IMPACT OF BILATERAL TRADE AGREEMENTS ON INDIA'S ECONOMIC GROWTH: A PRE-POST ANALYSIS

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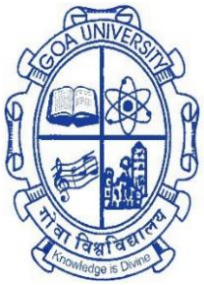

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Date: APRIL 2024

DECLARATION BY STUDENT

I hereby declare that the data presented in this Dissertation report entitled, "Impact of bilateral trade agreements on India's economic growth: A pre-post analysis" is based on the results of investigations carried out by me in the Master of Commerce programme at Goa Business School, Goa University under the Supervision of Prof. Y.V. Reddy and the same has not been submitted elsewhere for the award of degree or diploma by me. Further, I understand that Goa University or its authorities will be not be responsible for the correctness of observations / experimental or other findings given the dissertation.

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COMPLETION CERTIFICATE

This is to certify that the dissertation report "Impact of bilateral trade agreements on India's economic growth: A pre-post analysis" is a bonafide work carried out by Mr. Bhandare Anirudh Nitin under my supervision/mentorship in partial fulfilment of the requirements of for the award of the degree of M. Com in the Discipline of Commerce at the Goa Business School, Goa University.

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CONTENT

TABLES

FIGURES

Abstract

With the advancement of telecommunications and transportation, international trade is playing a major role in determining the value of a country and the relationships held between countries of the world. This study investigates the impact of international trade on the country's economic growth, narrowing it down to the precise impact of trade agreements entered into by that country. The study considers international trade in three areas: export of manufacturing products, export of non-manufacturing commodities, and import of capital goods. It is based on annual data from 1990 to 2021 collected by WITS and WDI. The study employs the Cobb Douglas production function, replacing productivity level as the amount of international trade of the country, resulting in economic development. An auto regressive distributed lag (ARDL) model is used to determine the model's long-run relationship as well as the short-run error correction rate. To further investigate the influence of bilateral agreements, the study used ordinary least squares (OLS) analysis by including a dummy variable. The results confirm the import-led growth and export-led growth hypotheses. The OLS results showed the trade agreement with Chile, South Korea, Malaysia and Thailand showed positive, whereas, the trade agreement with Afghanistan shows negative results.

Key-Words: International Trade, Bilateral Trade Agreements, GDP

CHAPTER 1: INTRODUCTION

India has always been concerned with its exports in the international market. It has been in a trade deficit, i.e., an excess of imports over exports since the time of its independence in 1947. Being a newly independent country that had been under the rule of another for over 200 years, it was bound to face a lot of challenges in the coming years. Furthermore, with the introduction of the New Economic Policy (NEP) in 1991, India was required to open up its borders for international trade by reducing its trade barriers.

India has been showing a growing trend in its exports. Historically India has always prioritized export of goods over the export of services. This cannot be seen reflected in the balance of payments which shows the true picture by considering net exports. India has a had a continuous negative net export with respect to goods, as India is still dependent on importing a lot of goods rather than be domestically self-sufficient. However, India has always shown a positive net export in services.

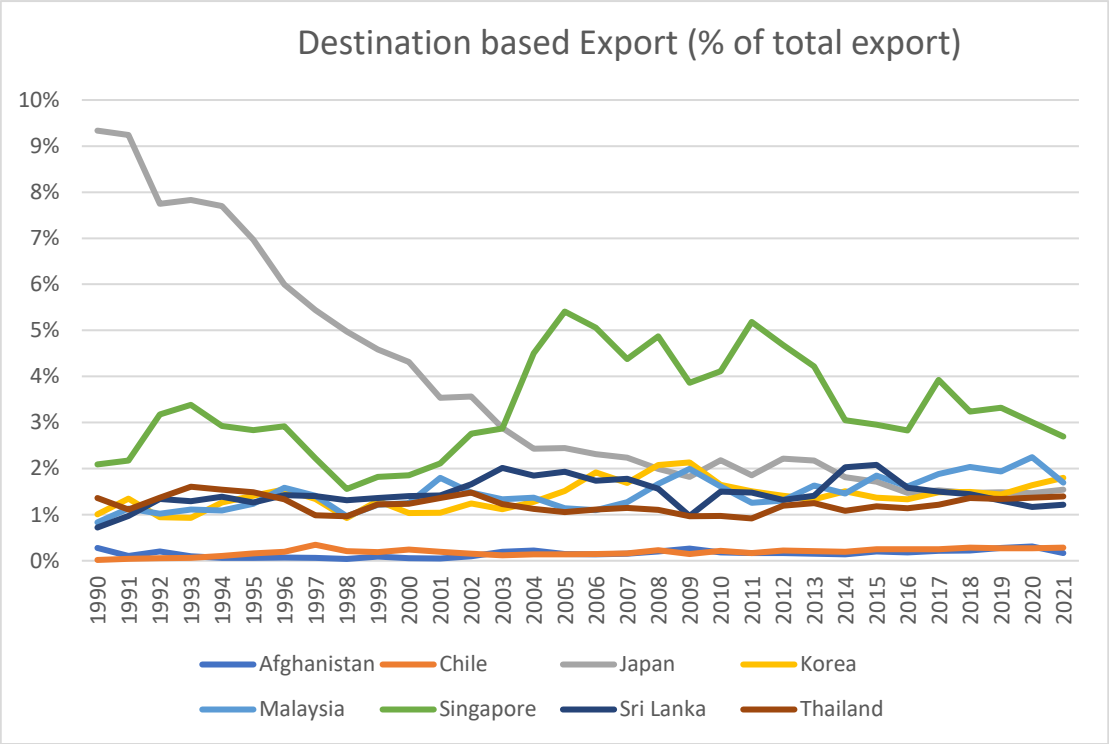
Recently however India has shown a huge success in its venture into service exports. Being termed as an international outsourcing hub, service exports play a major role in protecting India's forex reserves from the constant trade deficit from goods. It can be noticed that there has been a steady increase in the export of both goods and services, however, its percentage growth has reduced and has come to a steady pace, which can be attributed to its large numbers.

India has had a steady growth in the GDP, this can be seen with the absolute growth of GDP, with relative growth the GDP has decreased but still positive. The constantly evolving nature of international trade has resulted in an unstable and ever-changing trading relationship

between economies. For instance, the importing economy must alter its trade strategy and import pesticide products from other economies when an economy that exports pesticides faces economic sanctions and trade blockades. A shift in trade relations impacts the trade status and the economy's influence in the global trade network, which in turn directly alters the structure of the pesticide trade network (Xie & Wu, 2021).

Preferential trade agreements have become a major part in the workings of WTO. It is responsible for maintaining a record of each of the trade agreements entered into by all the countries in the world. As in 1990s WTO had recorded 22 Regional trade agreements which has now been increased to 361 RTAs (Jiang & Gao, 2023). Bilateral commerce, or the exchange of goods and services between two countries, has a significant impact on the global economic landscape. For a rapidly developing country like India, the influence of bilateral trade on economic growth is complex and dynamic. As India continues to integrate into the global economy, its trading agreements with other countries have a substantial impact on important economic indicators such as GDP growth, employment, and industrial development. Over the years, India has actively pursued bilateral trade agreements with other countries, each customized to meet distinct economic, political, and international goals. These agreements have had an extensive influence on India's economic growth, affecting industries such as manufacturing, services, agriculture, and technology. Understanding the implications of these agreements is critical for determining their overall impact on India's economic progress.

Fig 1.1 Destination Based export of countries entered into bilateral agreements with India



Source: Author's own compilation

In this chart we can see how there been a shift in the export destinations of India over the last 3 decades. In the 1st decade we can see a high demand for Indian products in the Japan markets, however slowing moving into the 3rd decade it is Singapore being the major importer of Indian products. The chart shows the percentage of exports, however when we consider absolute value of exports, we can see a rise in India's exports to all of the bilateral trade agreed countries.

Since getting a steady foothold both in domestic as well as international markets, with its strong domestic initiative such as "Make in India", India has achieved a considerably strong image in the global market, and is even able to create trade alliances with close regional neighbours. India has always believed in working together with its neighbours and growing and prospering together, one of the 1st signs of this concept can be seen with its trade agreement

with Sri Lanka w.e.f. 01/05/2000. Currently, India has bilateral trade agreements with 11 countries, is a part of 7 multilateral free trade agreements, and has more FTAs proposed and under negotiation.

1.1 Theoretical background

1.1.1 Mercantilism

Mercantilism was prevalent throughout the 16th century all the way till the 18th century. It was not discovered by a single individual rather the theory slowly developed over time by the contribution of multiple thinkers and policy makers. The theorist aimed to export more goods than they had to import in order to accumulate wealth, which in modern period would be called foreign exchange reserves. Smith (2010) suggest that governments should encourage exports and discourage imports through the use of subsidies and taxes respectively. The theory of Mercantilism believed in a zero-sum game as promoted the dominance of the most powerful economic country over others. It believed in selfish trade rather than enhancing world trade.

1.1.2 Absolute Advantage

In 1776 Adam Smith in his book “The Wealth of Nations” first introduced the theory of absolute advantage as a means to tackle the major drawback in mercantilism which was that it was impossible for nations to become rich simultaneously. Taking the example of 2 countries England and Portugal, dominating the European markets at the time, he showed how if country A could produce product X & product Y more efficiently than country B, it is more advantageous for country B to import the products rather than produce it domestically. He stated how rather than gold accumulation wealth accumulation actually refers to the goods and services available to the country citizens.

1.1.3 Comparative Advantage

The theory of absolute advantage had a major flaw, how does the importing country create wealth, this led to a new theory introduced by David Ricardo in his book "Principles of Political Economy and Taxation" in 1817. Ricardo suggested that rather than a single country focusing on producing each type of good it is better for each country to produce the product it has the highest efficiency in. Even if country A can produce both product X & product Y more efficiently than country B, the theory would suggest country A to produce product X and export it, while country B produces product Y and exports it to country A. The theory introduced the concept of opportunity cost.

1.1.4 Heckscher-Ohlin

Eli Heckscher and Bertil Ohlin further developed the theory of comparative advantage by introducing the problem of scarcity of resources into the theory. They focused of the various factors of production hence giving it the alternate name Factor Proportion theory. As per the Heckscher-Ohlin theory, nations will export commodities that heavily rely on their abundant production factors and import items that heavily rely on their scarce production elements. Stated differently, nations will focus on manufacturing and exporting products that heavily utilize their plentiful resources, while importing products that heavily utilize comparatively limited resources.

1.1.5 Country Similarity

Country similarity or Linder theory was proposed in the 1960s, it stated how similar countries were more likely to trade with each other as similar per capita income would result in similar buying behaviors and patterns. The theory is able to provide evidence as to the reason for intra-industry trade.

1.1.6 Product Life Cycle

A concept applied in economics and marketing to better understand the phases a product goes through is called the Product Life Cycle Theory. Raymond Vernon initially presented it in 1966. Products usually go through four stages, according to this theory: introduction, growth, maturity, and decline. Distinct marketing tactics, together with varying levels of sales, earnings, and client demand, define each stage. According to the Product Life Cycle Theory, patterns of international trade can be influenced by how products evolve through different stages. It illustrates how, as a product goes through its life cycle, it is manufactured and traded all over the world in addition to being created mostly in the innovative country.

Introduction Stage: During this phase, a new product is created and released onto the domestic market. Research and development for this stage usually start in the native country of the innovative firm. Demand for the product may be low at first, and production costs may be expensive because new ideas and investments in facilities are required. The production is mainly suitable only for the domestic market.

Growth Stage: A product reaches this stage when it becomes more widely accepted in the domestic market and as demand rises. As production techniques grow more effective and achieve economies of scale, the product might become more appealing for international trade during this phase. If domestic capacity isn't enough to meet demand, companies can start looking into exporting their goods to other adjacent countries.

Maturity Stage: During this phase, demand for the product reaches its pinnacle in both domestic and foreign markets. At this stage, the market is saturated and there is more rivalry, which could

cause profit margins to start declining. To preserve profits and compete in global markets, businesses may begin to think about offshore production to nations with cheaper labor costs.

Decline Stage: The product eventually enters the decline stage when demand begins to fall owing to shifting customer tastes, technical developments, or the appearance of replacement items. At this point, manufacturing may be moved fully to nations with the lowest prices, commonly through outsourcing or offshore. Companies may consider selling residual goods in overseas markets where demand may last longer than in their native market.

1.1.7 Global strategic rivalry

In recent years with the world becoming a single global market classical theories were no longer effective and there was a need to develop more modern theories to international trade. One such theory is the global strategic rivalry, which talks about the intense competition of firms across the globe. Globalization and the growing interdependence of the world economy inevitably led to global strategic rivalry. In order to remain competitive in this ever-changing market, businesses must constantly innovate and adapt, which breeds fierce competition as they compete for market share in international marketplaces.

1.1.8 Porter's national competitive advantage

This theory was developed and published by Michael Porter in 1990 in his book "The Competitive Advantage of Nations." The theory mainly focuses on 4 core components I.e. factor conditions, demand conditions, related and supporting industries & firm strategy, structure and rivalry, along with 2 sub factors I.e. government and chance. Through this theory policymakers, companies, and analysts can better understand the environment that promote industrial competitiveness, which analyzes these characteristics and offers insights into the

national sources of competitive advantage. It is crucial to take a comprehensive approach that takes into account all of the variables operating within the economic environment of a nation.

Competitive Advantage: According to the idea, a country's competitive advantage in certain sectors is determined by the interplay of four essential factors: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure, and competition. Nations with significant advantages in these sectors are more likely to excel at exporting goods and services connected to those industries.

Export Competitiveness: Understanding the variables that contribute to a country's competitive edge allows it to strategically focus on industries where it excels. For example, a nation with a large trained labor force and excellent technical infrastructure may concentrate on exporting high-tech items, using its factor circumstances and linked sectors to compete globally.

Policy Implications: Governments may utilize Porter's Diamond Theory to develop policies aimed at improving the competitiveness of vital industries. For example, they may invest in education and training programs to generate skilled workforce, give incentives for research and development to stimulate innovation, or provide supportive infrastructure to assist sector expansion.

Trade Strategies: Porter's Diamond Theory can help nations plan their trade policies. Countries might prioritize industries with a competitive edge in trade talks and accords, aiming to increase market access and enhance exports.

Global Value Chains: Understanding the elements that influence competitiveness might help countries position themselves within global value chains. Countries that specialize in certain stages of production where they have a comparative advantage can engage more effectively in international commerce and capture a higher percentage of value-added.

1.1.9 Total Factor Productivity

Existing general equilibrium theories of international trade have been developed without explicit treatment of the multinational corporation (Helpman, 1984). Total factor productivity theory considers the impact of all factor inputs and its productivity in order to achieve economic growth. The theory explains the simultaneous existence of intersectoral trade, intra-industry trade, and intrafirm trade.

Equation 1: Production Function

$$LNY = \beta_0 c_t + \beta_1 LMX_{it} + \beta_2 LPX_{it} + \beta_3 LCM_{it} + \beta_4 LL_t$$

1.2 Research gap:

According to the literature assessment, the relationship between aggregate export and GDP, while researched as a whole, has not been studied extensively with goods and services separately. The majority of research papers have focused on a single trade agreement or conducted a study of members vs. non-members in a multilateral trade agreement, however, no comparative analysis of India's numerous trade agreements has been conducted.

1.3 Research questions:

1) Does international trade boost GDP?

2) Does the introduction of bilateral trade agreements with the selected countries facilitate this growth even further?

1.4 Research Objective:

1) To study the impact of the international trade on GDP

2) To analyse the impact of bilateral trade agreements of the respective countries on India's GDP growth

1.5 Scope of Study

The scope of this research work is to investigate the impact of international trade on India's economic performance. Further the study also investigates the relationship between the introduction of bilateral trade agreement with India's economic growth by the introduction of a dummy variable. The study is mainly studied using the Cobb-Douglas Production function used by the theory of total factor productivity. Our research dives deeper into the study by examining whether the pattern remain true at the destination based international trade level whereas the existing literature only viewed the trade of the country as a whole. This study also sticks with the disaggregated exports approach i.e. export of manufactured and non-manufactured goods as compared to the total exports of merchandise. The study is limited to 8 countries of the 11 countries India currently has trade agreements, excluding Mauritius, United Arab Emirates and Australia. The study uses two main techniques which are Autoregressive Distributed Lags model and Ordinary Least Square model, along with other auxiliary techniques like Jaquer-Bera, Augmented Dickey Fuller test, Lagrange Multiplier test, Breusch Pagan Godfrey test, CUSUM and CUSUM Square test. This research work further adds to the current body of literature on GDP and Trade and enhance it further with the introduction of trade agreements.

CHAPTER 2: LITERATURE REVIEW

There have been countless studies conducted on the multivariate relationships between macro-economic factors over the last 2 centuries. This shows us that there is a high demand by the various stakeholders, i.e. government, businesses, investing institutions etc.

The inter-relationship among the macroeconomic variables of a country is being carried out at large by all countries of the world. There have been several studies conducted over the past centuries. Over the past decades, the growth of exports in India has been a lot faster than its GDP growth (Sharma, 2003). The large pool of skilled labor along with infrastructure development and sustained reforms in the financial sector, telecommunication, and software sectors have helped India achieve substantial growth in MSEs (Sahoo & Dash, 2014). It is important to note that, the share of services inputs bought to the total inputs bought by a manufacturing firm, is directly linked with the export potential of the firm (Pattnayak & Chadha, 2022). Love & Chandra (2004) brings forth the idea that investments exercises impact on growth and states that inputs of labour, capital or technology are seen more as a consequence than a cause of growth.

2.1 Impact of international trade on GDP

Studies show that GDP & export have a bi-directional relationship, this has been confirmed by (Hatemi-J, 2002; Love & Chandra, 2004). Both services and manufacturing product exports have a positive impact on non-export GDP, however, this is not true when dealing with primary products (Debnath et al., 2014; Hye, 2012; Kalaitzi & Chamberlain, 2020; Siliverstovs & Herzer, 2019). The greatest effect on the movements in the volume of GDP p/c is that of the products manufactured by the low and medium-low technology intensity

industries (Trlaković et al., 2018). As with all factors of massive scales, we need to account for volatility, when volatility is factored in, it removes any influence that import growth and trade-adjusted GDP growth have on each other but it does not diminish the two-way relationship between export growth and trade-adjusted GDP growth (Mahadevan & Suardi, 2010).

Studies show similar results even in the import led growth area, the study shows that there is a bidirectional relationship between the import and economic growth confirming the validity of ILG and GLI hypothesis (Hye, 2012). Another study shows, how policy makers of big economics need to analyse the shift of their import as it can affect the economic growth of that economy (Usman & Bashir, 2022).

The model taken for study is a widely adopted model known as the Cobb–Douglas production function Y (L, K) = ALxKy where Y is the total factor output, A is the factor productivity, L is the labour input and K is the capital input. As the study is related to international trade we can proxy A as the trade output of a country. Through this model we can see the export effects onto the economy. The growth of exports might increase productivity by offering sizable economies of scale (Helpman and Krugman, 1987). This argument suggest that it is not only export of products but also the import of capital goods which will lead to higher productivity levels, hence concludes that A = CMp Xq C where CM is the import of capital goods, X is the export of goods and C is any other complimentary factors (Debnath et al., 2014).

2.2 Impact of Trade agreements on GDP

International trade theory suggests that openness in trade regimes contributes positively to economic growth by facilitating the exploitation of economies of scale especially in small economies (Helpman, 1984). As the world is still divided by its national borders, we work around these restrictions through the help of trade agreements. From the economic growth perspective, countries would choose to cooperate and set up an FTA (Cui et al., 2019). An FTA among these three countries can optimize resource allocation, enhance competitiveness in advantaged industries, and enhance resistance to economic crises emerging outside the region (Siliverstovs & Herzer, 2006). It is better to use the restrictive index developed by the World Bank (Borchert et al., 2012), this is key to the study as shown by the interaction between international trade products and restrictions on services (Ariu et al., 2019). Further, the relationship is even better when the firm is a bi-exporter (Ariu et al., 2020). Expansion of exports leading to the economic growth process on Japan and the bidirectional causality also justifies the reduction of international trade barriers which is possible through trade agreements (Hatemi-J, 2002). FTAs not only help in boosting trade between members, but also strengthen extra trade with non-members (Jagdambe & Kannan, 2020). WTO, the major body responsible in handling all of the worlds trade agreements help facilitate trade suggesting developing countries are likely to experience a substantial increase in the number of products exported and of destination markets (Beverelli et al., 2015).

All FTAs are entered into for economic benefit is a largely false statement, favouritism and government need to play a major role in the proposal and acceptance of trade agreements (Bandara & Yu, 2012; Schiff, 1997). FTA though may boost overall economic growth if proper safety measurements are not put in place can have a drastic impact on the livelihood of the domestic farmers and producers in the event of a major surge in imports (Jagdambe & Kannan, 2020). Studies also show that when trade agreements are entered into with a condition of a

phase-in period the phase in period is not sufficient for protecting domestic industries from the foreign competition in the short run (The Effect of Phase-In Tariffs on Import Growth). Countries entered into bilateral trade agreement are highly volatility impact of unexpected depreciation and appreciations of either currency on international trade (Hayakawa et al., 2017). When the various worldwide FTAs were studied there was a shocking revelation which showed that discrepancies between the interested sectors also limit the chance of a free trade area embracing East Asia and also produced fewer gains than the risk and problems associated with them (Hyun & Hong, 2004).

CHAPTER 3:DATA SOURCES & ANALYSIS

3.1 Data Sources

Data used in this paper are annual figures based on calendar year, from 1990 up to 2021. The destination-based export and import data is collected from World Integrated Trade Solutions and GDP & labour formation is obtained from World Development Indicators database.

For the purpose of this study Capital formation is excluded when running the models due to its high correlation with import of capital goods.

Table 3.1 List of Variables and Prefixes

Variable	Description
X	Aggregate exports
MX	Export of Manufactured Goods
PX	Export of Non-Manufactured Goods
CM	Import of Capital Goods
NY	Real GDP Net Exports
L	Labour Formation

Prefix	Description
I_	India
A_	Afghanistan
C_	Chile
J_	Japan
K_	South Korea
M_	Malaysia
S_	Singapore
SL_	Sri Lanka
T_	Thailand
FTA_	Sum Aggregation of values for the 8 selected bilateral trade countries

Source: *Author's own compilation*

3.2 Descriptive Analysis

Table 3.2. Descriptive Statistics

	I_LNY	I_LL	I_LPX	I_LMX	I_LCM	FTA_LMX	FTA_LPX	FTA_LCM
Mean	27.347	19.834	24.053	24.922	23.911	22.603	22.430	22.509
Maximum	28.553	20.045	25.605	26.318	25.604	23.824	23.809	24.052
Minimum	26.234	19.495	22.347	23.251	21.759	21.142	20.971	20.425
Std. Dev.	0.781	0.169	1.194	1.027	1.260	0.923	1.086	1.147
Skewness	0.089	-0.645	-0.105	-0.167	-0.197	-0.088	-0.111	-0.327
Kurtosis	1.522	2.117	1.315	1.510	1.439	1.432	1.256	1.615
Jarque-Bera	2.957	3.261	3.843	3.110	3.457	3.318	4.121	3.127
Probability	0.228	0.196	0.146	0.211	0.178	0.190	0.127	0.209
No. of Obs	32	32	32	32	32	32	32	32

Source: Author's own compilation

Figure 3.2 gives results of various descriptive statistics of the different independent factors taken into consideration. There are a total of 32 observations, the means ranging for 19.83 to 27.34 for log of labour formation and log of real GDP net exports. Other than the dependent

variable we can observe negative skewness for all other variables however all being between +1 and -1 is a good sign for normality. Further using the Jarque- Bera test, the null hypothesis H_0 is there is normality, here we can see that in both the models the p values are not significant at 10%, indicating we fail to reject the null hypothesis for both models.

CHAPTER 4: EMPIRICAL ANALYSIS – I

The analysis is divided into 2 parts based on the varying models used for the 2 objectives. As the data dealt with is in time series, there is a need to determine the stationarity in the data it give accurate results.

4.1 Unit Root Test

The 1st step using time series data is to ascertain whether there is stationarity in the data. Here the Augmented Dickey Fuller test is used to determine the order of co integration of the various variables.

The results show that all variables are co integrated at *I*(0) or at *I*(1). Since the variable show no unit root at this stage, we can safely go for the next model I.e. the ARDL model

Table 4.1 Unit root test results

	I_	A_	C_	J_	K_	M_	S_	SL_	T_
LMX	-4.747	-7.270	-6.278	-5.150	-7.483	-6.111	-6.824	-5.178	-5.368
LPX	-4.054	-2.625	-4.874	-4.617	-4.001	-6.552	-4.478	-5.606	-7.021
LCM	-5.500	-5.214	-12.52	-6.556	-5.284	-6.47*	-7.268	-7.223	-4.681
LNY	-6.745	-	-	-	-	-	-	-	-
LL	-3.61*	-	-	-	-	-	-	-	-

Note: * indicates that the variable is co integrated at I(0), whereas a blank indicates that the variable is co integrated at I(1).

Source: Author's own compilation

The above table shows that all variable is co integrated at is level or at the 1st difference. Since no variable is stationary at 2nd difference or higher we are able to carry out the ARDL method.

4.2 Autoregressive Distributed Lag Model (ARDL)

The ARDL method estimates $(P+1)^k$ number of regressions in order to obtain the optimal lags for each variable, where p is the maximum number of lags to be used and k is the number of regressors in the equation. Since we are using annual data, two lags are selected as the maximum lag (p). The criterion used for selection is based on Akaikin information criterion (AIC).

Equation 2: ARDL based OLS model

$$\Delta LNY = \beta_0 + \beta_1 LNY_{t-1} + \beta_2 LMX_{t-1} + \beta_3 LPX_{t-1} + \beta_4 LCM_{t-1} + \beta_5 LL_{t-1} + \sum_{i=1}^{np} \beta_6 \Delta LNY_{t-1} + \sum_{i=0}^{p} \beta_7 \Delta LMX_{t-1} + \sum_{i=0}^{p} \beta_7 \Delta LMX_{t-1} + \sum_{i=0}^{p} \beta_8 \Delta LCM_{t-1} + \sum_{i=0}^{p} \beta_9 \Delta LL_{t-1} + u_i$$

In Equation 2, the term the summation signs represent the error correction dynamics while the other part corresponds to the long run relationship (Debnath et al., 2014). The null hypothesis in the Equation 2 is $\beta1 = \beta2 = \beta3 = \beta4 = \beta5 = 0$, indicates the non-existence of long run relationship among variables.

The paper selects a total of 8 models. Model 1 is considering the disaggregated exports, model 2 considers aggregated exports. Model 3 and model 4 are similar to model 1 and model 2 with the inclusion of capital formation.

Model a considers the trade of India to and from the world whereas model b considers trade of India to and from the selected trade agreement countries.

Table 4.2 Bound test for Cointegration

		10%		5%		1%	
F statistic		***I(0)***	***I(1)***	***I(0)***	***I(1)***	***I(0)***	***I(1)***
Model 1a	5.8890 (k=4)	2.2	3.09	2.56	3.49	3.29	4.37
Model 1b	8.8616 (k=4)	2.2	3.09	2.56	3.49	3.29	4.37
Model 2a	3.1320 (k=3)	2.72	3.77	3.23	4.35	4.29	5.61
Model 2b	2.6527 (k=3)	2.72	3.77	3.23	4.35	4.29	5.61
Model 3a	3.4918 (k=5)	2.26	3.35	2.62	3.79	3.41	4.68
Model 3b	5.6127 (k=5)	2.26	3.35	2.62	3.79	3.41	4.68
Model 4a	1.7244 (k=4)	2.45	3.52	2.86	4.01	3.74	5.06
Model 4b	1.4357 (k=4)	2.45	3.52	2.86	4.01	3.74	5.06

Source: Author's own compilation

Table 4.2 shows F statistic value for model 1a is 5.8890 which is higher than the critical value at 5% significance at *I(1)* indicating the existence of long run form. A similar result can also be derived for model 1b whose F statistic value is even greater than the model 1a. Model 2a and model 2b fall under the criterion set by *I*(0) at 5% indicating the presence of no long run stating the model is only effective in the short run. Model 3b shows indication that there could be long run effect in this model however model 3a lies within the bounds of *I*(0) and *I*(1) which leaves us with inconclusive results. Similar to model 2, model 4a and model 4b and fall short of the *I*(0) criterion stating only short run effect. For the study model 1a and 1b are selected as they have the best result.

Table 4.3 Long-run coefficients estimating result

Dependent Variable: LNY		
Variable	**Model 1a (1, 0, 1, 2, 2)**	**Model 1b (2, 2, 1, 0, 0)**
LMX	0.63 (1.99)*	0.60 (2.86)***
LPX	-0.62 (-5.76)***	-0.32 (-2.13)**
LCM	0.76 (3.98)***	0.75 (3.35)***
LL	-0.82 (-1.64)	-1.57 (-1.79)*
Constant	25.10 (3.44)***	35.51 (2.41)**

Notes: *, **, *** indicate the significance level at 10%, 5% & 1%. Model 1 Indicates export and imports for the whole of India, whereas model 2 only use export and import data of the trade agreement countries.

Source: Author's own compilation

Table 4.3 shows us that in model 1a, other than labour formation all factors are significant. Export of manufacturing goods play a significant role in the promotion of GDP net export where a change in 1% of export of manufacturing goods will lead to a growth in the dependent variable by 0.63%. similarly, the import of capital goods is leading to a change in the dependent variable by 0.76% for every 1% change in itself. Export of non-manufacturing goods however have a negative impact on the dependent variable affecting it by 0.62% forever 1% change.

In model 1b we can see similar impacts as model 1a showing that the theory works when trade figures are taken as a whole as well as in a part. Export of manufacturing goods play a significant role in the promotion of GDP net export where a change in 1% of export of manufacturing goods will lead to a growth in the dependent variable by 0.63%. similarly, the import of capital goods is leading to a change in the dependent variable by 0.76% for every 1% change in itself. Export of non-manufacturing goods however have a negative impact on the dependent variable affecting it by 0.62% forever 1% change. Further in this model we can see

the labour formation also has a significant negative impact on GDP net export. In model 1b, the bilateral trade results fall short of the total export of non-manufacturing goods, we can see a significance in the labour formation unlike in model 1a.

Table 4.4 Short-run coefficients estimating result

Dependent Variable: D (LNY)		
Variable	**Model 1a (1, 0, 1, 2, 2)**	**Model 1b (2, 2, 1, 0, 0)**
D (LNY (-1))		-.038 (-3.03)***
D (LMX)		-0.00 (-0.03)
D (LMX (-1))		-0.29 (3.67)***
D (LPX)	-0.23 (-2.93)***	0.03 (0.52)
D (LCM)	0.02 (0.23)	
D (LCM (-1))	-0.289 (-3.69)***	
D (LL)	-2.01 (-2.24)**	
D (LL (-1))	-3.15 (-3.90)***	
ECM (-1)	-0.75 (-6.68)***	-0.47 (-8.15)***

Source: Author's own compilation

Table 4.4 shows short run coefficient describes how the variables can affect GDP growth in the short run. In model 1a we can see the impact of export of non-manufacturing goods, 1st lag of capital imports and labour both at level and at 1st lag having significant impact on the dependent variable. Of these the most crucial to notice is the impact of labour where at both at level and 1st lag it has a correction of -2.01 and -3.15 respectively significantly affecting GDP growth. The ECM term or the error correction model term tells us the overall impact of the short run on the long run effect, here the lag value of the ECM term is negatively affecting d(GDP) by 0.75%.

In model 1b the focus on the trade can be seen as it is the lagged value of the dependent variable and the lagged value of export of manufacturing goods that have an impact on GDP in the short run. The prior has an impact of -0.38 while the latter has an impact of -0.29. the lag of ECM however is accounting for 0.47% which will have a long-term benefit instead.

Table 4.5 Normality test

Series: Residuals		
Sample: 1992-2021		
Observations: 30		
	Model 1a	**Model 1b**
Mean	0.0000	0.0000
Median	0.0003	0.0059
Maximum	0.1362	0.1006
Minimum	-0.1199	-0.1561
Std. Dev.	0.0495	0.0513
Skewness	-0.1129	-0.4498
Kurtosis	4.6027	4.5918
Jarque-Bera	3.2745	4.1787
Probability	0.1945	0.1238

Source: Author's own compilation

The null hypothesis for the normality test is H_0 is there is normality, here we can see that in both the models the p values are not significant at 10%, indicating we fail to reject the null hypothesis for both models. Therefore, it can be said the residuals for both the models are normally distributed.

Table 4.6 LM test results

Breusch-Godfrey Serial Correlation LM Test		
	Model 1a	**Model 1b**
F-statistic	4.889	0.043
Obs*R-squared	10.954	0.142
Prob. F (2,17)	0.021	0.958
Prob. Chi-Square (2)	0.004	0.932
Variable	**Coefficient**	**Coefficient**
RESID (-1)	-0.463	-0.003
RESID (-2)	-0.615	-0.078

Source: Author's own compilation

The null hypothesis for the LM test is H_0, indicating that there is no unit root. The p-value for *Model 1a* is 0.0042, which is significant at 1%, indicating that we reject the null hypothesis. *Model 1b*, on the other hand, has a p-value of 0.9315, indicating that we failed to reject the null hypothesis. Given the two outcomes, we may infer that *Model 1a* is unsuitable for evaluation as there is a high degree of autocorrelation, which leads to spurious results. However, *Model 1b* is free from any autocorrelation.

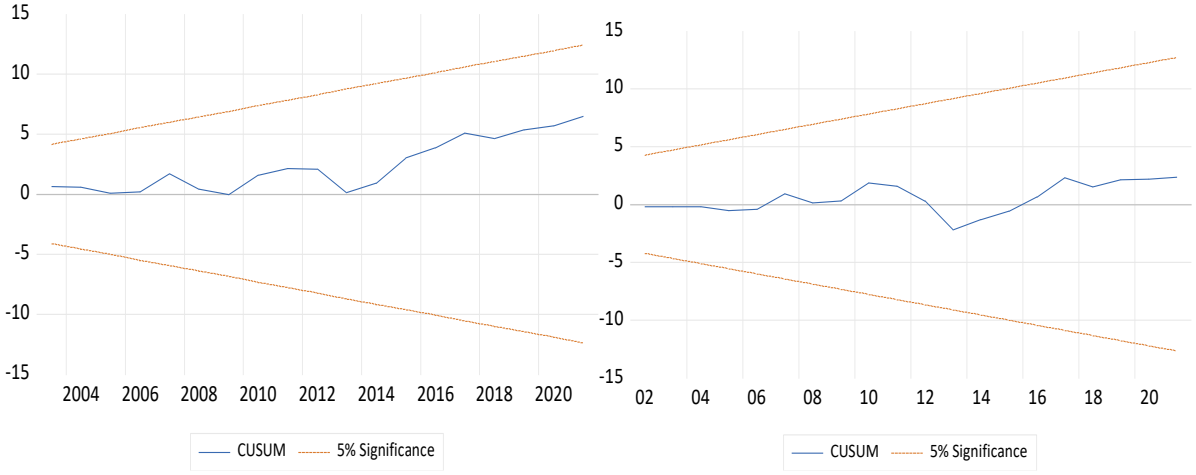
Table 4.7 Heteroskedasticity test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
	Model 1a		**Model 1b**
F-statistic	1.445	**F-statistic**	1.821
Obs*R-squared	12.962	**Obs*R-squared**	13.510
Scaled explained SS	9.365	**Scaled explained SS**	10.783
Prob. F (10,19)	0.235	**Prob. F (9,20)**	0.127
Prob. Chi-Square (10)	0.226	**Prob. Chi-Square (9)**	0.141
Prob. Chi-Square (10)	0.498	**Prob. Chi-Square (9)**	0.291

Source: Author's own compilation

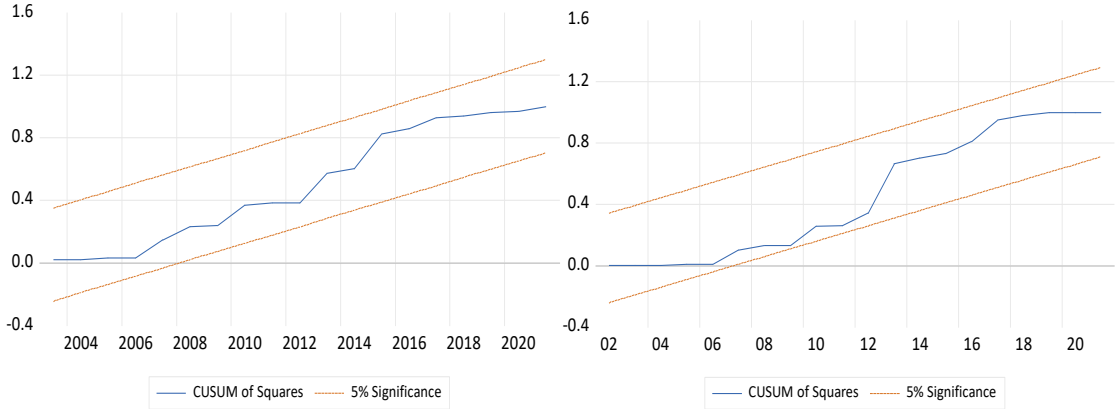
The null hypothesis for the Breush Pagan Godfrey test is H_0 is there is no heteroskedasticity. Both the models have p values greater than 10% which are 0.4978 and 0.2908 respectively in model 1a and 1b. We fail to reject the null hypothesis in both the models indicating that the models are free from heteroskedasticity.

Figure 4.1 CUSUM test



Source: *Author's own compilation*

Figure 4.2 CUSUM SQ test



Source: Author's own compilation

The CUSUM and CUSUM SQ tests are graphical representations of the residuals derived through running the model. The Blue lines indicates the cumulative sum of residuals and the

cumulative sum of the squared residuals, whereas the red line indicates the 5% level of significance. These models are used to check the fitness of the model by observing the movement of the blue line, as the blue line is within the level of significance in both models, we can observe that the results derive are accurate.

CHAPTER 5: EMPIRICAL ANALYSIS – II

This chapter focuses on the pre post analysis of the trade agreed countries. We consider the variable FTA as the dummy variable in order to divide the data set into pre and post. Years prior to the trade agreement coming into effect is consider '0' and year of coming into effect and the post is considered '1'.

Equation 3: OLS with dummy

$$LNY = \beta_0 c_t + \beta_1 LMX_{it} + \beta_2 LPX_{it} + \beta_3 LCM_{it} + \beta_4 FTA_{it} + \beta_5 LL_t$$

Where β is the coefficient of the independent variables with β_0 being the coefficient of the constant term. 'i' indicates the variable corresponds to the trade with selected country while GDP and labour formation are taken of the whole of India itself.

Figure 5.1 List of Bilateral Trade Agreements of India

Country	Agreement name	Type	Signed	Effective
Sri Lanka	India Sri Lanka Free Trade Agreement (ISFTA)	FTA	28 December 1998	1 March 2000
Afghanistan	India Afghanistan Preferential Trade Agreement	PTA	6 March 2003	13 May 2003
Singapore	India Singapore Comprehensive Economic Cooperation Agreement	CECA	29 June 2005	1 August 2005
Thailand	India Thailand Free Trade Agreement	FTA	9 October 2003	1 September 2006
Chile	India Chile Preferential Trade Agreement	PTA	8 March 2006	11 September 2007
South Korea	India Korea Comprehensive Economic Partnership Agreement (IKCEPA)	CEPA	7 August 2009	1 January 2010
Malaysia	India Malaysia Comprehensive Economic Cooperation Agreement (IMCECA)	CECA	8 February 2011	1 July 2011
Japan	Japan India Comprehensive Economic Partnership Agreement (JICEPA)	CEPA	16 February 2011	1 August 2011
Mauritius	India Mauritius Comprehensive Economic Cooperation and Partnership Agreement	CECPA	22 February 2021	1 April 2021
United Arab Emirates	India UAE Comprehensive Economic Partnership Agreement	CEPA	18 February 2022	1 May 2022
Australia	Australia–India Comprehensive Economic Cooperation Agreement (AI-CECA)	CECA	2 April 2022	29 December 2022

Source: Wikipedia

Table 5.1: OLS Estimations results

	Afghanistan	Chile	Japan	Korea	Malaysia	Singapore	Sri Lanka	Thailand
Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
LMx	0.2132***	0.0612	0.4199**	0.0211	0.1049	0.1104	0.3608**	0.6966***
LPx	0.1775***	-0.0034	-0.2216**	0.1912***	0.3136***	0.0015	-0.0439	-0.2330**
LCm	-0.0320**	-0.0008	0.4490***	0.0164	-0.1042	0.2923*	0.0957*	0.0298
FTA	-0.3026*	0.6366***	0.1599	0.4832***	0.2317**	0.3135	-0.3113	0.3438**
LL	2.7783***	2.2538**	1.5619***	1.5479*	1.7857*	0.8816	1.8977*	0.3539
C	-34.2125***	-18.7403	-17.5267**	-8.1794	-14.5720	1.2023	-18.2281	9.8245
No. of Obs	32	32	32	32	32	32	32	32
R^2	0.9721	0.9442	0.9784	0.9714	0.9745	0.9331	0.9343	0.9757

Notes: *, **, * indicate the significance level at 10%, 5% & 1%.**

Source: Author's own compilation

5.1 Afghanistan

The India Afghanistan preferential trade agreement was signed on the 6th of March 2003 and came into effect in 13th May 2003 approximately with a 2-month delay time. As such for the period of 1990- 2002, A_FTA is considered '0' and '1' otherwise.

Fig 6 displays the results derived when we individually consider impact of international trade with Afghanistan on India's non trade GDP. We can see a negative position of the trade agreement at 30.26% which is significant at 10% level of significance. The control variables i.e. export of manufacturing goods and export of non-manufacturing goods to Afghanistan show affect non-trade GDP by 0.21% and 0.18% respectively while labour formation affects non-trade GDP by 2.78% whereas import of capital goods from Afghanistan negatively affect non trade GDP by 0.03% and the constant shows a negative value of 34.21%.

5.2 Chile

The India Chile preferential trade agreement was signed on the 8th of March 2006 and came into effect in 11th September 2007 approximately with over an 18-month delay period. As such for the period of 1990- 2005, C_FTA is considered '0' and '1' otherwise.

Fig 6 displays the results derived when we individually consider impact of international trade with Chile on India's non trade GDP. We can see a positive position of the trade agreement at 63.66% which is significant at 1% level of significance. The control variables i.e. export of manufacturing goods to Chile show affect non-trade GDP by 0.06% while labour formation affects non-trade GDP by 2.25% whereas export of non-manufacturing goods and import of capital goods from Chile negatively affect non trade GDP by 0.003% and 0.001% and the constant shows a negative value of 18.74%. Of which only labour formation showed significant results.

5.3 Japan

The Japan India comprehensive economic partnership agreement was signed on the 16th of February 2011 and came into effect in 1th August 2011 approximately with slight 6-month delay period. As such for the period of 1990- 2010, J_FTA is considered '0' and '1' otherwise.

Fig 6 displays the results derived when we individually consider impact of international trade with Japan on India's non trade GDP. We can see a positive position of the trade agreement at 15.99% however the results are not significant even at 10% level of significance. The control variables i.e. export of manufacturing goods and import of capital goods from Japan affect non-trade GDP by 0.42% and 0.45% respectively while labour formation affects non-trade GDP by 1.56% whereas export of non-manufacturing goods to Japan negatively affect non trade GDP by 0.22% and the constant shows a negative value of 18.74%. Other than trade agreement all values are statistically significant

5.4 Korea

The India Korea Comprehensive economic partnership agreement was signed on 7th August 2009 and came into effect on 1st January 2010. As such for the period of 1990- 2009, K_FTA is considered '0' and '1' otherwise.

Unlike the prior trade with South Korea shows positive results in all the variables. Trade agreements show positive position of 44.90% which is significant at 1% level of significance. Export of manufactured and non-manufactured goods to South Korea show positive impact of 0.02% and 0.19% respectively. Import of capital goods from South Korea and labour formation also show positive impact of 0.02% and 1.55% respectively. Here statistical significance can only be found with export of non-manufactured goods and with labour formation

5.5 Malaysia

The India Malaysia Comprehensive Economic Cooperation Agreement was signed on 8th February 2011 and came into effect on 1st July 2011. As such for the period of 1990- 2010, M_FTA is considered '0' and '1' otherwise.

Fig 6 displays the results derived when we individually consider impact of international trade with Malaysia on India's non trade GDP. We can see a positive position of the trade agreement at 23.17%% significant at 5% level of significance. The control variables i.e. export of manufacturing goods and export of non-manufacturing goods to Malaysia affect non-trade GDP by 0.10% and 0.31% respectively while labour formation affects non-trade GDP by 1.79% whereas import of capital goods from Malaysia export of non-manufacturing goods to Malaysia negatively affect non trade GDP by 0.10% and the constant shows a negative value of 8.18%. Of the above control variables only export of non-manufactured goods and labour formation are statistically significant

5.6 Singapore

The India Singapore Comprehensive Economic Cooperation Agreement was signed on 29th June 2005 and came into effect on 1st August 2005 a mere delay of a month. As such for the period of 1990- 2004, S_FTA is considered '0' and '1' otherwise.

The sample of Singapore taken with this model fails to show any statistically significant results except for import of capital goods from Singapore which has a positive impact of 0.29% on non-trade GDP, for every 1% change in the independent variable. The constant shows a positive value of 1.20% far different from the values derived in the other sample countries.

5.7 Sri Lanka

The India Sri Lanka Free Trade Agreement was signed on the 28th December 1998 and came into effect in 1st March 2000 approximately with slight 6-month delay period. As such for the period of 1990- 1999, SL_FTA is considered '0' and '1' otherwise.

Fig 6 displays the results derived when we individually consider impact of international trade with Sri Lanka on India's non trade GDP. Export of manufacturing goods, import of capital goods from Sri Lanka and labour formation affect non-trade GDP by 0.36%, 0.09% and 1.90% respectively, all being statistically significant. The constant show negative value of 18.23% whereas, trade agreement in this sample has no significant impact even at 10% level of significance.

5.8 Thailand

The India Thailand Free Trade Agreement was signed on the 9th October 2003 and came into effect in 1st September 2006 approximately with slightly under 3-year delay period. As such for the period of 1990- 2005, T_FTA is considered '0' and '1' otherwise.

Fig 6 displays the results derived when we individually consider impact of international trade with Thailand on India's non trade GDP. We can see a positive position of the trade agreement at 34.38%% which is significant at 5% level of significance. Further the control variables i.e. export of manufacturing goods and export of non-manufacturing to Thailand affect non-trade GDP by 0.70% and -0.23% for every 1% change in the dependent variable respectively, while labour formation and import of capital goods from Thailand do not provide and statically significant claims and still suggest positive impacts. However, the constant shows a positive value of 9.82%.

CHAPTER 6: CONCLUSION, LIMITATION AND SUGGESTIONS

6.1 Conclusions

The findings derived through the 1st objective show that there is a long run relationship when we deal with the impact of international trade with the host country's GDP. It is noticed when the export is disaggregated we can see a positive impact of export of manufacturing goods versus the negative impact we see in the export of non-manufacturing goods, this is similar to the results of Debnath et al. (2014) who studied that the aggregate export shows incomplete results as compared to its disaggregated counterpart. Import of capital goods also shows a positive impact in the long run, stating that imports can lead to growth (Hye, 2012).

The 2nd objective which deals with the impact of trade agreement on the India's GDP. We notice that when we assume a dummy variable only 5 countries reveal statistically significant data i.e. Afghanistan, Chile, South Korea, Malaysia and Thailand. The results reveal that of the five countries only Afghanistan is showing a negative position post effect of the trade agreement, this may be attributed to the economic instability of the Afghan market. When we look at the other countries, however it reveals a positive light on the impact of trade agreements. This can further the statement put forth by (Kawai & Morgan, 2014) revealing that trade agreements bring forth economic benefit to the country.

6.2 Limitations and Future research avenues

A major limitation faced by this paper is the lack of a large number of observations present. Further unlike other previous studies this studied excludes capital formation as the results led to the occurrence of multicollinearity issues. The smaller time frame also does not allow a more comparative pre-post research through the use of sample breakpoint.

Future research papers could possibly also include the other bilateral and multilateral trade countries. Research may also be conducted comparing the impact of bilateral trade agreements versus the impact of multilateral trade agreements on India's GDP.

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