines (excl. extruding and drawing or roving machines); Reeds for looms, healds and heald-frames; Centrifugal cream separators; Compression-ignition internal combustion piston engine "diesel or semi-diesel engine" (excl. ...; Sharpening "tool or cutter grinding" machines, numerically controlled; Gasoperated machinery and apparatus for soldering, brazing, welding or surface tempering (excl. ...; and Machines for preparing textile fibres (excl. carding, combing, drawing or roving machines).

Figure 3.2.13- Top ten products with highest RCA for machinery/electrical products category (2022)

PRODUCT GROUP: 84-85 MACHINERY / ELECTRICAL



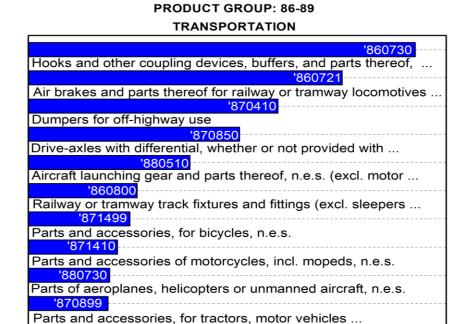
Source- Author calculations based on UN COMTRADE database

Table 3.3 depicts that the first four products have enjoyed revealed comparative advantage in exports to China in 2022 whereas the remaining products exhibit revealed comparative disadvantage in 2022.

Figure 3.2.14 shows the performance of top ten products with highest RCA for transportation category in the year 2022. The top ten performing products in this product group are Hooks and other coupling devices, buffers, and parts thereof, for railway or tramway locomotives ...; Air brakes and parts thereof for railway or tramway locomotives or rolling stock, n.e.s.; Dumpers for off-highway use; Drive-axles with differential, whether or not provided with other transmission components, ...; Aircraft launching gear and parts thereof, n.e.s. (excl. motor winches for launching gliders); ...; Railway or tramway track fixtures and fittings (excl. sleepers of wood, concrete or steel, ...; Parts and accessories, for bicycles, n.e.s.; Parts and accessories of motorcycles, incl. mopeds, n.e.s.; Parts of aeroplanes, helicopters or unmanned aircraft, n.e.s. (excl. those

for gliders); and Parts and accessories, for tractors, motor vehicles for the transport of ten or more persons.

Figure 3.2.14- Top ten products with highest RCA for transportation products category (2022)



Source- Author calculations based on UN COMTRADE database

RCA

0.06

80.0

0.10

0.04

0.00

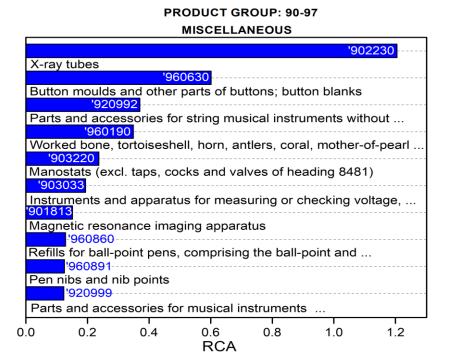
0.02

Table 3.3 shows that India has revealed comparative disadvantage in exports to China in transportation products category. These top ten products exhibit least comparative disadvantage in this product category in the years under study from 2001 to 2022.

Figure 3.2.15 shows the performance of top ten products with highest RCA for miscellaneous products category in the year 2022. The top ten performing products in this product group are X-ray tubes; Button moulds and other parts of buttons; button blanks; Parts and accessories for string musical instruments without keyboards, n.e.s. (excl. strings ...; Worked bone, tortoiseshell, horn, antlers, coral, mother-of-pearl and other animal carving ...; Manostats (excl. taps, cocks and valves of heading 8481); Instruments and apparatus for measuring or checking voltage, current, resistance or electrical ...; Magnetic resonance imaging apparatus; Refills for ball-point pens,

comprising the ball-point and ink-reservoir; Pen nibs and nib points and lastly Parts and accessories for musical instruments "e.g. mechanisms for musical boxes, cards, discs.

Figure 3.2.15- Top ten products with highest RCA for miscellaneous products category (2022)



Source- Author calculations based on UN COMTRADE database

Table 3.3 and figure 3.2.15 shows that India has enjoyed revealed comparative advantage in export of X-ray tubes in 2022 and the remaining products exhibited least comparative disadvantage in the year 2022.

3.4 Summary

The analysis of product categories at HS 2-Digit code for the year 2022 shows that out of 15 product groups, India is found to enjoy comparative advantage in four product groups where the RCA value is greater than 1. Two product groups are resource intensive and two product groups are technology intensive in which India enjoys comparative advantage for the 2-digit product groups for the year 2022. These product groups are: Mineral products (HS 25-27), Plastics/Rubbers (HS 39-40), Metals (HS 72-83) and Machinery/ Electrical products (HS 84-85). In the remaining 11 product

groups, India is found to be at comparative disadvantage in its trade with China for 2022.

The RCA analysis for the HS 6 Digit product classification shows that Mineral Products (HS 25-27), Chemical & Allied Industries (HS 28-38), Animal and animal products (HS 01-05) are the top three product groups with highest percentage of Competitively Positioned (CP) product lines. These product groups perform strongly in the India-China trade dynamic. Footwear/ Headgear (HS 64-67) product group has the highest percentage of product lines at 2 per cent in Threatened Products (TP) category. Other product groups having less than 1 per cent in this category indicating a lower level of threat in terms of losing their competitive standing are Mineral products (HS 25-27), Animal and Animal products (HS 01-05), Vegetable products (HS 06-15), Chemical and allied industries (HS 28-38) and Textiles (HS 50-63).

Raw Hides, Skins, leathers & Furs (HS 41-43), Chemical & Allied Industries (HS 28-38), Wood & wood products (HS 44-49) are the top three product groups with highest percentage of product lines in Emerging Products Tier I (EPT1) category. They have shown the ability to capture increasing market share and are likely to contribute to the country's trade competitiveness in the future. Machinery/Electrical (HS 84-85), Miscellaneous (HS 90-97) and Textiles (HS 50-63) are the top three product groups with the highest percentage of product lines, more than fifty per cent, in Emerging Products Tier II category (EPTII). These products exhibit potential, though relatively lower than EPTI, to become competitive in the future, provided that India continues to develop its production and export capacities in these areas.

Mineral Products (HS 25-27), Chemical & Allied Industries (HS 28-38) and Textiles (HS 50-63) are the only three product groups with product lines in Weakly Positioned Tier I category (WPTI) and their share is less than 1 per cent indicating a relatively small portion of India's export portfolio facing challenges in these product categories. All the product groups have significant percentage of product lines in Weakly Positioned Tier II category (WPTII) with Animal and Animal products (HS 01-05), Mineral products (HS 25-27), Metals (HS 72-83), Vegetable products (HS 06-15), Foodstuffs (HS 16-24), Stone/Glass (HS 68-71) having more than fifty per cent of their product lines in this category. These are product lines that face difficulties in

maintaining their competitive edge and may require strategic interventions to improve their performance in trade.

The product group analysis at HS 6 Digit analysis has helped in the identification of top ten performing products under different product groups classification in which India enjoys revealed comparative advantage in trade with China in 2022. Some of the products identified are: Mussels "Mytilus spp., Perna spp.", smoked, dried, salted or in brine, even in shell (HS 030739), Frozen sole "Solea spp." (HS 030333), Castor oil and fractions thereof, whether or not refined, but not chemically modified (HS 151530), Crude groundnut oil (HS 150810), Mica waste (HS 252530), Granite, crude or roughly trimmed (excl. already with the characteristics of setts, curbstones ...(HS 251611), Menthol (HS 290611), Oils of mints, whether or not terpeneless, incl. concretes and absolutes (excl. those of peppermint ...(HS 330125), Reclaimed rubber in primary forms or in plates, sheets or strip (HS 400300), Leather "incl. parchment-dressed leather" of the whole hides and skins of bovine "incl. buffalo" ...(HS 410719), Sheets for veneering, incl. those obtained by slicing laminated wood, for plywood or for other ...(HS 440831), Silk waste, incl. cocoons unsuitable for reeling, yarn waste and garnetted stock (HS 500300), Coarse animal hair, carded or combed (HS 510540), Human hair, dressed, thinned, bleached or otherwise worked; wool, other animal hair or other ...(HS 670300), Tubes of glass having a linear coefficient of expansion <= 5 x 10-6 per kelvin within a temperature ...(HS 700232), Copper, refined, in the form of billets (HS 740313), Copper-zinc base alloys "brass" unwrought (HS 740321), Parts and accessories of machines for preparing textile fibres, n.e.s. (other than card clothing) (HS 844832), Combing machines for preparing textile fibres (HS 844512), X-ray tubes (HS 902230) and Button moulds and other parts of buttons; button blanks (HS 960630). These findings help identify India's strengths and weaknesses in its trade relations with China and highlighting key areas for policy intervention and export promotion.



CHAPTER 4

TRADE POTENTIAL BETWEEN INDIA AND CHINA

4.1 Introduction

This chapter sheds light on trade potential between India and China. Bilateral trade is one of the major factors of economic development and it contributes to economic integration. India- China relationship in recent years has changed significantly because of its economic implications even though they have strong historical and cultural links and share other similarities. In their early stages of development, both nations pursued inward oriented policies but they opened up their economics gradually, China (since 1978) and India (since 1991) and deepened their economic integration with one another and with the rest of the world.

Multifold increase in bilateral trade shows that India and China are competitors in many aspects but are also complementary and supplementary to each other. Substantial complementarities characterize their economic structures which can be exploited for mutual benefits. Their geographical closeness and large size of the economies would facilitate making the best use of opportunities for fruitful cooperation which could exist in many areas such as services, manufacturing and investment. Trade integration and cooperation between India and China can generate economic and social benefits which could help counter the excesses of excesses of economic globalization (Bhattacharya and Bhattacharyay, 2007).

India and China's growing economic interactions are visible from the fact that in 2021, China is the fourth largest export destination for Indian exports and is the number one exporter to Indian market. Their volume of trade has increased exponentially but so has the trade deficit. In order to enhance bilateral trade and promote economic cooperation, the two sides had started negotiations for establishing an FTA but India's widening trade deficit raised questions of its usefulness for India. Though Government of India has concluded number of trading agreements with other nations, India's widening trade deficit with China has slowed down the progress of bilateral trade agreement with China (Kalirajan, 2022).

4.1 Gravity model evolution

Gravity model has been a widely applied model for analyzing bilateral trade flows. Its basic form is derived from Newton's law of gravitation. This model has been applied by several researchers in different forms over the years. The initial application of the model on trade flows concluded that the trade flow between two countries was directly proportional to national income and inversely proportional to distance between the two nations. The model underwent lot of developments later and different variables were included. Some of the determinants used in various models over the years are per capita income, population, common language, regional trade agreement etc.

Last fifty years has seen the wide usage of gravity equation to predict the trade flows. This approach witnessed controversies concerning the theoretical foundations of the model in the eighties and about its specification in the nineties. The last few years saw an intense debate about estimation techniques of the gravity models. The multiplicative gravity model was linearized and estimated using Ordinary Least Squares (OLS) techniques with the assumption that the variance of error is constant across observations (presence of homoscedasticity) or using panel techniques with the assumption that the error is constant across countries or country-pairs. Silva and Tenreyro (2006) pointed out that the Pseudo Poisson Maximum Likelihood estimator performs better. Zero values posed another challenge according to literature. Recently divergent results have been obtained when comparing alternative estimators to deal with the problems of heteroscedasticity and zero values in the works of Westerlund and Wilhelmsson (2007), Martinez-Zarzoso et al. (2007), Martin and Pham (2008) and Burger et al. (2009).

Gravity models were applied for international trade by Tinbergen (1962) and Poyhonen (1963). Tinbergen employed the model in order to determine the standard pattern of international trade which would occur among 42 countries in the absence of trade barriers. Tinbergen estimated other models which included dummy variables for trade agreements and presence of common border between trading countries apart from the standard gravity model. Leamer and Stern (1970) did not rely on standard trade theories to derive these relationships from a probability model of transactions. In search for a theoretical basis, several authors came up with models that are based on increasing

returns. Anderson (1979) in particular, used Armington preferences in a model of homogenous goods to derive a role for transport costs. Dummy variables are commonly used in gravity models to control for cultural similarity among trade partners for example language or historical relationships such as colonialism. Historical linkages are found to be important determinants of international trade flows in the growing empirical literature (Frankel, Stein and Wei (1995), Frankel (1997) and Eichengreen and Irwin (1998).

The gravity equation of trade is proven to be highly effective in explaining bilateral trade flows as is evident from the works of Linemann (1966) and Leamer and Stern (1971). However, it was surrounded by controversies and its theoretical framework was put in doubt but afterwards justified by Bergstrand (1989) for the factorial model, Deardoff (1998) for the Hecksher-Ohlin model and Helpman, Melitz and Rubinstein (2008) in the context of heterogeneity of firms.

4.3 Gravity model empirical analysis

The model equation of gravity model is specified as equation (1):

$$Tradeij = \frac{\alpha(GDPi*GDPj)}{Distanceij} \tag{1}$$

In equation 1, Trade_{ij} denotes bilateral trade between country i and j. GDP_i and GDP_j are the respective national incomes of the two countries under consideration. Distance_{ij} measures geographical distance between two countries. α is the constant of proportionality.

The linear gravity model is obtained by taking the log of equation (1) which is shown by equation (2).

$$Log(Tradeij) = \alpha + \beta_1 log(GDPi.GDPj) + \beta_2 log(Distanceij) + \mu ij$$
 (2)

In equation (2), α , β_1 , β_2 are the coefficients which are to be estimated and u_{ij} represents chance events and any other disturbance that could affect the bilateral trade flows. Equation (2) forms the base equation for gravity model. Thus, to analyse India's trade potential with China, the following gravity model equation is used in this study:

$$logTi = \alpha + \beta_1 logGDPi + \beta_2 logPCGDPi + \beta_3 POPi + \beta_4 SIMi + \beta_5 RFEi + \beta_6 Dist + \beta_7 PTA + \beta_8 Com_border + \beta_9 COM_LANG + \mu ij$$
(3)

In equation (3), T_i denotes the trade flow of India with China. GDP_i, PCGDP_i, POP_i, SIM_i, RFE_i are the gross domestic product, per capita GDP, population, similarity index of India with China and relative factor endowment index of India with China respectively. Dist is the distance between New Delhi and Beijing, the capital cities of India and China respectively. Com_border, COM_LANG, PTA are the dummy variables denoting common border, common language and the preferential trade agreement. Here India and China do share a land border, both countries are members of Asia Pacific Trade Agreement (APTA) but they do not share a common language. ε_{ij} denotes the error term. RFEi aims to capture technology differences in trade between two countries based on the comparative advantage explanation of trade. The expected sign of RFEi is positive., the relative factor endowment is defined as follows (Egger, 2002; Serlenga and Shin, 2007; Kabir and Salim, 2010):

$$RFEi = \left| lnPGDPi - lnPGDPj \right| \tag{4}$$

In equation (4), lnPGDPi and lnPGDPj are the natural logs of per capita GDP of India and China respectively. The similarity index (SIM_i) of India with China is defined as follows (Breuss and Egger, 1999; Serlenga and Shin, 2007 and Egger 2000):

$$SIMi = ln[1 - (GDPi/GDPi + GDPj)^2 - (GDPj/GDPi + GDPj)^2]$$
 (5)

Similarity Index is expected to positively impact bilateral trade flows because similarity with respect to per capita GDP between countries suggests increased similarity in differentiated goods sector production. This increased similarity would lead to an increased trade volume.

Table 4.1 shows variables used in gravity equation with abbreviations, measurement and their expected sign in the model.

Table 4.1: Variables descriptives

	Abbreviations	Variable Name	Measurement	Expected Sign
Ī	GDP	Gross Domestic	GDP at current	+
		Product	US\$	

PCGDP	Per Capita GDP	PCGDP at current	+
		US\$	
POP	Population	Millions	+
SIM	Similarity Index	Author Calculation	+
REF	Relative Factor	Author Calculation	+
	Endowment Index		
DIST	Bilateral Distance	Kilometers	-
PTA	Preferential Trade	If countries part of	+
	Agreement	a PTA, PTA 1 or	
		otherwise 0	
COM_BORDER	Common Border	If countries share	+
		border, it is 1 or	
		otherwise 0	
COM_LANG	Common Official	If countries share	+
	Language	language, it is 1 or	
		otherwise 0	

Source- Author calculations

These variables are taken with the following null hypotheses:

 \mathbf{H}_{01} : Trade flow is not affected by India's gross domestic product.

 \mathbf{H}_{02} : Trade flow is not affected by India's per capita gross domestic product.

H₀₃: Trade flow is not affected by India's population.

H₀₄: Trade flow is not affected by the economic similarity between India and China.

H₀₅: Trade flow is not affected by the relative factor endowment differences between India and China.

H₀₆: Trade flow is not affected by the distance between India and China.

H₀₇: Trade flow is not affected by the presence of a free trade agreement between India and China.

H₀₈: Trade flow is not affected by sharing a common border between India and China.

Ho9: Trade flow is not affected by sharing a common language between India and China.

Table 4.2: Empirical results of Gravity model estimation

Group variable:	Year	Number of groups	21
R-sq: Within	0.969271	Obs. per group: min	13
Between	0.963373	Avg	13.0

Overall	0.964531	Max.	13
F(5,90)		1451.13	
Corr (u_i, Xb)	0.0772	Prob > F	0.0000

Source- Author Calculations

The given table 4.2 has shown gravity model estimation results for India with China. The conventional variables behave very much the same way as the model predicts and the estimated coefficients are statistically significant. R^2 has high value of 0.964531 which implies that the model explains 96.45 per cent of the total variation in trade flows and this indicates a strong fit. The values of R^2 are 0.9792 within model, 0.9633 between model which shows that 96.93% of the variation in trade flows within the same country and 96.34% of the variation in trade flows across countries over different years of study is explained by the model. The F-statistic tests the overall significance of the regression. The very high value (1451.13) and the corresponding p-value (Prob > F = 0.0000) indicate that the independent variables together have a statistically significant effect on the dependent variable. The null hypothesis that all regression coefficients are equal to zero is rejected. The small positive correlation (.0772) between unobserved individual effects (u_i) and explanatory variables (Xb) indicates that the unobserved individual effects are only slightly correlated with the explanatory variables. Thus, this model provides a strong fit for explaining trade flows and is highly reliable.

Table 4.3: Gravity Model Estimation Results

	Dep. Var. – I	Trade flow
Indep. Vari.	Ordinary Least Square (OLS)	Random Effect (GLS)
Log_GDP	1.06991* (37.21)	0.912* (31.30)
Log_PCGDP	7.05361* (57.81)	0.8154* (43.09)
POP	1.893201* (11.21)	0.5514* (10.15)
SIM	-3.649* (-1.89)	0.6411* (8.833)
REF	-9.5601* (-2.93)	-8.0032* (-0.986)
Dist	-1.478* (-41.74)	-2.477* (-30.09)
PTA	0.345* (-1.55)	0.6434* (0.78)
Com_border	0.832* (23.12)	0.5146* (1.59)

COM_LANG	0.9312* (41.11)	0.678* (4.77)
Constant	17.2617* (-57.15)	35.147* (52.61)
R ²	0.96	-
Observations	273	273

^{*}Significant at 5% level, OLS values, GLS- Generalised Least Squares

Note: the t values are in parenthesis.

Source: Author Calculations

Using both Ordinary Least Squares (OLS) and Generalized Least Squares (GLS) models in gravity analysis provides a comprehensive understanding of the relationships between independent and dependent variables. OLS is a foundational statistical method used for this analysis and assumes that unobserved effects are constant across entities. GLS extends the OLS method by addressing potential issues common with panel data analysis such as heteroscedasticity (non-constant variance) and autocorrelation in the residuals. It is particularly suitable for analysing data that is correlated within groups (e.g., trade data across different years) and thus providing more efficient and unbiased estimates of the coefficients.

Results obtained, as shown in table 4.3, are analysed as below:

H₀₁: Trade flow is not affected by India's gross domestic product (GDP).

The gravity model states that bilateral trade is directly proportional to the economic sizes of the countries under consideration. As larger economies can trade more than smaller ones, trade flows should be larger between countries with higher or increased gross domestic product, as wealthier economies can produce and trade more than poorer ones. Hence GDP is a crucial factor in determining a country's bilateral trade flows. In case of India, it is expected to be positively related to changes in its trade flows with China. Results show that the coefficient for Log_GDP is 1.06991 (OLS) and 0.912 (GLS) and both are highly significant. This suggests that India's GDP leads to approximately a 1.07% increase in trade flow (OLS) and 0.91% (GLS). In conclusion, we reject the null hypothesis and accept the alternate hypothesis that India's trade flow with China is positively affected by its GDP.

H₀₂: Trade flow is not affected by India's per capita gross domestic product (PCGDP).

Per capita GDP is used as an independent variable because it reflects the level of development in the economy. It suggests that countries with similar rates of per capita production should trade more. It reflects a country' stage of development because as a country develops the desire of consumers for luxurious goods increases. Trade volumes are expected to rise with increasingly equivalent GDP distribution. This concept predicts that it will favorably affect trade. Results show that the coefficient for Log_PCGDP is 7.05361 (OLS) and 0.8154 (GLS) and both are highly significant. This supports theory that a higher per capita GDP increases trade. Thus, we reject the null hypothesis and accept the alternate hypothesis that as India's standard of living improves, its trade flow with China increases.

H₀₃: Trade flow is not affected by India's population.

Population variable represent the size of the economies and are expected to have positive sign. Larger the population, larger the market size and thus trade volumes are expected to rise. Results show that the coefficient for population is 1.893201 (OLS) and 0.5514 (GLS) and is thus both positive and significant. This suggests that larger population sizes have a positive impact on trade. The null hypothesis is rejected and we accept the alternate hypothesis that India's trade flow with China is affected positively by India's population and it increases the trade potential with China.

H₀₄: Trade flow is not affected by the economic similarity between India and China.

Theory posits that greater similarity in economic structures suggests that countries have a more comparable range of products in the differentiated goods sector. This shared diversity in what they produce contributes to higher trade volumes between them. Countries with similar economic characteristics may engage in intra-industry trade where countries benefit from specialization and economies of scale despite similar economic structures. Results show that

the coefficient for SIM is -3.649 (OLS) and 0.6411 (GLS). The OLS shows a negative relationship, but the GLS shows a positive and significant impact. The GLS result implies that when India and China have more similar economic structures, trade tends

to increase and this is consistent with the Linder Hypothesis. Thus, based on GLS, we reject the null hypothesis and accept the alternate hypothesis that greater economic similarity positively influences India's trade flow with China.

H₀₅: Trade flow is not affected by the relative factor endowment differences between India and China.

The choice of this variable as an independent variable is based on the standard comparative advantage explanation of trade. A country will have a comparative advantage in the good that uses the factor with which it is heavily endowed. This variable aims to capture technology differences between countries which plays important role in explaining trade patterns. By assessing relative factor endowments, we can understand how differences in resources and technology impact the types of goods produced and traded by countries. The results show that the coefficient for RFE is -9.5601 (OLS) and -8.0032 (GLS) and is both negative and significant in both cases. This suggests that greater differences in relative factor endowments reduces trade between the two countries. In conclusion, we fail to reject the null hypothesis that trade flow is not affected by the relative factor endowment differences between India and China. So contrary to Heckscher-Ohlin theory, trade decreases when the difference in factor endowments increases between India and China.

H₀₆: Trade flow is not affected by the distance between India and China.

Distance between pairs of countries is considered an important linkage factor affecting trade flows. The gravity model assumes that bilateral trade is inversely proportional to the distance between trading partners. The reason is that longer distances incur higher transportation costs and communication expenses, which will increase products' prices and reduce their competitiveness, thus having a negative impact on trade volume. Result shows that the coefficient for distance is -1.478 (OLS) and -2.477 (GLS) and is highly significant and negative in both cases. This is in line with expectations in gravity models of trade, where greater distance acts as a trade deterrent. In conclusion, we reject the null hypothesis and accept the alternate hypothesis that distance negatively impacts India's trade flow with China.

H₀₇: Trade flow is not affected by the presence of a free trade agreement between India and China.

Various literatures point that trade flows are positively affected if a country becomes a member of a trade agreement. India, China being members of PTA (APTA) is expected to boost trade between two nations. Member countries are expected to trade more within an RTA; therefore, a positive coefficient is expected for India's trade with China. Results show that the coefficient for PTA is 0.345 (OLS) and 0.6434 (GLS) but are not significant. For a variable to be significant at the 5% level, its corresponding *t*-value should be larger than ± 1.96 (or *p*-value < 0.05). This suggests that PTA has a positive relationship with trade flow but the impact is statistically weak. Thus, we fail to reject the null hypothesis as there is insufficient evidence to confirm that PTA significantly affects trade flows between India and China at the 5% significance level.

H₀₈: Trade flow is not affected by sharing a common border between India and China.

Trade flow between two nations is expected to increase when they share a common border. This leads to reduction in transport costs and increases the competitiveness of a country's exports. The expected sign of this variable is positive. Result shows that the coefficient for common border is 0.832 (OLS) and 0.5146 (GLS) which is positive and significant in both cases. This indicates that sharing a border significantly increases trade between India and China. In conclusion, we reject the null hypothesis and accept the alternate hypothesis that trade flow is affected by sharing a common border between India and China.

H₉: Trade flow is not affected by sharing a common language between India and China.

Trade flow between two nations is expected to increase when they share a common language as it aids in doing business and increasing trade among partner countries. The expected sign of this variable is positive. Result shows that the coefficient for common language is 0.9312 (OLS) and 0.678 (GLS) which is positive and significant in both cases. This suggests that language similarity promotes trade between India and China which could be a shared business or trade language such as English even if they do not

share common native language. In conclusion we reject the null hypothesis and accept the alternate hypothesis that the trade flow is affected by the sharing of a common language between India and China.

4.4 Summary

Ordinary Least Square (OLS) and Random Effects Generalised Least Squares estimation techniques are used to perform gravity model analysis of India's trade flow with China from the year 2001 to 2022. The GLS model provides a more robust estimation by accounting for unobserved heterogeneity, making it the preferred model for interpretation. The results show that various economic and geographical factors significantly influence trade flows between India and China which offers practical insights for policymakers aiming to enhance bilateral trade relations.

The findings indicate that certain key factors such as GDP, per capita GDP, population, distance and common border, significantly influence trade flows between the India and China. Conversely, variables such as relative factor endowments and preferential trade agreements are found to be statistically insignificant, which suggests that these factors do not play as crucial a role in determining bilateral trade between India and China.

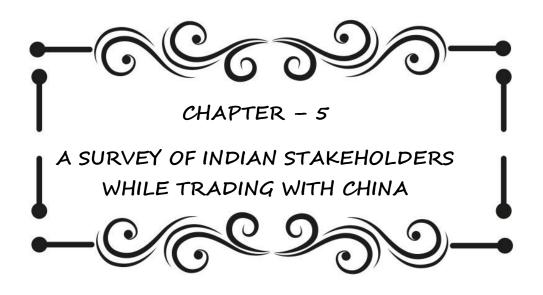
The GDP variable, as anticipated, shows a strong and positive relationship with trade flows in both the OLS and GLS models. This is consistent with the fundamental proposition of the gravity model that larger economies tend to engage in higher trade volumes because of their greater production and consumption capacities. Similarly, per capita GDP (PCGDP) shows a significant and positive impact on trade flows. This suggests that wealthier economies are more likely to engage in trade because they have more disposable income and demand for diverse products. The results indicate that as India's per capita income grows, its trade with China is likely to increase as well. Population also plays an important role in determining trade flows as the variable shows a positive and significant relation in both models. Larger populations tend to create greater domestic demand which can increase the volume of imports and exports. For the world's two most populated countries i.e. India and China, this result highlights the importance of domestic market size in facilitating trade. Distance, as expected, has a

negative and significant effect on trade. It supports the gravity model's assumption that geographical proximity is an important factor in promoting trade between nations. The larger the distance between India and China, the lower the trade volume, as predicted by the model.

The similarity index, which measures the economic structure alignment between the two countries, presents mixed results. In the GLS model, the positive and significant coefficient suggests that greater similarity in economic structures between India and China encourages trade. This could indicate intra-industry trade, where countries with similar economic characteristics exchange similar goods within the same sector. However, the OLS results were not significant, indicating that this relationship might depend on other unobserved factors. The relative factor endowment variable, which captures differences in resource availability between the two countries, is negative and statistically insignificant in both models. This suggests that differences in relative factor endowments does not significantly drive trade between India and China. This result does not support the Heckscher-Ohlin theory, which suggests that countries trade based on their comparative advantage in factor endowments.

Preferential trade agreements (PTAs) also showed positive but statistically insignificant coefficients in both models. While there may be a positive relationship between trade agreements and trade flows according to theory but the results suggest that PTAs do not have a statistically significant impact on India's trade flow with China. Lastly, the common border and common language variables show significant positive effects on trade. Even though India and China do not share an official common language, the positive coefficient for the common language variable could reflect the presence of other communication facilitators that ease trade interactions.

In conclusion, the analysis confirms that GDP, per capita GDP, population, distance, and common borders significantly impact trade flows between India and China. However, factors such as relative factor endowments and PTAs appear to have a limited role in influencing trade.



CHAPTER 5

A SURVEY OF INDIAN STAKEHOLDERS WHILE TRADING WITH CHINA

5.1 Survey result

A survey of 120 respondents including exporters and importers was conducted to understand the issues and challenges faced by them while trading with China. The survey was targeted at respondents from different sectors who were engaged in trade with China. Respondents of the survey covered sectors such as live animal and animal products, vegetable products, foodstuffs, plastics and rubber products, textiles, footwear, headgear products, metals, machinery/ electrical products and miscellaneous products.

Miscellaneous Live animals and animal products 10% 6% Machinery/electrical Vegetable products products 4% 18% Foodstuffs 9% Metals Plastics and rubber 15% products 12% Stone/glass products Footwear, headgear Textiles products 20% 3%

Figure 5.1 – Respondent profile industry wise

Source- Author calculations

The majority of respondents belong to textiles, machinery/electrical products, metals and miscellaneous products and are followed by plastics and rubber products, foodstuffs, live animal and animal products, vegetable products, stone/glass products and footwear, headgear products industry.

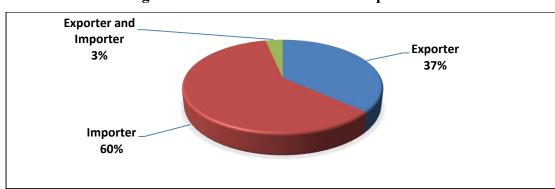
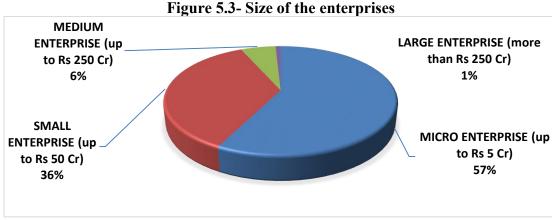


Figure 5.2- Nature of Business of respondents

Source- Author calculations

Figure 5.2 depicts the nature of business of respondents as exporters, importers and both exporters and importers. The 60 per cent of respondents are the importers followed by 37 per cent exporters and three per cent those which both export and import from China.



Source- Author calculations

Figure 5.3 depicts the size of the enterprises of respondents involved in trade with China. 57 per cent of the respondents are the micro enterprises, followed by small enterprises at 36 per cent, medium enterprises at 6 per cent and large enterprise at 1 per cent.

Figure 5.4 shows the products mainly exported by the respondents which are textiles, foodstuffs, metals, miscellaneous products, plastics and rubber products, machinery/electrical products followed by live animals and foodstuffs, footwear/headgear and stone/glass products.

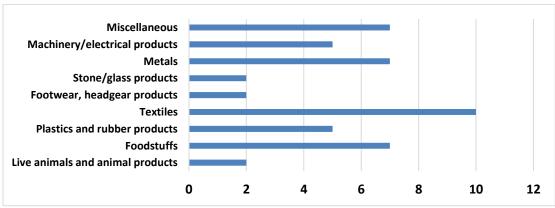


Figure 5.4: Products exported by respondents

Source- Author calculations

A 5-point Lickert scale was used by the respondents to rate variables relating to issues and challenges faced by Indian stakeholders while trading with China where 1 represented the strongest agreement and 5 the least agreement with the statement. The outcome of their rankings was converted into percent positions using the following formula proposed by Garrett and Woodworth (1969):

Percent position = $100 (R_{ij} - 0.5) / N_j$

Where R_{ij} = Rank given for the i^{th} variable by the j^{th} respondent, N_j = Number of variables ranked by the j^{th} respondent. The 5-point Lickert scale's rankings (1-5) were thus converted into percentiles and then converted into their Garrett Scores which was determined using the Garrett's ranking conversion table. Each variable's total score was subsequently determined based on the frequency of the rankings it received on the 5-point Lickert scale. Their weighted Garrett Ranking score was subsequently calculated and ranked (Dhanavandan 2016; Chigunhah *et al.* 2020).

Table 5a- Conversion of Rank and Percentile into Garrett Score

Lickert Scale Rank	Percentile Position	Garrette's Score
1	10	75
2	30	60
3	50	50
4	70	40
5	90	25

Source- Garrett and Woodworth, 1969

Table 5.1 shows the selected characteristics of raw materials which most affect India's exports performance according to the perception of the respondents on a five-point lickert scale ranging from strongly agree to strongly disagree. These characteristics are then ranked using the Garett's ranking technique to identify the preferences given by the respondents for selected parameters.

Numerous studies have been conducted on the determinants of exports performance of developed and developing countries. Import of raw materials and infrastructure are some of the important determinants of exports performance (Handoyo *et al.*, 2024; Ramaiah and Roy, 2021; Rehman *et al.*, 2020). Import of raw materials is not only the

primary source of productivity in the manufacturing sector but also a predictor of a company's propensity to grow productivity, which in turn impacts exports, particularly for small businesses (Castellani and Fassio, 2019). Raw materials are an important input of production but their import makes production costs sensitive to international price volatility (Setyorini and Budiono, 2020).

India is part of the trend where an ever-growing portion of the ultimate value of exports has been contributed by imported inputs. Imported inputs and raw materials are being increasingly used by its export-oriented sectors. India's manufactured goods exports have increased along with the growth in the number of imported inputs. Local taxes and international customs duties are applied on imported goods. This is related to the inverted duty structure phenomenon where the import tariff levied on inputs is higher than the tax imposed on the final output which presents certain challenges to domestic businesses and exporters in terms of tax compliance and export turnovers (Deolekar and Tiwari, 2024).

Table 5.1- Ranking of characteristics of raw materials affecting exports performance based on the perception of the respondent

Parameter			quency espons			Corr	espond	ing Gar	ret S	Scale	Total	Weighted Score	Rank
	1	2	3	4	5	75	60	50	40	25			
Appropriate quality of raw materials	42	55	14	0	9	3150	3300	700	0	225	7375	0.1965	4
Cost of raw materials	50	59	6	2	3	3750	3540	300	80	75	7745	0.2064	2
Availability of raw materials	16	75	25	4	0	1200	4500	1250	160	0	7110	0.1895	5
Price fluctuations	34	54	32	0	0	2550	3240	1600	0	0	7390	0.1969	3
Tax/duty on Import of raw materials	59	44	16	1	0	4425	2640	800	40	0	7905	0.2107	1

Source- Author calculations

As shown in table 5.1, respondents' opinion is sought on certain parameters of raw materials which could affect exports performance according to their perception. The parameters selected are the quality, cost, availability, tax/duty on import of raw materials and price fluctuations. The table 5.1 above depicts that the respondents have selected Tax/Duty on import of raw materials as the top-ranking raw material characteristic impacting exports performance. The next important characteristic is cost

of raw materials followed by price fluctuations of raw materials, appropriate quality and availability of raw materials affecting exports performance of India.

Improvements in infrastructure and logistics performance could enhance growth of middle-income countries with increase in the international trade volume (Yeo *et al.*, 2020). Infrastructure determines a country's ability to produce and move goods and help reduce the trade costs. The 2015-20 foreign trade policy set a target for growth in exports to \$900 billion and to achieve this level of growth there is need to create appropriate infrastructure.

Certain infrastructural gaps related to exports such as testing facilities, cold chains, quality testing and certification labs, export warehousing and packaging, last mile connectivity to ports, standardization of operations, cargo handling facilities etc. need to be addressed as they are essential to ensure export competitiveness (Ministry of Commerce, 2021)¹⁰.

Table 5.2 is concerned with infrastructure affecting exports performance. It shows the ranked response of the respondents regarding the impact of selected infrastructure facilities characteristics on India's exports performance. The above table depicts that the respondents have ranked export warehousing and packaging facilities as the top ranked infrastructure facility impacting exports performance. This is followed by road connectivity to ports, railways and airports. The third ranked characteristic is infrastructure available at ports, railways and airports such as cargo handling, storage etc. and the last ranked is the availability of quality testing and certification labs.

Table 5.2 - Ranking of characteristics of infrastructure facilities affecting exports performance based on the perception of the respondents

Parameter			quenc espon	•		Co	-	nding Scale	Garr	et	Total	Weighted Score	Rank
	1	2	3	4	5	75	60	50	40	25			
Availability of Quality testing And certification labs	34	41	28	17	0	2550	2460	1400	680	0	7090	0.2449	4
Export warehousing And packaging facilities	38	48	33	1	0	2850	2880	1650	40	0	7420	0.2564	1
Road connectivity To ports, railways	23	71	25	1	0	1725	4260	1250	40	0	7275	0.2514	2

 $^{^{10}\} https://commerce.gov.in/wp-content/uploads/2021/07/TIES-revised-guidelines-FY22-to-FY26.pdf$

And airports													
Infrastructure available At ports, railways And airports (Cargo Handling, storage etc.)	27	58	25	10	0	2025	3480	1250	400	0	7155	0.2472	3

Source- Author calculations

The tracing, tracking and timely delivery of exports found to be positive and significant predictors of export competitiveness in East African Community (EAC) countries but trade infrastructure, shipping arrangements and customs quality are not found to influence export competitiveness. EAC states are recommended to implement harmonized trade policies, remove behind the border trade restrictions and create a common economic space to improve export competitiveness both within and outside the region (Olyanga *et al.*, 2021). The quality of transport infrastructure especially roads and ports are found to positively impact export performance in developing countries but the inefficient logistic services is found is have a detrimental effect hindering exports. It is suggested to adopt innovative policies and collaborate with private sector to enhance logistics performance (Diaz, 2021).

Table 5.3 – Ranking factors affecting competitiveness of India's exports based on the perception of the respondents

				r		P 020	11 01		Pop				
Parameter		Freq	uency	of		C	orresp	ondin	g Garr	et	Total	Weighted	Rank
		Res	spons	e				Scale				Score	
	1	2	3	4	5	75	60	50	40	25			
Labour cost	37	65	18	0	0	2775	3900	900	0	0	7575	0.1723	2
Labour productivity	23	59	34	4	0	1725	3540	1700	160	0	7125	0.1621	5
Skilled workforce	53	50	13	4	0	3975	3000	650	160	0	7785	0.1771	1
Level of Technology (Low, medium, High)	40	48	25	7	0	3000	2880	1250	280	0	7410	0.1686	3
Cost of credit	10	60	46	4	0	750	3600	2300	160	0	6810	0.1549	6
Transportation cost	29	56	32	3	0	2175	3360	1600	120	0	7255	0.165	4

Source- Author calculations

The relation between labour productivity and export competitiveness in the Indian textile sector is found to be unidirectional where higher labour productivity leads to increase in export competitiveness. So, focus on improving productivity through use of appropriate policies is essential for the success at international marketplace (Dhiman

and Sharma, 2019). The differing influence of labour costs is found affecting the textile and apparel exports performance in Asian developing economies. The underlying effect of higher labour costs accompanying poorer exports performance is observed (Wang, 2013). Education and training of human capital is found to have greatest influence on the export performance of small and medium enterprises (Mubarik el.al., 2019). A strong link is observed between technological capability and trade. Technical efficiency is found to be improved when firms engage simultaneously in exporting activity and R&D expenditure (Arora, 2024). SMEs contribute to more than 40 per cent of Indian exports and access to adequate and timely finance is a key constraint faced by them. Institutional finance in the form of bank credit is found to play a prominent role in exports performance of firms (Raju and Rajan, 2019). Firm size has important implication on the cost of credit where large firms are more likely to have better access to credit services offered by their banks (Yildirim et al., 2013). Transportation sector plays an important role in international trade as it helps reduce inequalities in comparative advantage and thus empowering less competitive countries to engage more effectively in international trade. It also generates network effects which reduce overall trade costs (Brancaccio et al., 2020). Improvements in transportation can reduce trade costs and thus augment cross border trade networks (Soyres et al., 2020).

Table 5.3 shows the ranking of the factors affecting competitiveness of India's exports according to the perception of the respondents. Here we find that the respondents have ranked skilled workforce as the top factor affecting Indian export competitiveness followed by labour cost and level of technology (low, medium, high) involved in production process. This is followed by transportation cost, labour productivity and cost of credit which affect India's export competitiveness.

Government of India provides financial assistance to Indian exporters through various schemes and programmes in order to boost their export competitiveness. The Interest Equalisation Scheme (IES) provides 5 per cent interest subsidy for MSME manufacturers and 3 per cent for other exporters on specific tariff lines which helps reduce cost of borrowing for Indian exporters and finance their operations at reduced cost. Schemes such as Advance Authorisation Scheme (AAS) and Duty-Free Import Authorisation scheme (DFIA) allows for the duty-free import of raw materials. Several

schemes provide credit facilities in order to augment financing options available to exporters. These schemes include Interest Equalisation Scheme (IES) which provides interest subsidies on pre and post shipment export credit, Export Credit Guarantee Corporation (ECGC) helps exporters secure bank loans by offering credit insurance products including the Niryat Rin Vikas Yojana (NIRVIK) scheme which offers high insurance cover, simplification of loan process and encourages banks to provide credit. The Market Access Initiative scheme (MAIS) helps exporters enhance market access which can improve credit worthiness and access to financing (DGFT, 2024)¹¹.

As shown in Table 5.4, respondents are asked if they agreed with certain financial assistance provided in order to promote exports. Table below shows the ranked response of the respondents where they agreed with the type of financial assistance provided to exporters.

Table 5.4- Ranking financial assistance provided to boost Indian exports according to the perception of the respondents

Parameter			quenc espon	•		Co		onding Scale	Garr	et	Total	Weighted Score	Ran k
	1	2	3	4	5	75	60	50	40	25			
Subsidised loans	25	37	44	14	0	1875	2220	2200	560	0	6855	0.2522	2
Faster processing Of loan applications	10	49	47	12	2	750	2940	2350	480	50	6570	0.2417	4
Duty free Import of inputs	29	42	46	3	0	2175	2520	2300	120	0	7115	0.2618	1
Credit Facility	12	43	59	4	2	900	2580	2950	160	50	6640	0.2443	3

Source- Author calculations

According to respondents' response, duty free import of inputs is top ranked financial assistance provided to boost exports followed by subsidised loans and credit facility. Faster processing of loan applications is ranked fourth in this context.

There are various factors affecting demand for a product in foreign market. Pricing plays an important role in consumer buying behaviour in global marketplace and certain variables affect these pricing decisions. Some of these variables are price elasticity of demand translating to price changes impacting demand for a product; nature of the

¹¹ https://content.dgft.gov.in/Website/EPS.pdf\

product implying that a product with higher specialized advantage, for example technological, will face less price war in the market; product distribution system and company factors such as its value attached to reputation (Otuedon, 2016). Product quality and price perception of the product is found to have a positive effect on the purchase decision of the consumer (Alatas *et al.*, 2023). We aimed to identify the most relevant factors impacting the demand for Indian products in Chinese market as perceived by the respondents. Table 5.5 shows the responses of the respondents ranked using the Garett's ranking method.

Table 5.5- Ranking factors impacting demand for Indian products in Chinese market according to the perception of the respondents

Parameter			quenc	•		Cor	respon	ding G	arret S	cale	Total	Weighted Score	Rank
	1	2	3	4	5	75	60	50	40	25			
Price of the product	39	65	12	4	0	2925	3900	600	160	0	7585	0.1771	1
Quality of the product	35	66	17	2	0	2625	3960	850	80	0	7515	0.1755	2
Brand name Or Company image	19	41	45	15	0	1425	2460	2250	600	0	6735	0.1572	6
Delivery system Of product	19	59	38	4	0	1425	3540	1900	160	0	7025	0.164	4
Design and packaging	24	64	13	3	16	1800	3840	650	120	400	6810	0.1590	5
Technological capability	36	54	17	3	10	2700	3240	850	120	250	7160	0.1672	3

Source- Author calculations

From the above table 5.5, we find that price of the product is ranked as the top factor affecting Indian exports in Chinese market according to the response of the respondents and this is closely followed by the quality of the product at the second place. Next important factor ranked is the technological capability followed by delivery system of the product and design and packaging of the product respectively. The factor that is ranked last is the brand name or company's image.

Complex regulatory procedures, customs duty, internal market barriers, trade defence and political targeting are some the significant barriers used by China to regulate imports from other countries like India. Complex regulations regarding quality and product standards, product testing, inspection and quality certification are used to stifle competitive imports. China always prefers its domestic firms which means that an

exporter will have to face extra barriers to sell in the Chinese market (Srivastava, 2023). These barriers could decline India's capability to compete effectively against other exporting nations who may enjoy comparatively lesser restrictions as compared to India (PTI, 2023)¹².

Both India and China are predicted to be superpowers by 2050 but their relationship is marked by conflict and cooperation with primary source of conflict being the border disputes (Khan 2023). In the table below, respondents' opinion is sought on external constraints affecting Indian exports on a five-point lickert scale ranging from strongly agree to strongly disagree which are then ranked to identify the order of preference of respondents.

Table 5.6 – Ranking external constraints affecting Indian exports according to the perception of the respondents

Parameter			uency spons			Cor	respo	nding cale	Garı	et	Total	Weighted Score	Rank
	1	2	3	4	5	75	60	50	40	25			
Tariff Barriers	36	64	17	3	0	2700	3840	850	120	0	7510	0.2049	2
Non-tariff Barriers	18	74	25	3	0	1350	4440	1250	120	0	7160	0.1954	3
Competition From other countries	44	63	13	0	0	3300	3780	650	0	0	7730	0.2109	1
Fluctuations In exchange rate	28	52	31	9	0	2100	3120	1550	360	0	7130	0.1946	4
Political uncertainty Due to border disputes	24	55	37	4	0	1800	3300	1850	160	0	7110	0.1941	5

Source- Author calculations

From table 5.6, we find that competition from other countries is ranked as number one external constraint affecting Indian exports and is closely followed by tariff barriers and non-tariff barriers adversely impacting exports. Fluctuations in exchange are also recognized as fourth important constraint and political uncertainty due to border disputes is ranked fifth in impacting India's exports performance.

India has launched a number of export promotion measures and export promotion schemes is an important constituent of this process. We tried to ascertain the usefulness

 $^{^{12}\} https://www.business-standard.com/article/economy-policy/regulatory-internal-market-barriers-of-china-impact-india-s-exports-gtri-123011500158_1.html$

of export promotion schemes for the respondents on a five-point lickert scale ranging from extremely helpful to not at all helpful and then ranked the preferences using the Garett scale. Table 5.7 depicts the ranking of export promotion schemes according to the respondents.

Table 5.7 – Ranking export promotion schemes helping Indian exports according to the perception of the respondents

Parameter	Fre	equency	y of Res	pons	e	Cori	espond	ing Gar	ret Sc	ale	Total	Weighted	Rank
	1	2	3	4	5	75	60	50	40	25		Score	
PLI scheme	26	49	40	5	0	1950	2940	2000	200	0	7090	0.1107	5
Star export House certification	25	77	18	0	0	1875	4620	900	0	0	7395	0.1154	1
MAI scheme	28	53	30	9	0	2100	3180	1500	360	0	7140	0.1114	3
Market development assistance	13	75	31	1	0	975	4500	1550	40	0	7065	0.1103	6
EPCG scheme	28	47	39	6	0	2100	2820	1950	240	0	7110	0.1109	4
EPCG Duty credit Scrip scheme	23	49	47	1	0	1725	2940	2350	40	0	7055	0.1101	7
Export duty Drawback scheme	30	36	46	8	0	2250	2160	2300	320	0	7030	0.1097	8
DFIA scheme	20	61	35	1	3	1500	3660	1750	40	75	7025	0.1096	9
AAS scheme	33	38	45	4	0	2475	2280	2250	160	0	7165	0.1118	2

Source- Author calculations

The respondents ranked star export house certification scheme as most helpful for Indian exports followed by Advance Authorisation scheme (AAS) and Market Access Initiative Scheme (MAI) as the second and third most helpful for exporters. The fourth and fifth most helpful schemes are found to be Export Promotion Capital Goods (EPCG) Scheme and Production Linked Incentives (PLI) scheme. These are followed by Market development assistance scheme, EPCG duty credit scrip scheme, Export duty drawback scheme and Duty-Free Import Authorisation (DFIA) scheme as sixth, seventh, eighth and ninth ranked in schemes.

The PLI scheme offers rewards such as financial incentives, tax benefits, technology upgrades, enhanced market access, job creation opportunities and boost to local supply chains and exports. This is done with the objective to promote domestic manufacturing across fourteen sectors including pharmaceuticals and electronics (MEITY, 2024)¹³.

¹³ https://www.meity.gov.in/esdm/pli

The star export house certification offers various benefits including self-declaration for customs clearance, exemption from bank guarantee conditions priority of fixing input-output norms (IndiaFilings, 2024)¹⁴. The MAI scheme provides financial assistance to export promotion bodies for conducting export promotion activities such as participation in trade fairs etc to help Indian exporters access new markets and increase their share in existing ones (ESC, 2024)¹⁵. MDA scheme aims to help international market expansion of MSMEs by providing benefits such as reimbursement for trade fair participation, financial assistance for publicity and export promotion (Ministry of Commerce, 2024)¹⁶.

The Export Promotion Capital Goods Scheme (EPCG) allows for duty free imports of capital goods required for producing quality exports and services and includes benefits such as zero customs duty aimed at enhancing exports competitiveness. Importers are not required to pay customs duty upfront but must fulfil an export obligation equal to six times the duty saved within six years (DGFT, 2024)¹⁷. The EPCG Duty Credit Scrip Scheme is for exporters who intend to import capital goods on full payment of custom duties upfront and receive reimbursement in the form of duty credit scrips (DGFT, 2024)¹⁸. The Export Duty Drawback Scheme helps exporters claim refunds on custom duties paid for import of inputs used in manufacturing exports. This helps in reducing production costs, provides flexibility in sourcing, improves cash flow and helps enhance competitiveness (DGFT, 2024)¹⁹.

The Duty-Free Import Authorisation (DFIA) scheme allows for duty free import of inputs required for export production thereby helping in reducing production costs. DFIA is issued post exports and is transferable. Its application process is streamlined and issued within a short time frame. This scheme provisions for 20 per cent value addition in exports promoting higher quality and value in exports (DGFT, 2019)²⁰. The

¹⁴ https://www.indiafilings.com/learn/export-house-certificate/

¹⁵ https://www.escindia.in/members/market-access-initiative-mai-scheme/

 $^{^{16}\} https://www.commerce.gov.in/international-trade/trade-promotion-programmes-and-schemes/trade-promotion-programme-focus-cis/market-development-assistance-mda-scheme/$

¹⁷ https://content.dgft.gov.in/Website/dgftprod/5ff3762d-94a4-48ac-a461-33e2b318613d/FTP%202021% 20updated%20on%2026.3.21.pdf

 $^{^{18}\,}https://content.dgft.gov.in/Website/DGFT_FAQs-Export_Promotion_Capital_Goods\%28EPCG\%29v1.0.pdf$

¹⁹ https://content.dgft.gov.in/Website/EPS.pdf

²⁰ https://content.dgft.gov.in/Website/FTP%20Chapter%204%20as%20on%20June%2030%202019.pdf

Advance Authorisation scheme (AAS) allows for duty free import of inputs but it differs from DFIA in certain aspects such as it includes minimum value addition of 15 per cent on exported products, advance authorisation is availed before exports takes place, is not transferable and its scope for input imports is wider as DFIA is used for certain products that meet the criteria set by Directorate General of Foreign Trade (DGFT,2024)²¹.

The perceived benefits of these schemes are asked to be rated by the respondents. The responses and their subsequent ranking are shown in table 5.8. According to the respondents, the top ranked perceived benefit of these schemes is the competitive advantage in exports market that these schemes provide. The second perceived benefit is the increase in market share followed by help in reduction in cost of production. The fourth perceived benefit of export promotion schemes is the increase in exports sales volume and fifth perceived benefit is financial assistance. The last two ranked benefits of these schemes are the contribution to overall profit and increase in product quality.

Table 5.8- Ranking export promotion schemes benefit as perceived by the respondents

Parameter			uenc spon	•		Co	-	onding Scale	Garr	et	Total	Weighted Score	Rank
	1	2	3	4	5	75	60	50	40	25			
Reduction in Cost of Production	35	43	30	11	1	2625	2580	1500	440	25	7170	0.1449	3
Contribution to Overall profit	29	44	25	18	4	2175	2640	1250	720	100	6885	0.1392	6
Increase in Exports Sales volume	26	64	20	7	3	1950	3840	1000	280	75	7145	0.1445	4
Increase in Market Share	24	68	24	0	4	1800	4080	1200	0	100	7180	0.1452	2
Financial Assistance	23	60	26	9	2	1725	3600	1300	360	50	7035	0.1423	5
Increase in Product Quality	16	62	27	11	4	1200	3720	1350	440	100	6810	0.1377	7
Competitive Advantage in Export market	31	55	26	7	1	2325	3300	1300	280	25	7230	0.1462	1

Source- Author calculations

These responses help identify the perceived benefits of various export promotion schemes launched to boost India's exports. The respondents' opinion is sought on the

²¹ https://www.dgft.gov.in/CP/?opt=adnavce-authorisation

issue of access to export promotion programs initiated by the government aimed at export promotion.

60
50
40
30
20
10
easy neutral difficult very difficult

Figure 5.5- Access to export assistance programs as perceived by the respondents

Source- Author calculations

Figure 5.5 shows the perceived access to the export promotion programs by the respondents. The 40 per cent of respondents found it difficult to access the programs and receive the benefits associated with them. It was closely followed by 38.33 per cent of the respondents who were neutral about the access to these programs as it was neither easy nor difficult for them to do so. Only 13.33 per cent of the respondents had the perception that it is to access the schemes and 8.33 per cent of respondents found it very difficult to access the export promotion programs. Compliance with disproportionately cumbersome regulatory procedures, dissonance between policies and their on-ground implementation and difficulty in claiming exports incentives are some of the challenges in business environment faced by exporters (Niti Aayog, 2024)²².

Analysing the imports aspect of India China trade, we find that the respondents importing from China belong to various industries. Figure 5.6 shows that the majority of importers belong to textiles and closely followed by machinery/electrical products industry. The remaining respondents belong to metals, plastics/rubber products,

134

 $^{^{22}} https://www.niti.gov.in/sites/default/files/2024-03/Boosting\%20Exports\%20from\%20MSMEs_March\%202024_compressed.pdf$

vegetable products, live animals and animal products, foodstuffs, stone/glass products and footwear / headgear products industry.

Miscellaneous
Machinery/Electrical Products
Metals
Stone/Glass Products
Footwear/Headgear Products
Textiles
Plastics and Rubber Products
Foodstuffs
Vegetable Products
Live animals and food products

0 5 10 15 20

Figure 5.6- Products imported by respondents

Source- Author calculations

Figure 5.7 shows the use of the products imported by the respondents from China. 41.66 per cent of respondents reported that the main purpose of imports is to be used as raw materials closely followed by 38.33 per cent of respondents who described the use of imports as final goods for domestic supply. 15 per cent agreed with the reason to import as intermediate products followed by 5 per cent who selected the use of imports as to be used in exports from the company.

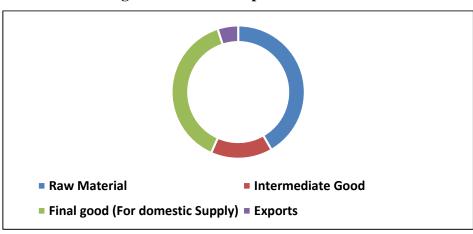


Figure 5.7- Use of Imports from China

Source- Author calculations

As shown in figure 5.8, 63 per cent of respondents reported yes on importing from China even when the product was supplied by domestic suppliers and 37 per cent affirmed that the imports were not supplied by domestic suppliers.

yes no

Figure 5.8- Imports whether supplied by domestic suppliers

Source- Author calculations

The respondents selected their perceived reasons for importing from China even when products imported were supplied by domestic suppliers. Price- cost margin represents the difference between the amount a product is sold for and the costs incurred in making and selling it. It is expressed as a percentage of selling price. Trade liberalization is found to have a pro-competitive effect leading to reduction in price-cost margins (Goldar and Aggarwal, 2005). An analysis of India's imports from China brought forth the point that China's dominance in manufacturing sector enables it to manufacture goods at lower costs which in turn benefits Indian importers' price-cost margins (GTRI, 2022).

Indian manufacturers face higher infrastructure and transaction costs which reduce their cost competitiveness. There are various critical components used in the manufacturing sector such as in heavy electrical equipment industry, which are not readily available in domestic market. The machinery imports from China are mainly due to price considerations and shorter delivery time (GOI, 2016)²³. 90 per cent of pharmaceutical industry imports are met through China only. Several regulatory issues induce Indian importers to import from China such as misclassification of Chinese goods which helps evade anti-dumping duties and bring in the product without facing intended regulatory hurdles (GOI, 2018)²⁴.

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²³ https://www.cgsc.in/pdf/Capital%20Goods%20Policy%202016.pdf

 $^{^{24}} https://prsindia.org/files/policy/policy_committee_reports/SC\% 20RS_Impact\% 20of\% 20 Chinese\% 20 Goods\% 20 n\% 20 Indian\% 20 Industry_vF.pdf$

Table 5.9 shows that the respondents have selected Price cost margin as the top ranked reason for importing from China when the product is supplied by domestic suppliers. Second ranked reason is the specification of the product followed by the limited availability of desired quality product produced local. The other ranked reasons are transaction costs, regulatory procedures and delivery issues.

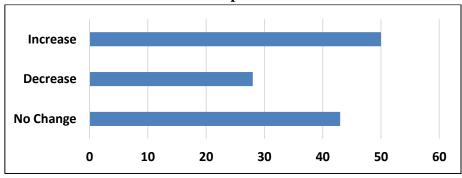
Table 5.9- Ranking reasons for imports from China as perceived by the respondents

Parameter			uenc spons	,		Co	-	nding (Scale	Garre	t	Total	Weighted Score	Rank
	1	2	3	4	5	75	60	50	40	25			
Price Cost Margin	45	42	33	0	0	3375	2520	1650	0	0	7545	0.1783	1
Limited availability Of desired quality Products produced local	19	66	35	0	0	1425	3960	1750	0	0	7135	0.1687	3
Specification of Product	23	62	34	0	1	1725	3720	1700	0	25	7170	0.1695	2
Transaction Costs	12	56	52	0	0	900	3360	2600	0	0	6860	0.1622	4
Delivery Issues	14	45	57	4	0	1050	2700	2850	160	0	6760	0.1598	6
Regulatory Procedures	11	60	45	4	0	825	3600	2250	160	0	6835	0.1616	5

Source- Author calculations

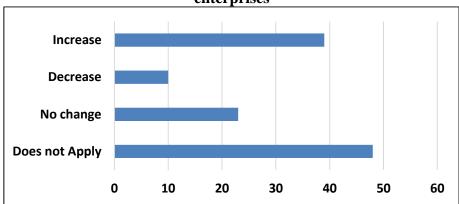
India's imports from China have witnessed an upward trend over the years. As shown in figure 5.9, the respondent's opinion is sought on the impact of increased imports over the years from China on the sales of the enterprises. This leads us to find that 41.66 per cent of respondents were of the opinion that imports from China helped increase sale of Indian enterprises. 23.33 per cent opined that it decreased the enterprise sales and 35.83 per cent of them held the opinion that increased imports from China did no change in the sales of the enterprises.

Figure 5.9- Impact of increased imports from China on sales of the Indian enterprises



Source- Author calculations

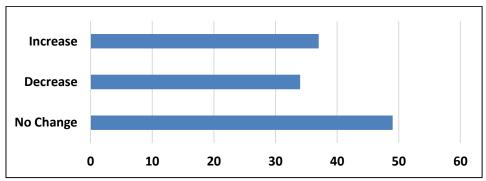
Figure 5.10 - Impact of increased imports from China on exports of the Indian enterprises



Source- Author calculations

As shown in figure 5.10, the response of the respondents is sought on the impact of increased imports from China over the years on the exports of Indian enterprises. 40 per cent of the respondents selected the does not apply option as they reported not engaging in exports activity utilizing Chinese imports. 19.16 per cent of the respondents reported having no change on exports. 32.5 per cent of the respondents agreed that it led to increase in exports but 8.33 per cent of the respondents opined those increased imports from China decreased their exports performance.

Figure 5.11 - Impact of increased imports from China on imports from other countries



Source- Author calculations

Concerning the impact of increased imports from China on imports from other countries, about 40.83 per cent of the respondents believed that it did not change their imports from other nations. 30.83 per cent opined that their imports from other nations increased and 28.33 per cent reported decrease in imports from other countries after

increased imports from China. This is shown in figure 5.11 depicting the response of respondents on the issue of Impact of Chinese imports on imports from other countries.

Maybe
No
Yes
0 10 20 30 40 50

Figure 5.12- Intention to reduce Import dependence on China

Source- Author calculations

As shown in Figure 5.12, the respondents were asked whether they intended to reduce dependence on China for imports which led to 34.16 per cent of respondents reported yes on the desire to reduce import dependence on China. 39.16 per cent disagreed with this and selected no as the answer to reducing import dependence and 26.66 per cent were neutral about the issue and selected maybe as the response to the question of reducing import dependence on China.

The respondents who selected yes on the intention for reducing imports from China also identified following reasons for doing so. The main reasons mentioned are:

- the need to promote Indian industry which can be achieved with the help of Make in India program
- improve nation's forex reserve by reducing imports bill
- to support Aatmanirbhar Bharat Scheme
- to support local industry but there is need to bring down the production cost
- possibility of war due to unstable political situation between two countries so it is better to look at other markets.

These respondents also identified following countries from which they wish to engage and are engaging in trade other than China. These are United States of America (USA), Bangladesh, Germany, Israel, Indonesia, Japan, Nepal, Russia, South Korea, Taiwan, United Kingdom and Vietnam. Some respondents were of opinion to support domestic industry and source products from reliable domestic suppliers.

Maybe
No
Yes

0 10 20 30 40 50 60 70

Figure 5.13- Sustainability of export volume

Source- Author calculations

Regarding an overview of trade with China, the respondents are asked if they perceived their export volume to be sustainable in the future while engaged in trade with China. 49.16 per cent of the respondents were of the opinion that the export volume is sustainable in future but 18.33 per cent were not optimistic and selected no as an answer. 32.5 per cent of the respondents were unsure and selected maybe as the response regarding sustainability of export volume in future.

China appears as a single unified market but it is a collection of sub-markets characterized by different cultural, demographic and economic characteristics. China's entry into WTO in 2001 did liberalize its trade environment to some extent but many industries are still heavily regulated and are inaccessible to foreign companies such as in energy, petrochemicals and telecommunications sectors. Domestic and foreign companies are expected to conform to industry specific standards and regulations which are under different ministries and regulatory bodies which makes compliance difficult. Strict government regulations significantly impact the timeline and costs of market entry. The old adage "In China everything is possible but nothing is easy" is still true for foreign companies doing business in China (Headly, 2014)²⁵. The socioeconomic condition in China is ever evolving and expanding which in turn, affects consumer choices. Chinese consumers place a strong preference on brands and status is a key factor in purchase decisions. New entrants need to focus on brand building and creation of brand awareness. Price is an important consideration for buyers especially in case of non-brand items. China is still a developing economy marked by infrastructural

²⁵ https://www.b2binternational.com/publications/china-market-entry/

constraints mainly in poorer regions which could cause delay in goods reaching markets in time (Asialink Business, 2024)²⁶.

India's imports from China align with the global trends and the real issue is not high imports but low exports to China. China uses a combination of internal market barriers, regulatory issues, trade defence measures and geopolitics to regulate imports. The regulatory framework of China is quite cumbersome. A product must be registered with a specific Chinese authority which translates to heavy documentation and includes onsite inspection, testing of the product and quality certification. Registration of a company takes one to three years and product is tested again at the time of imports. China cancels registration if even a single batch is found to have issues.

More stringent processes are in place for food, meat and dairy products which have to comply with additional food safety standards and sanitary and quality regulations. A firm needs to have an import quota in order to avoid exorbitant tariffs for products like sugar and rice. The majority of imports enter Chinese market as inputs for making export products and a small portion makes it to the domestic market. China always prefers domestic firms. China also uses countervailing duties, anti-dumping and safeguard duties to counter effect of subsidy provided by exporting country. China is known to use trade to meet political ends e.g. China suddenly stopped buying bananas from Philippines after it questioned China's claim over South China Sea (GTRI, 2023)²⁷.

It is a widely accepted notion that cultural differences pose a significant impediment to trade. Larger the difference in language, customs and values, the more challenging the trade relations become. China has been able to circumvent it by aligning itself with the development needs of its trade partners. China's adeptness at overcoming cultural barriers combined with the foreign firms continued engagement with China despite facing various market access barriers is a cause of concern for its trade partner countries (Tadesse, 2024)²⁸.

 26 https://asialinkbusiness.com.au/china/sales-and-marketing/marketing-in-china?doNothing=1 27 https://gtri.co.in/gtriRep3.pdf

²⁸ https://www.thestatesman.com/opinion/how-china-overcame-culture-barrier-1503317440.html

Table 5.10 – Ranking China market environment factors impacting India's exports performance with China as perceived by the respondents

Parameter	Frequ	uency	of Re	espor	ise	Co	rrespo	nding (Scale	Garre	t	Total	Weighted Score	Rank
	1	2	3	4	5	75	60	50	40	25			
Unstable Product Demand	22	71	26	1	0	1650	4260	1300	40	0	7250	0.1246	6
Difficulty in making Contacts	14	80	25	1	0	1050	4800	1250	40	0	7140	0.1227	7
Lack of Publicity	28	73	18	1	0	2100	4380	900	40	0	7420	0.1275	2
Paperwork involved In processing an Export sale	26	67	27	0	0	1950	4020	1350	0	0	7320	0.1258	4
Inadequate Logistics Export Systems	21	77	18	4	0	1575	4620	900	160	0	7255	0.1246	5
Political Problems	11	60	48	1	0	825	3600	2400	40	0	6865	0.1179	8
Competition from Domestic Producers	42	58	19	1	0	3150	3480	950	40	0	7620	0.1309	1
High Import Duties	29	62	28	1	0	2175	3720	1400	40	0	7335	0.1260	3

Source- Author calculations

The respondents' opinion is sought on selected China market environment features impacting India's export performance with China.

The export market environment features affect a country's export performance. Here in table 5.10, the top ranked Chinese market environment factor impacting India's export performance according to the perception of respondents is the competition from domestic producers. Second ranked is the lack of publicity closely followed by high import duties on Indian exports. Paperwork involved in processing an export sale is ranked fourth in impacting exports performance and fifth important factor is the inadequate logistics export systems.

The unstable product demand is ranked sixth important factor. The difficulty in making contacts and political problems between two nations is ranked seventh and eight important factor respectively. The respondents' opinion is sought on their overall impression of Chinese market. Their agreement on certain items regarding Chinese market is ranked using the Garett ranking method. Table 5.11 shows their overall impression of Chinese market.

Table 5.11- Ranking Overall Impression of Chinese market as perceived by the respondents

Parameter	Free	quenc	y of F	Respo	nse	Corr	espond	ing Gar	ret Sc	ale	Total	Weighted	Rank
	1	2	3	4	5	75	60	50	40	25		Score	
Ease of Market Access	19	49	42	10	0	1425	2940	2100	400	0	6865	0.1635	4
Lack of Market Access	35	44	34	7	0	2625	2640	1700	280	0	7245	0.1725	2
Discriminatory Restrictions	34	56	29	1	0	2550	3360	1450	40	0	7400	0.1762	1
Unfair Trade Practices	24	66	25	5	0	1800	3960	1250	200	0	7210	0.1717	3
Language Barriers	15	35	56	13	1	1125	2100	2800	520	25	6570	0.1565	6
Cultural Differences	14	47	47	12	0	1050	2820	2350	480	0	6700	0.1596	5

Source- Author calculations

The respondents opined those discriminatory restrictions is ranked as the top defining feature of Chinese market. This is followed by the lack of market access. The third ranked item depicting their impression of Chinese market is the unfair trade practices. The fourth ranked item is the ease of market access followed by cultural differences and language barriers ranked fifth and sixth respectively.

The main issues plaguing Indian exports performance is the non-alignment of trade policies to shift in India's export markets, non-trade barriers in exports markets, inadequate availability of financing and limited understanding of international market requirements. There are various factors impacting Indian export competitiveness such as skewed tax structure, high infrastructure and logistics costs, high input costs, limited ability of MSMEs to develop R&D, low awareness of international market standards, low investment, lack of skilled manpower, efficient supply chain and access to capital. Several companies are unable to scale up their operations because mass manufacturing is unavailable to them. China provides its domestic electrical equipment manufacturers export subsidies, social security subsidy, lower income tax rates, cheaper access to financing which gives these companies unfair price advantage and helps them price their products competitively. On the other hand, China offers credit to foreign buyers on easy terms so that they can finance their imports from China. These steps make Indian industry non-competitive as compared to China (GOI, 2016)²⁹. Issues like

²⁹ https://www.cgsc.in/pdf/Capital%20Goods%20Policy%202016.pdf

requirement of local experience inhibit the participation of Indian industries in the Chinese procurement process (GOI, 2019)³⁰. The issues of market access and non-tariff barriers are regularly raised with Chinese side to bring to their attention (GOI, 2023)³¹.

The respondents' opinion is sought on certain items which they agree need to be addressed in order to facilitate India's exports performance in Chinese market. These responses are ranked and are shown in Table 5.12.

Table 5.12- Ranking issues which need to be addressed in order to facilitate India's exports performance in Chinese market as perceived by the respondents

Parameter			uenc spons			Co	orrespo	onding Scale	Garre	Total	Weighted Score	Rank	
	1	2	3	4	5	75	60	50	40	25			
Resolution of Border Disputes	15	66	36	2	1	1125	3960	1800	80	25	6990	0.1179	8
Technical Standards, Qualification Norms	37	54	27	2	0	2775	3240	1350	80	0	7445	0.1256	6
Registration/ Licensing Process	32	73	12	3	0	2400	4380	600	120	0	7500	0.1265	4
Labour Norms	21	74	22	3	0	1575	4440	1100	120	0	7235	0.1221	7
Market Access	38	59	21	2	0	2850	3540	1050	80	0	7520	0.1269	2
Supply Chain Management	31	74	14	1	0	2325	4440	700	40	0	7505	0.1266	3
Sector/Industry Specify Govt Support	34	61	24	1	0	2550	3660	1200	40	0	7450	0.1257	5
Investment in R&D	39	67	12	2	0	2925	4020	600	80	0	7625	0.1286	1

Source- Author calculations

The top ranked issue which needs to be addressed in order to boost India's exports is investment in R&D according to the respondents. The second important issue is the market access followed by supply chain management which needs to be addressed. The next issue is the registration/Licensing process followed by fifth ranked sector/ industry specify government support. Next the technical standards and qualification norms needs to be addressed followed by labour norms and last ranked is the resolution of border disputes.

India needs to focus on promoting exports and minimizing imports. Obsolete technology, lack of R&D due to high costs involved, low investment, infrastructural

31 https://sansad.in/getFile/annex/262/AU690.pdf?source=pqars

³⁰ https://pib.gov.in/Pressreleaseshare.aspx?PRID=1575818

constraints, lack of fiscal support by the government, need to expand manufacturing capacity, provide for quality inspection, simplification of taxation structure, lack of domestic availability of critical raw materials, competition from cheap imports especially from China are some of the issues facing Indian manufacturing industry and need to be addressed to make India a global player. There is need of focused manufacturing and provide for mass manufacturing in order to help companies scale up (GOI, 2016)³².

There are several steps taken by the government to reduce import dependency such as Production Linked Incentives (PLI) scheme for 14 critical sectors where there is significant import dependency. Government introduced stricter certification, testing and quality standards protocol to discourage substandard imports. They are also encouraging Indian businesses to diversify their supply chains and explore alternative suppliers. Customs duty on imports has been rationalized to support domestic industry. Government has empowered Directorate General of Trade Remedies (DGTR) to recommend remedial actions against unfair trade practices and introduced various programs to enhance domestic capacities such as Make in India, Promoting Ease of Doing Business etc (GOI, 2023)³³. This brings to the next issue of remedial measures which will help boost India's exports and reduce its imports. The respondents' agreement on certain remedial measures is sought which they perceive as important to boost Indian exports performance and reduce its import bill.

Table 5.13- Ranking remedial measures to boost Indian exports and reduce imports as perceived by the respondents

Parameter	Free	quenc	y of F	Respo	nse	Corr	espond	ing Gar	ret Sca	Total	Weighted	Rank	
	1	2	3	4	5	75	60	50	40	25		Score	
Develop local Manufacturing Capabilities	54	41	22	3	0	4050	2460	1100	120	0	7730	0.1453	1
Diversify import Options	33	63	20	4	0	2475	3780	1000	160	0	7415	0.1394	7
Large scale manufacturing	41	63	15	1	0	3075	3780	750	40	0	7645	0.1437	4
Divert Trade Towards more Friendly Countries	35	67	17	1	0	2625	4020	850	40	0	7535	0.1417	5
Government	43	45	26	3	3	3225	2700	1300	120	75	7420	0.1395	6

³² https://www.cgsc.in/pdf/Capital%20Goods%20Policy%202016.pdf

³³ https://sansad.in/getFile/annex/262/AU690.pdf?source=pgars

Support													
Boosting Manufacturing at Competitive Cost	46	59	14	1	0	3450	3540	700	40	0	7730	0.1453	2
Focusing on Enhancing Competitiveness of Of Enterprises	47	57	13	3	0	3525	3420	650	120	0	7715	0.1450	3

Source- Author calculations

Table 5.13 shows the ranked response of the respondents selecting the appropriate remedial measures. The weighted ranked response of the respondents has shown the development of local manufacturing capabilities as the top ranked remedial measure needed to boost Indian exports. Boosting manufacturing at competitive cost is ranked second followed by need to focus on enhancing the competitiveness of enterprises in India. The next remedial measure which could be used is to develop large scale manufacturing and diversion of trade towards more friendly countries. The sixth ranked remedy is the government support to achieve the objective. The diversification of import options is ranked seventh in order to boost Indian exports and reduce imports.

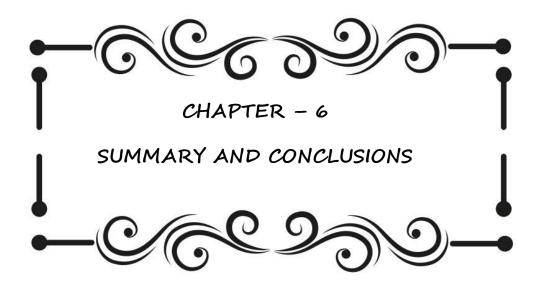
5.2 Summary

This survey is conducted in order to understand various issues and challenges faced by Indian stakeholders while trading with China. India's trade with China is marked by various challenges and some of these issues get highlighted by the outcome of this study. Tax/duty on import of raw materials, availability of export warehousing and packaging facilities and skilled workforce affect the performance and competitiveness of Indian exports. Duty free import of inputs is the top ranked financial assistance provided to boost exports. Competition from other countries is viewed as the major external constraint impacting Indian exports and price of the product is considered as the major factor impacting demand for Indian products in Chinese market. Government of India has launched various export promotion schemes to help Indian exports and the prominent scheme identified by the respondents in this study is the star export house certification. The major benefit availed out of various export promotion schemes is that they provide competitive advantage in export market but majority of respondents found it difficult to access the export promotion schemes. The India China trade is characterized by high imports from China and the respondents identified the top ranked

use of imports to be used as raw materials closely followed by the use of imports as final goods for domestic supply. The respondents helped identify price cost margin as the main reason for import from China and 34.16 per cent of respondents expressed willingness on the desire to reduce import dependence on China. The opined that the reason for intention for reducing imports from China is the need to support and develop Indian industry with the help of schemes like "Make in India" and "Aatmanirbhar Bharat", improve country's forex with reduction of import bill and exploration of other markets in the event of war in the future. With an overview of the Chinese market, the respondents identified competition from domestic producers as the main factor impacting India's export performance in China and facing discriminatory restrictions is their overall impression of the Chinese market though cultural differences and language barriers rank lower on the list. Investment in Research and Development (R&D) is identified as the main issue which need to be addressed in order to facilitate India's exports performance in Chinese market. Development of local manufacturing capabilities is top ranked remedial measure in order to boost exports and reduce imports.

Indian manufacturing sector is heavily import dependent and it can afford to sustain this trend of importing priority components. The domestic manufacturing is affected by India's cost disadvantage in manufacturing as compared to countries like China, lack of indigenous design and raw material ecosystem and lack of large-scale domestic manufacturing capabilities. Domestic industry has low R&D investment which leads to lower manufacturing potential. It is suggested e.g. for development of electronics manufacturing to increase the time period of fiscal support to allow for enhancement in value addition and scaling up of operations, rationalization of import tariffs in line with competing economies and aggressively pursue trade agreements with European Union (EU), Gulf Cooperation Council (GCC) countries, United Kingdom and emerging African economies. Encouragement of public-private partnership is suggested to improve infrastructure access for small companies (CII, 2024)³⁴.

³⁴ https://www.cii.in/PressreleasesDetail.aspx?enc=dwGNCvcevtTsyhiCxk0ggz7a0ZQDpl/w9QsgBOUhReY=



CHAPTER 6

SUMMARY AND CONCLUSIONS

6.1 Summary of the study

India and China have existed together since ancient times as being the world's two oldest civilizations. These countries enjoy strong historical, cultural links and many other similarities. China and India account for greater than thirty seven percent of the world's population with about 1.4 billion and 1.3 billion populations respectively. Territory wise China is the world's fourth largest country and India is the seventh largest country in the world. India lies at the centre of South Asia and China lies at the centre of East Asia (Singh, 2005). India and China have experienced a rollercoaster of relations starting from the 1950s to lows of deep hostility in 1960s and 1970s to highs of rapprochement in the 1980s (Arif, 2013). Indo-Chinese economic ties are considered as one of the building blocks of their reproachment and it has remained same despite other areas of conflict amongst them. Bringing forth this point is the fact that despite border skirmishes and military standoff, the bilateral trade crossed \$125 Billion mark in 2021. From 2009, China has been the biggest import partner country of India but the same importance is not reciprocated for Indian exports to China which is reflected in the burgeoning trade deficit between the two nations and it shows that the trade is more in favor of China than of India which has resulted in unbalanced economic relations between the two giants (The Economic Times, 2022).

The study aims to analyse India's trade ties with China. Recent studies do not include the most recent developments happening at the global level such as corona virus pandemic, US-China trade war etc. and in both countries' bilateral relations such as recent flare ups in border disputes. The studies also show that the increase in bilateral trade over the years is significantly marked by the growth of India's trade deficit with China. No specific analytical study has been found which analyzes India's trade with China in the wake of these developments at the global and bilateral level. Bilateral trade happened between India and China prior to 2001 but in 2001 China became a part of the multilateral trading system by becoming member of World Trade Organization (WTO). The study intended to undertake a rigorous economic analysis of India's trade

ties with China. The study conducts a comprehensive analysis to deeply analyze the consistency and composition of bilateral trade and make forecast of future bilateral trade between India and China.

India and China are two important world economies as is reflected in the size of their population, size of the economy and growing importance at the world stage. China is the number one import partner and number two export partner of India. India's trade with China has consistently increased over the years and China has emerged as its leading trade partner despite political differences as reflected in border disputes. This trade relation is characterized by the growth of trade deficit for India which has persistently increased over the years. Various factors are attributed to the increase in deficit ranging from the quality and technology composition of India's exports to unfair trade practices and lack of market access provided by China to Indian products. The present study has focused on economic aspect of India's ties with China with emphasis on trends and patterns of trade and identification of products in which India enjoys competitiveness and also identification of issues affecting Indian trade with China.

The main objectives of the study are:

- 1. To analyze the trends and patterns of bilateral trade between India and China.
- 2. To assess the trade competitiveness between India and China.
- 3. To study the trade potential between India and China.
- 4. To study the issue and challenges faced by Indian stakeholders while trading with China.

6.1.1 Objective 1 Summary

- India exhibits substantial trade deficit with China which has increased over the years of study. In 2022, India-China trade amounted to \$135.98 billion out of which India had a trade deficit of about \$101 billion. This is the first instance of Indian trade deficit with China crossing the 100-billion-dollar mark. The trade imbalance leaves us vulnerable to supply chain disruptions and economic coercion. This becomes a strategic vulnerability and it is high time to reverse it.
- India exhibited slow integration with global economy. Its share in world exports, imports and total trade accounts for around 2 per cent as compared to China's share of about 14 per cent in world trade. China has jumped higher than India

- in global trade integration as is reflected from their respective share in world trade.
- China is an important market for India's exports but accounts for only about 3 per cent of its exports share. On the other hand, China accounts for about 14 per cent of imports required by India and it is the largest import partner of India. For China, India is found to be at 32nd position of import partner nations in 2022, accounting for 0.64 % of China's imports. India does not enjoy a relatively important place in China's trade as it has comparatively lower share in China exports and imports basket.
- China's export, import and trade intensity with India is more than India's export, import and trade intensity with China over the time period under study.
- The top twenty exports of India do not enjoy export similarity with the exports of China in the global market. This shows that India is not a competitor for China's exports in the global market. India lacks import similarity with China which shows difference in import needs of these two countries.
- The study finds high complementarity between Indian exports and Chinese imports. This implies India has high trade prospects with China because of higher complementarity between Indian exports and Chinese imports.

6.1.2 Objective 2 Summary

- The analysis of product categories at HS 2-Digit code for the year 2022 shows that out of 15 product groups, India is found to enjoy comparative advantage in four product groups where the RCA value is greater than 1. Two product groups are resource intensive and two product groups are technology intensive in which India enjoys comparative advantage for the 2-digit product groups for the year 2022. These product groups are: Mineral products (HS 25-27), Plastics/rubbers (HS 39-40), Metals (HS 72-83) and machinery/ electrical products (HS 84-85). In the remaining 11 product groups, India is found to be at comparative disadvantage in its trade with China for 2022.
- The RCA analysis for the HS 6 Digit product classification shows that Mineral Products (HS 25-27), Chemical & Allied Industries (HS 28-38), Animal and animal products (HS 01-05) are the top three product groups with highest

percentage of competitively positioned (CP) product lines. Footwear/ Headgear product (HS 64-67) group has the highest percentage of product lines in Threatened Products (TP) category. Other product groups having less than 1 per cent of product lines in Threatened Products category are Mineral products (HS 25-27), Animal and Animal products (HS 01-05), Vegetable products (HS 06-15), Chemical and allied industries (HS 28-38) and Textiles (HS 50-63). Raw Hides, Skins, leathers & Furs (HS 41-43), Chemical & Allied Industries (HS 28-38), Wood & wood products (HS 44-49) are the top three product groups with highest percentage of product lines in Emerging Products Tier I (EPT1) category. Machinery/Electrical (HS 84-85), Miscellaneous (HS 90-97) and Textiles (HS 50-63) are the top three product groups with the highest percentage of product lines, more than fifty per cent, in Emerging Products Tier II category (EPTII). Mineral Products (HS 25-27), Chemical & Allied Industries (HS 28-38) and Textiles (HS 50-63) are the only three product groups with product lines in Weakly Positioned Tier I category (WPTI) and their share is less than 1 per cent. All the product groups have significant percentage of product lines in Weakly Positioned Tier II category (WPTII) with Animal and Animal products (HS 01-05), Mineral products (HS 25-27), Metals (HS 72-83), Vegetable products (HS 06-15), Foodstuffs (HS 16-24), Stone/Glass (HS 68-71) having more than fifty per cent of their product lines in this category.

6.1.3 Objective 3 Summary

The study's findings indicate that India-China trade flows largely align with the gravity model's theoretical expectations. Key factor such as GDP, per capita GDP, population, distance, and common border are found to significantly influence bilateral trade. As per the gravity model, the GDP variable has a positive and substantial impact, affirming that larger economies like India and China engage in higher trade volumes due to their greater production and consumption capacities. Similarly, per capita GDP (PCGDP) is positively associated with trade flows, implying that wealthier populations are more likely to trade as disposable incomes and demand for a variety of goods rise. Thus, as India's per capita income grows, its trade with China is expected to increase. Population size also plays an influential

role, with larger populations contributing to greater domestic demand, thereby increasing trade volumes. Distance, on the other hand, is negatively correlated with trade flows, reinforcing the gravity model's assumption that geographical proximity encourages trade between nations. As distance increases, trade volume decreases due to higher transportation and transaction costs.

The similarity index yields mixed results, with the GLS model suggesting a positive and significant effect, which may indicate intra-industry trade where nations exchange similar goods within the same sector. However, this result was not significant in the OLS model, suggesting that unobserved factors might influence this relationship. The study finds that relative factor endowments and preferential trade agreements (PTAs) have statistically insignificant effects on trade flows. This suggests that differences in resource availability do not notably influence India-China trade, diverging from the Heckscher-Ohlin theory which proposes that countries trade based on comparative advantages in resource endowments. PTAs, while theoretically expected to boost trade, also appear to have a minimal impact in this case. Lastly, common borders and language significantly foster trade between India and China, with the language factor likely reflecting the role other facilitators that ease communication in trade. In summary, India-China trade flows are driven by economic size, wealth, population, proximity and shared borders while factors like resource endowments and PTAs play a more limited role.

6.1.4 Objective 4 Summary

- Tax/duty on import of raw materials, availability of export warehousing and packaging facilities and skilled workforce affect the performance and competitiveness of Indian exports.
- Duty free import of inputs is the top ranked financial assistance provided to boost exports. Competition from other countries is viewed as the major external constraint impacting Indian exports and price of the product is considered as the major factor impacting demand for Indian products in Chinese market.
- Government of India has launched various export promotion schemes to help
 Indian exports and the prominent scheme identified by the respondents in this
 study is the star export house certification. The major benefit availed out of

various export promotion schemes is that they provide competitive advantage in export market but majority of respondents found it difficult to access the export promotion schemes.

- The India China trade is characterized by high imports from China and the respondents identified the top ranked use of imports to be used as raw materials closely followed by the use of imports as final goods for domestic supply.
- The respondents helped identify price cost margin as the main reason for import from China and 34.16 per cent of respondents expressed willingness on the desire to reduce import dependence on China. The opined that the reason for intention for reducing imports from China is the need to support and develop Indian industry with the help of schemes like "Make in India" and "Aatmanirbhar Bharat", improve country's forex with reduction of import bill and exploration of other markets in the event of war in the future.
- With an overview of the Chinese market, the respondents identified competition
 from domestic producers as the main factor impacting India's export
 performance in China and facing discriminatory restrictions is their overall
 impression of the Chinese market though cultural differences and language
 barriers rank lower on the list.
- Investment in Research and Development (R&D) is identified as the main issue which need to be addressed in order to facilitate India's exports performance in Chinese market. Development of local manufacturing capabilities is top ranked remedial measure in order to boost exports and reduce imports.

6.2 Policy Implications

By implementing following policy measures, India can work towards reducing the trade deficit with China, enhance its economic resilience, better leverage its comparative advantages and position itself as a more competitive player in the global market.

1. Strive for diversification of import sources away from China:

 India exports only 3.33 per cent of its exports to China but meets 14 per cent of its import needs from China. It has continuously expanded trade deficit with China which crossed the 100-billion-dollar mark and it points towards import dependency. This can be achieved by providing incentives for local manufacturing and innovation. India should explore trade arrangements with other countries to reduce dependence on a single market and increase its economic resilience. This will also help alleviate risks associated with geopolitical tensions. Recent FTAs with Mauritius, UAE, Australia and European Free Trade Association (EFTA) are a step in the right direction.

2. Aim for greater integration with the global economy

- In 2022, India's share in world exports, imports and trade is 1.84 %, 2.89 % and 2.37 % respectively and China's share in world exports, imports and trade is 14.60 %, 10.71 % and 12.62 % respectively. India does not enjoy export and import similarity with China in the global market. India needs to monitor and adapt to trends in global trade.
- India should stay well-informed about shifts in global supply chains and adapt policies to position India as an attractive alternative for manufacturing and sourcing, especially as companies seek to diversify away from China after the Covid-19 induced supply chain disruptions. India should be able to take advantage of changing geopolitical dynamics to strengthen trade ties with other nations while balancing relationships with China at the same time.

3. Taking advantage of trade complementarity

• The study finds high trade complementarity between Indian exports and Chinese imports which implies high trade prospects between both countries. India should focus on enhancing trade in products where Indian exports complement Chinese imports. This will help increase the overall trade volume and reduce the trade deficit. India should work on improving market access for its exports in China by addressing nontariff barriers and improvements in diplomatic relations. India should try to reinforce bilateral trade relations through dialogue and strengthen economic ties.

4. Aim to strengthen competitive advantages:

- India should support Resource-Intensive and Technology-Intensive Sectors. Given India's comparative advantage in Mineral products (HS 25-27), Plastics/Rubbers (HS 39-40), Metals (HS 72-83) and Machinery/ Electrical products (HS 84-85), the government should implement policies that support these sectors. It could be done through tax incentives, subsidies, and research grants to enhance production capabilities and competitiveness.
 - The product groups with highest percentage of product lines in Competitively Positioned (CP) category such Mineral products (HS 25-27), Animal and Animal products (HS 01-05) and Chemical and Allied Industries (HS 28-38) should be provided with adequate policy support maintain their competitive edge in the future. The product groups falling under Threatened Products (TP) category need appropriate policy support to stop the decline in their competitive advantage over time. The top three product groups with highest percentage of product lines in this category are Footwear/Headgear (HS 64-67), Mineral Products (HS 25-27) and Animal and Animal Products (01-05). The product lines under Emerging products Category (Tier I and II) demonstrate comparative disadvantage at present but exhibit underlying trends to become competitive in the future with the help of appropriate state support. Weakly positioned product lines (Tier I and II) are at a comparative disadvantage and their RCA is declining over time. There is need for timely assistance to these industries especially Mineral products (HS 25-27), Chemical and Allied industries (HS 28-38) and Textiles (HS 50-63) which have product lines in both tiers. These product lines require special mediation to arrest the fall in their comparative advantage profile because of discouraging domestic and global reasons.

5. Promote language and cultural exchange

India should inspire language learning and cultural exchange programs.
 Although the lack of a common language is not found to adversely

impact trade flows, promoting language learning and cultural exchange can augment understanding and business relationships between Indian and Chinese companies.

6. Increased investment in infrastructure development

 India needs to invest in infrastructure such as logistics and supply chain networks including export warehousing and packaging facilities should be pursued in order to enhance the competitiveness of Indian manufacturing against Chinese imports. It can help reduce trade costs and enhance the efficiency of supply chains allowing for smoother trade with partner countries.

7. Recalibrate trade policies:

Tax/duty on import of raw materials is identified as one of the
determinants of Indian exports performance. India should evaluate and
adjust tariff structures to protect domestic industries while ensuring that
essential imports are not excessively taxed. Enhance transparency in
trade policies and simplify regulatory compliance processes to enhance
ease of operation for businesses.

8. Consolidation of R&D and Innovation:

• Increase investment in research and development. Encourage investment in R&D to promote innovation in manufacturing processes and product development thereby empowering Indian industries to compete more effectively with Chinese products. Increase investment to foster innovation in sectors where India has Emerging Products (EP) which can involve partnerships with academic institutions and private sector players to develop new technologies and improve product quality.

9. Promoting Domestic Manufacturing

 Development of local manufacturing capabilities is identified as the top ranked remedial measure in order to boost India's exports and reduce imports. India should implement such policies which provide incentives, financial assistance and technological support to Micro, Small, and Medium Enterprises (MSMEs) in order to boost their domestic production capabilities.

10. Create public awareness campaigns

 Promote and strengthen public awareness campaigns such as "Make in India" to encourage Indian consumers to buy domestically produced goods. This will help support local industries and reduce the trade deficit.

6.3 Conclusion

India and China, as two of the largest economies in the world, should strive for deeper economic cooperation and enhanced trade relations. They rank as the seventh and third largest countries in the world respectively accounting for approximately 35.31 per cent of the global population collectively. China is an approximately five times larger economy with GDP of around \$17 trillion as compared to India's GDP of around \$3 trillion. This sharp disparity in economic size has historical underpinnings as China adopted economic reforms and rapid industrialization in the late 20th century which propelled its growth trajectory and India has struggled to match it. Though recent trends do indicate a shift as Indian economy is gaining momentum and is expected to accelerate its growth trajectory with the aim of reaching levels comparable to China.

Despite historical tensions and strategic differences, the incentives for enhanced economic ties have become increasingly compelling for both nations. India's rapidly growing economy and young consumer base has presented significant opportunities for Chinese investment and trade. As China faces domestic challenges like economic restructuring and an aging population, India's demographic advantage makes it an attractive partner. At the same time, India can benefit from China's expertise in manufacturing and technology to accelerate its own growth trajectory. In the context of global supply chain diversification away from China, India and China should work together to leverage their complementary strengths. China's manufacturing prowess and India's growing market can create mutually beneficial trade and investment

opportunities. To realize the full potential of India-China economic cooperation, both nations should pursue following measures:

- 1. India and China should aim to reduce trade barriers and work towards a balanced trade relationship that addresses concerns over trade deficits.
- 2. They could collaborate on infrastructure development and connectivity projects that enhance regional economic integration.
- 3. They should align their economic strategies to take advantage of emerging opportunities in areas like renewable energy, healthcare, and digital economy.
- 4. India and China should manage differences and disputes through dialogue and diplomacy to maintain a stable economic relationship.

By embracing a future-oriented approach focused on economic cooperation, India and China can unlock new avenues for growth and prosperity for their people. A strong economic partnership between the two Asian giants can also contribute to regional stability and global economic resilience.

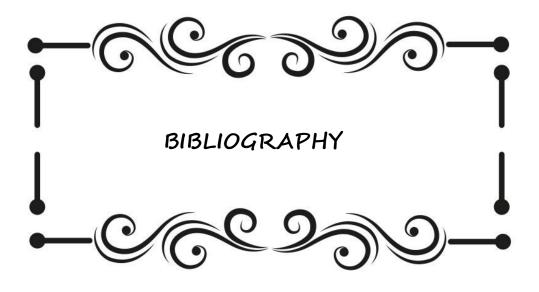
6.4 Limitations of The Study and Future Research Scope

This study provides valuable insights but also has few limitations. First, it relies on secondary data from 2001 to 2023, which may not completely capture real-time developments in trade. Additionally, while the study employs various statistical techniques, the gravity model's focus on GDP and geographic factors might overlook other critical elements like political relations, regulatory frameworks, or non-tariff barriers that could impact trade flows.

The analysis at the HS 2-Digit and HS 6-Digit code levels is insightful but does not account for rapidly changing global supply chains, market demands, or emerging technologies that could influence future trade patterns.

For future research, there is scope to expand the dataset to include more recent developments and to integrate a broader range of economic and non-economic factors influencing trade between India and China. A more comprehensive industry specific survey of Indian exporters and importers could provide deeper insights into trade

barriers and strategies for overcoming them. Moreover, exploring trade dynamics in specific sectors, such as technology or renewable energy, where India could enhance competitiveness with China, would be beneficial. Additionally, the impact of recent bilateral trade agreements, trade wars, and regional cooperation frameworks could be further examined to provide a more holistic understanding of the evolving trade dynamics between India and China.



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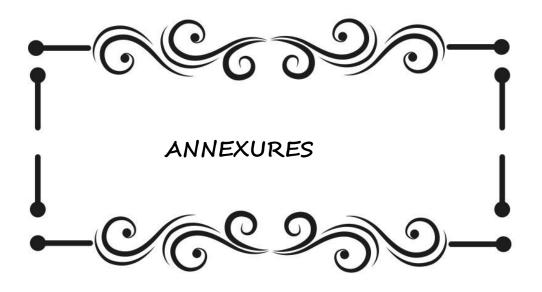
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ANNEXURE-I

SURVEY QUESTIONNAIRE

Respected Sir/Madam

I, Alka Sandhu, am a research scholar in Department of Economics, Lovely Professional University, Phagwara (Punjab). The title of my research is "India's trade ties with China since 2001" under the guidance of Dr. Sakshi, Assistant Professor, Lovely Professional University, Phagwara (Punjab).

The aim of my study is to study the issues and challenges faced by Indian stakeholders while trading with China. Your response will be used with ethical considerations. The data will be kept confidential and used strictly for research purposes. I request you to kindly spend a few minutes of your precious time to fill out this questionnaire.

Thanks and Regards

Alka Sandhu

Research Scholar

ID-11916817

Lovely Professional University, Phagwara

SECTION A: PROFILE OF THE RESPONDENT

1.

1. NAME OF THE COMPANY	
2. ADDRESS	
3. CONTACT NUMBER	
4. Email ADDRESS	

- 2. DO YOU TRADE WITH CHINA?
 - 1. YES
 - 2. NO
- 3. WHAT IS THE NATURE OF YOUR BUSINESS? (YOU MAY TICK MORE THAN ONE OPTION):
 - 1. IMPORTER
 - 2. EXPORTER
 - 3. IMPORTER AND EXPORTER

- 4. WHAT IS THE SIZE OF YOUR ENTERPRISE? (IN TERMS OF ANNUAL TURNOVER)
 - 1. MICRO ENTERPRISE (up to Rs 5 Cr)
 - 2. SMALL ENTERPRISE (up to Rs 50 Cr)
 - 3. MEDIUM ENTERPRISE (up to Rs 250 Cr)
 - 4. LARGE ENTERPRISE (more than Rs 250 Cr)

SECTION B: EXPORTS PERFORMANCE

- 5. STATE THE PRODUCTS EXPORTED TO CHINA:
 - 1. LIVE ANIMALS AND ANIMAL PRODUCTS
 - 2. VEGETABLE PRODUCTS
 - 3. FOOD STUFFS
 - 4. MINERAL PRODUCTS
 - 5. CHEMICAL AND ALLIED INDUSTRIES PRODUCTS
 - 6. PLASTICS AND RUBBER PRODUCTS
 - 7. RAW HIDES, SKINS, LEATHER, FUR PRODUCTS
 - 8. WOOD AND WOOD PRODUCTS
 - 9. TEXTILES
 - 10. FOOTWEAR, HEADGEAR PRODUCTS
 - 11. STONE/GLASS PRODUCTS
 - 12. METALS
 - 13. MACHINERY/ ELECTRICAL PRODUCTS
 - 14. TRANSPORTATION
 - 15. MISCELLANEOUS

SECTION C: MAJOR DETERMINANTS IMPACTING EXPORTS PERFORMANCE

6. DO YOU THINK THE FOLLOWING CHARATERISTICS OF RAW MATERIALS AFFECT EXPORTS? TICK MARK () IN THE RELEVANT COLUMN:

RAW MATERIAL	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
CHARACTERISTICS	AGREE				DISAGREE
1. APPROPRIATE					
QUALITY OF RAW					
MATERIALS					
2. COST OF RAW					
MATERIALS					
3. AVAILABILITY					
OF RAW					
MATERIALS					
4. PRICE					
FLUCTUATIONS					
5. TAX/DUTY ON					
IMPORT OF RAW					
MATERIALS					

6. ANY OTHER (SPECIFY)-

7. DO YOU THINK THAT THE FOLLOWING ITEMS REGARDING INFRASTRUCTURE FACILITIES AFFECT EXPORTS? TICK MARK () IN THE RELEVANT COLUMN:

INFRASTRUCTURE	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
FACILITIES	AGREE				DISAGREE
1. AVAILABILITY OF					
QUALITY TESTING					
AND CERTIFICATION					
LABS					
2. EXPORTS					
WAREHOUSING AND					
PACKAGING					
FACILITIES					
3. ROAD					
CONNECTIVITY TO					
PORTS, RAILWAYS,					
AIRPORTS					
4. INFRASTRUCTURE					
AVAILABLE AT					
PORTS, RAILWAYS,					
AIRPORTS (CARGO					
HANDLING,					
STORAGE ETC.)					
5. ANY OTHER (SPECIF	Y)-				
	•				

8. DO YOU AGREE THAT THE FOLLOWING FACTORS AFFECT COMPETITIVENESS OF INDIAN EXPORTS? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

EXPORT	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
COMPETITIVENESS	AGREE				DISAGREE
1. LABOUR COST					
2. LABOUR					
PRODUCTIVITY					
THODGETTYTT					
3. SKILLED					
WORKFORCE					
World Orion					
4. LEVEL OF					
TECHNOLOGY					
(LOW, MEDIUM,					
HIGH)					

5. COST OF CREDIT						
6. TRANSPORTATION						
COST						
6. ANY OTHER (SPECIFY)-						

9. DO YOU AGREE THAT THE FOLLOWING FINANCIAL ASSISTANCE IS PROVIDED TO INDIAN EXPORTS IN ORDER TO BOOST EXPORTS? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

	()						
FINANCIAL	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY		
ASSISTANCE	AGREE				DISAGREE		
1. SUBSIDISED							
LOANS							
2. FASTER							
PROCESSING OF							
LOAN							
APPLICATIONS							
3. DUTY FREE							
IMPORT OF							
INPUTS							
4. CREDIT							
FACILITY							
5. ANY OTHER (SP	5. ANY OTHER (SPECIFY)-						
	,						

10. DO YOU AGREE THAT THE FOLLOWING FACTORS AFFECT DEMAND FOR INDIAN PRODUCTS IN CHINESE MARKET? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

ITEMS	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
	AGREE				DISAGREE
1. PRICE OF THE					
PRODUCT					
2. QUALITY OF					
THE PRODUCT					
3. BRAND NAME					
OR COMPANY'S					
IMAGE					
1	1		1	I	ı

4. DELIVERY SYSTEM OF THE PRODUCT					
5. DESIGN AND PACKAGING					
6. TECHNOLOGICAL CAPABILITY					
7. ANY OTHER (SPECIFY)-					

11. DO YOU AGREE THAT THE FOLLOWING EXTERNAL CONSTRAINTS AFFECT INDIAN EXPORTS? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

EXTERNAL CONSTRAINTS	STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE	STRONGLY DISAGREE
CONSTRAINTS	AGREE				DISAGREE
1. TARIFF					
BARRIERS					
2. NON TARIFF					
BARRIERS					
3. COMPETITION					
FROM OTHER					
COUNTRIES					
4.					
FLUCTUATIONS					
IN EXCHANGE					
RATE					
5. POLITICAL					
UNCERTAINTY					
DUE TO BORDER					
DISPUTES					
6. ANY OTHER (SPI	ECIFY)-	•			

12. HOW DO YOU FIND THE FOLLOWING EXPORT PROMOTION SCHEME(S) HELPING INDIAN EXPORTS? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

EXPORT	EXTREMELY	VERY	SOMEWHAT	SLIGHTLY	NOT AT
PROMOTION	HELPFUL	HELPFUL	HELPFUL	HELPFUL	ALL
SCHEMES					HELPFUL
1. PRODUCTION					
LINKED					
INCENTIVE (PLI)					
SCHEME					

		,					
2. STAR EXPORT							
HOUSE/STATUS							
HOLDER							
CERTIFICATION							
3. MARKET							
ACCESS							
INITIATIVE							
(MAI) SCHEME							
4. MARKET							
DEVELOPMET							
ASSISTANCE							
(MDA)							
5. ZERO DUTY							
EXPORT							
PROMOTION							
CAPITAL GOODS							
(EPCG) SCHEME							
6. POST EXPORT							
EPCG DUTY							
CREDIT SCRIP							
SCHEME							
7. EXPORT DUTY							
DRAWBACK FOR							
CUSTOMS,							
CENTRAL							
EXCISE AND							
SERVICE TAX							
8. DUTY FREE							
IMPORT							
AUTHORISATION							
(DFIA) SCHEME							
9. ADVANCE							
AUTHORISATION							
SCHEME (AAS)							
10. ANY OTHER (SI	PECIFY)-						

13. HOW DO YOU FIND THE FOLLOWING BENEFIT(S) EXTENDED BY EXPORT PROMOTION SCHEME(S) FOR GROWTH OF EXPORTS? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

EXPORT PROMOTION	EXTREMELY	VERY	SOMEWHAT	SLIGHTLY	NOT AT
SCHEME(S) BENEFIT(S)	HELPFUL	HELPFUL	HELPFUL	HELPFUL	ALL
					HELPFUL
1. REDUCTION IN					
COST OF					
PRODUCTION					

2. CONTRIBUTION TO			
OVERALL PROFIT			
3. INCREASE IN			
EXPORT SALES			
VOLUME			
4. INCREASE IN			
MARKET SHARE			
5. FINANCIAL			
ASSISTANCE			
6. INCREASE IN			
PRODUCT QUALITY			
7. COMPETITIVE			
ADVANTAGE IN			
EXPORT MARKET			
8. ANY OTHER (SPECIFY	Y)-		

- 14. TO WHAT EXTENT ARE THE EXPORT ASSISTANCE PROGRAMMES EASY TO ACCESS?
 - 1. VERY EASY
 - 2. EASY
 - 3. NEUTRAL
 - 4. DIFFICULT
 - 5. VERY DIFFICULT

SECTION D: IMPORTS PERFORMANCE

- 15. STATE THE PRODUCTS IMPORTED FROM CHINA:
 - 1. LIVE ANIMALS AND ANIMAL PRODUCTS
 - 2. VEGETABLE PRODUCTS
 - 3. FOOD STUFFS
 - 4. MINERAL PRODUCTS
 - 5. CHEMICAL AND ALLIED INDUSTRIES PRODUCTS
 - 6. PLASTICS AND RUBBER PRODUCTS
 - 7. RAW HIDES, SKINS, LEATHER, FUR PRODUCTS
 - 8. WOOD AND WOOD PRODUCTS
 - 9. TEXTILES
 - 10. FOOTWEAR, HEADGEAR PRODUCTS
 - 11. STONE/GLASS PRODUCTS
 - 12. METALS
 - 13. MACHINERY/ ELECTRICAL PRODUCTS
 - 14. TRANSPORTATION
 - 15. MISCELLANEOUS
- 16. SELECT THE USE(S) OF THE PRODUCT(S) IMPORTED FROM CHINA:
 - 1. RAW MATERIAL

- 2. INTERMEDIATE GOOD
- 3. FINAL GOOD (FOR DOMESTIC SUPPLY)
- 4. EXPORTS
- 17. ARE THE PRODUCTS IMPORTED FROM CHINA ALSO SUPPLIED BY DOMESTIC SUPPLIERS?
 - 1. YES
 - 2. NO
- 18. IF THE PRODUCTS IMPORTED FROM CHINA ARE ALSO SUPPLIED BY DOMESTIC SUPPLIERS THEN SELECT AND TICK MARK () THE REASONS FOR IMPORTING FROM CHINA:

,					
ITEMS	STRONGLY	AGREE	NEUTRAL	DIS-	STRONGLY
	AGREE			AGREE	DISAGREE
1. PRICE COST					
MARGIN					
2. LIMITED					
AVAILABILITY					
OF DESIRED					
QUALITY					
PRODUCTS					
PRODUCED					
LOCAL					
3.					
SPECIFICATION					
OF PRODUCT					
4.					
TRANSACTION					
COSTS					
5. DELIVERY					
ISSUES					
6. REGULATORY					
PROCEDURES					
7. OTHERS (SPECIF	FY)-				

- 19. WHAT IS THE IMPACT ON THE SALES OF YOUR ENTERPRISE AFTER INCREASED IMPORTS FROM CHINA?
 - 1. INCREASE
 - 2. DECREASE
 - 3. NO CHANGE
- 20. WHAT IS THE IMPACT ON THE EXPORTS OF YOUR ENTERPRISE AFTER INCREASED IMPORTS FROM CHINA?
 - 1. INCREASE
 - 2. DECREASE

- 3. NO CHANGE
- 4. DOES NOT APPLY
- 21. WHAT IS THE IMPACT ON THE COMMODITIES IMPORTED FROM OTHER COUNTRIES AFTER INCREASED IMPORTS FROM CHINA?
 - 1. INCREASE
 - 2. DECREASE
 - 3. NO CHANGE
- 22. DO YOU INTEND TO REDUCE DEPENDENCE ON CHINA FOR IMPORTS?
 - 1. YES
 - 2. NO
 - 3. MAYBE

IF	YES.	STATE	THE REA	ASON(S)	FOR	REDUCING	IMP	ORTS	FROM	CHINA:

23.	STATE THE COUNTRY, OTHER THAN CHINA, YOU INTEND TO ENGAGE
	WITH / ARE ENGAGING WITH TO SOURCE IMPORTS:
Γ	
L	

SECTION E: OVERVIEW OF TRADE WITH CHINA

- 24. IS YOUR EXPORT VOLUME SUSTAINABLE IN FUTURE?
 - 1. YES
 - 2. NO
 - 3. MAYBE
- 25. DO YOU AGREE THAT THE FOLLOWING EXPORT MARKET ENVIRONMENT (CHINA) FACTORS AFFECT INDIA'S EXPORTS TO CHINA? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

EXPORT MARKET	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
ENVIRONMENT	AGREE				DISAGREE
FACTORS					
1. UNSTABLE					
PRODUCT					
DEMAND					
2. DIFFICULTY IN					
MAKING					
CONTACTS					
3. LACK OF					
PUBLICITY					

4. PAPERWORK			
INVOLVED IN			
PROCESSING AN			
EXPORT SALE			
5. INADEQUATE			
LOGISTICS			
SUPPORT			
SYSTEMS			
6. POLITICAL			
PROBLEMS			
7. COMPETITION			
FROM DOMESTIC			
PRODUCERS			
8. HIGH IMPORT			
DUTIES			
9. ANY OTHER			
(SPECIFY)-			

26. DO YOU AGREE WITH THE FOLLOWING ITEMS REGARDING CHINESE MARKET? SELECT AND TICK MARK () THE ITEM(S) SHOWING YOUR OVERALL IMPRESSION OF CHINESE MARKET:

IMPRESSION OF	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
CHINESE MARKET	AGREE				DISAGREE
1. EASE OF					
MARKET ACCESS					
2. LACK OF					
MARKET ACCESS					
3.					
DISCRIMINATORY					
RESTRICTIONS					
4. UNFAIR TRADE					
PRACTICES					
5. LANGUAGE					
BARRIERS					
6. CULTURAL					
DIFFERENCES					
7. ANY OTHER (SPE	CIFY)-				

27. DO YOU AGREE THAT THE FOLLOWING ISSUE(S) NEED TO BE ADDRESSED IN ORDER TO FACILITATE INDIAN EXPORT PERFORMANCE IN CHINESE MARKET? SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

ISSUES TO	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
FACILITATE	AGREE				DISAGREE
INDIAN EXPORTS					
1. RESOLUTION					
OF BORDER					
DISPUTES					
2.TECHNICAL					
STANDARDS AND					
QUALIFICATION					
NORMS					
3. REGISTRATION/					
LICENSING					
PROCESS					
4. LABOUR					
NORMS					
5. MARKET					
ACCESS					
6. SUPPLY CHAIN					
MANAGEMENT					
7. SECTOR/					
INDUSTRY					
SPECIFIC					
GOVERNMENT					
SUPPORT					
8. INVESTMENT					
IN R&D					
	9. AN	Y OTHER	(SPECIFY)-		

28. SELECT THE REMEDIAL MEASURES WHICH YOU AGREE ARE REQUIRED TO BOOST INDIAN EXPORTS AND REDUCE IMPORTS. SELECT AND TICK MARK () IN THE RELEVANT COLUMN:

REMEDIAL	STRONGLY	AGREE	NEUTRAL	DISAGREE	STRONGLY
MEASURES	AGREE				DISAGREE
1. DEVELOP LOCAL					
MANUFACTURING					
CAPABILITIES					
2. DIVERSIFY					
IMPORT OPTIONS					
3. LARGE SCALE					
MANUFACTURING					
4. DIVERT TRADE					
TOWARDS MORE					
FRIENDLY					
COUNTRIES					

5. GOVERNMENT			
SUPPORT			
6. BOOSTING			
MANUFACTURING			
AT COMPETITIVE			
COST			
7. FOCUS ON			
ENHANCING			
COMPETITIVENESS			
OF ENTERPRISES			
8. ANY OTHER (SPECIF	FY)-		

ANNEXURE-II LIST PUBLICATIONS

S. No.	Article	Article Title	Authors	Status	Indexation	Name of the	SCIMAGO
	Type					Journal	rank
1	Research	A Comparative	Alka	Published	SCOPUS	International	0.102
	Paper	Study on	Sandhu			Research Journal	
		Economic	and Dr.			of	
		Growth and	Sakshi			Multidisciplinary	
		Bilateral				Scope	
		Trade					
		Dynamics					
		between India					
		and China					
2	Research	Trends and	Alka	Published	UGC-CARE	Shodh Sanchar	
	Paper	Patterns of	Sandhu			Bulletin	
		India's trade	and				
		with China	Gurpreet				
			Kaur				
3	Research	India's Trade	Alka	Published		European Chemical	
	Paper	Potential with	Sandhu			Bulletin	
		China:	and				
		Gravity	Harpreet				
		Model	Kaur				
		Approach					
4	Book	India-China	Alka	Published		Contemporary	
	Chapter	Economic	Sandhu			Issues on	
		Performance	and			Business,	
			Gurpreet			Economics and	
			Kaur			Management	
5	Research	Analyzing	Alka	Published		African Journal of	
	Paper	India-China	Sandhu			Biomedical	
		Trade Growth	and Dr.			Research	
		and Future	Sakshi				
		Outlook					

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A Comparative Study on Economic Growth and Bilateral Trade Dynamics between India and China

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Abstract

This research paper attempts at analyzing bilateral trade and economic growth of India and China and explore future implications of their trade and economic cooperation. This paper examines the changes and major movements in the exports, imports, trade openness, and terms of trade and gross domestic product of both countries. Appropriate statistical methods are applied to obtain results which reveal that exports and imports of China are higher than India's which has resulted in much better integration with the world economy for China as compared to India. The lack of significant difference in TOT implies a relatively balanced economic relationship. No significant difference in trade openness suggests that both countries are equally open to international trade. Significant difference is observed in the GDP and GDP growth over the time period under study. The large size of the economy and rapid growth shows that China has significantly scaled up its economy. Regarding bilateral trade, there has been substantial increase in bilateral exports and imports but a statistically significant difference is observed in their performance. India's imports from China outperformed the exports from the country to China. This has resulted in trade imbalance and it is skewed in favor of China. Policy makers need to focus on other areas to improve bilateral trade such as infrastructure, reduction in barriers to trade, technology exchange, innovation, sustainable trade practices and diversification in types of goods traded

Keywords: Bilateral Trade, Comparative Analysis, India-China, Trade Performance.

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SHODH SANCHAR BULLETIN

Vol. 10, Issue 40, October-December 2020 Page Nos. 61-67

AN INTERNATIONAL BILINGUAL PEER REVIEWED REFEREED RESEARCH JOURNAL

TRENDS AND PATTERNS OF INDIA'S TRADE WITH CHINA

☐ Alka Sandhu* Dr. Gurpreet Kaur**

ABSTRACT

This study makes an effort to analyze India's trade relations with China from 2001 onwards using the measures of compound annual growth rate, average annual growth rate and long term trend analysis. Time period taken is from year 2001 to 2018. Our results show that India's exports and imports have increased in the concerned time period but the imports weigh more than the exports from India to China. The total volume of trade has increased but the trade balance is highly unfavorable for India. Regarding the product group analysis, India exports basically primary products and raw materials but imports mainly capital intensive products. In the long run this arrangement is not beneficial for India.

Keywords: Trade, India-China, Trade Balance, CAGR, Import, Export



India's Trade Potential with China: A Gravity Model Approach

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Abstract

The objective of the study is tofind out the potential of trade for India with its neighbor China by using gravity model analysis in a time series data set that covers the time period from 2001 to 2022. The results of OLS and GLS indicate that India's bilateral trade with China is positively impacted by GDP, PCGDP, POP of India whereas it is negatively affected by relative factor endowment and distance. The study revealed that bilateral trade is positively affected by common border, trade agreement (PTA) and common language which proves that language barrier does not impede trade between both nations. The study finds that there exists trade potential for India with China.

JEL Codes: F13, F14

INDIA- CHINA ECONOMIC PERFORMANCE

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ABSTRACT

India and China are world's two largest and dynamic economies which have emerged as leaders in global economy. In this chapter we provide a background of India China economic ties. Our main focus is on their bilateral trade from 2001 onwards when China joined World Trade Organization (WTO) as India was already its member since 1995. The relationship between India and China is multidimensional and characterized by various factors such as border conflicts, water disputes, trade issues etc. There is an immense potential in their bilateral relations which can add to the peace and stability in the region and reinforce each other's economic growth. This trade relation is skewed in favor of China as is evident from huge trade deficit accrued by India.

Key words- India China trade, exports, imports, policy implication



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Analyzing India- China Trade Growth And Future Outlook

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Abstract

India-China bilateral trade has increased rapidly in recent years especially after China became a member of World Trade Organization in 2001 and in 2009 it emerged as the largest trade partner of India. The objective of the paper is to examine and compare trade between two economies and to draw implications for trade and economic cooperation between them in the future. This paper investigates the growth rate, trade intensity, trade complementarity and growth potential between two nations using the gravity approach. The results show that the volume of India's bilateral trade with China has increased over the time period under study but India's imports weigh more than its exports to China. India's trade intensity with China has been found less than expected given the partner country's relevance in world trade even though India enjoys higher trade complementarity with China over the time period under study. The gravity model findings indicate that certain key factors such as GDP, per capita GDP, population, distance and common border, significantly influence trade flows between the India and China. Conversely, variables such as relative factor endowments and preferential trade agreements are found to be statistically insignificant, which suggests that these factors do not play as crucial a role in determining bilateral trade between India and China.

Keywords- India-China Trade, Trade Intensity, Trade Complementarity, Gravity Analysis

ANNEXURE III

LIST OF CONFERENCES















INTER-DISCIPLINARY APPROACHES TOWARDS SOCIO-ECONOMIC INCLUSIVENESS FOR SUSTAINABLE DEVELOPMENT (ICSISD-2022)

This is to certify that Ms./Mr./Dr./Prof	Alka Sandhu	from
Lovely Professional University		has presented a paper

titled INDIA'S EXPORT COMPETITIVENESS WITH CHINA

in the International E-Conference on Inter-Disciplinary Approaches towards Socio-Economic Inclusiveness for Sustainable Development (ICSISD-2022) organized by University School of Business, Chandigarh University, Mohali (India) during June 3-4, 2022.





DR. GAGANDEEP KAUR Conference Co-Convener



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Dr B R Ambedkar National Institute of Technology, Jalandhar, India **Department of Humanities and Management**

Certificate of Presentation

This is to certify that

ALKA SANDHU

has presented a paper entitled EXPORT COMPETITIVENESS: AN RCA ANALYSIS OF INDIA'S EXPORTS TO CHINA

At ICSSR Sponsored National Conference on Atmanirbhar Bharat: Building a Self-Reliant India (Prospects and Challenges Ahead) (BSRI-2022) organized by the Department of Humanities and Management, Dr B R Ambedkar National Institute of Technology Jalandhar-144011 (Punjab), India on May 25-26, 2022.

onia Chawla (Conference Chair)

Prof J N Chakraborty (Dean, R&C)



