EMPIRICAL INVESTIGATION OF INDIA'S TRADE WITH EU AND ASEAN COUNTRIES

by

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Dedicated to my husband Mr. Bir Singh,
daughter Gauri Singh and Parents.

DECLARATION

I hereby certify that the work which is being presented in the thesis titled "**EMPIRICAL INVESTIGATION OF INDIA'S TRADE WITH EU AND ASEAN COUNTRIES**" in fulfilment of the requirement of the degree of Doctor of Philosophy and submitted to Malaviya National Institute of Technology, Jaipur, is an authentic record of my own work carried out at the Department of Humanities and Social Sciences during the period from December 2011 to September 2016 under the supervision of Dr. Dipti Sharma, Assistant Professor, Department of Humanities and Social Sciences, MNIT, Jaipur.

The results contained in this thesis have not been submitted, in part or full, to any other university or institute for the award of any degree or diploma.

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CERTIFICATE

This is to certify that the thesis titled "**EMPIRICAL INVESTIGATION OF INDIA'S TRADE WITH EU AND ASEAN COUNTRIES"** being submitted by **Shikha Singh** to Malaviya National Institute of Technology, Jaipur, for the award of the degree of **Doctor of Philosophy** is a bonafide record of research work carried out by her under my supervision and guidance. The thesis work, in my opinion, has reached the requisite standard fulfilling the requirement of **Doctor of Philosophy**.

The results contained in this thesis have not been submitted, in part or full, to any other university or institute for the award of any degree or diploma.

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"Nothing in the world is worth having or worth doing unless it means effort, pain, difficulty… I have never in my life envied a human being who led an easy life. I have envied a great many people who led difficult lives and led them well."

Theodore Roosevelt

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ABSTRACT

1991 onwards, India witnessed economic reforms in its international trade policy which has led to a significant rise in trade flows. Trade with certain countries has risen following bilateral trade agreements with several countries. Liberalization has played an increasingly important role in the growth of specific industries in the last two decades. Along with trade liberalization there has been significant market diversification in recent years which helped the country in spite of sluggish global demand.

The bilateral trade agreements are considered as an important strategy for promoting economic growth. Patterns of bilateral trade may differ across regions but reducing barriers to trade between member countries remains the primary objective. Many agreements go beyond removing intra-regional tariffs on trade and address issue of non-tariff barriers and investment. While remaining committed to multilateralism, India like many other countries has negotiated a series of free trade agreements (FTAs), notably with trading partners in Asia. Since the mid-2000s India's FTAs have doubled to about forty-two today. The foreign trade policy 2009-2014 initiatives provided the much needed momentum to enter into various FTAs, preferential trade agreements (PTAs) and comprehensive economic partnership agreements (CECAs). This thesis reviews the experience of India's FTA with Association of South East Asian Nations (ASEAN) countries and its proposed FTA with European Union (EU) countries against the backdrop of mega regional agreements involving the largest traders- USA, China, Japan and EU.

The FTA with ASEAN countries was finalized in 2010 by the ASEAN - India Free trade agreement (AIFTA) which has had the greatest impact on India possibly because of a greater tariff reductions by India. India-ASEAN agreement and the on-going negotiations between India-EU representatives during the last few years have created substantial interest among researchers across the world.

Region-wise, India's export share to Europe has declined over the years due to the Eurozone crisis however the share of India's exports to Asia and Africa has increased.

For the India – EU trade agreement fifteen rounds of negotiations have been held till date. The negotiations were launched in 2007 and they are still incomplete. The proposed FTA is expected to boost trade and investment between the two regions. India as a developing country has higher stakes in getting the FTA implemented as soon as possible. The major concern behind this is the EU-United States proposed partnership under the two mega regional trading agreements i. e. Trans Pacific Partnership (TPP) and Transatlantic Trade and Investment Partnership (T-TIP), both of which India is not a member. If these mega regional agreements are finalized there is a possibility of Indian goods facing market access difficulty in European markets. The major trade challenge ahead of India is the stagnation in multilateral trade agreements. On the one hand, the Indian exports have become less buoyant and the trade environment is more challenging than before and on the other hand negotiations of mega regional trade arrangements are threatening to exclude India.

Henceforth, it is plausible to hypothesize that proliferating FTAs and the growing mega-regionalism can lead to increased trade for India with its member countries in ASEAN and EU. Testing the relationship between AIFTA and the proposed India –EU FTA could help the government and the policy makers to take India-EU relations forward in the right direction. It will also help the policy makers to identify countries and commodities within EU and ASEAN region for trade purpose keeping in mind India's comparative advantage and national interest. Hence the problem statement can be studied with the help of the empirical investigations of India's trade-country wise, sector wise and factor wise with EU and ASEAN countries.

The research design of the study is descriptive as well as causal in nature. In order to carry out an empirical investigation of India's trade with EU and ASEAN the research used secondary data. A time series and cross sectional data is used for the panel data analysis. The sampling frame consist of twenty-seven countries from EU and ten countries as part of the ASEAN bloc. The techniques used for the research analysis are mean of exports, imports and trade volume from the countries in EU and ASEAN, mean of exports, imports and trade volume from the countries in EU and ASEAN under specific sectors, correlation in exports, imports and trade volume in the sectors, linear regression model for long term trend analysis & semi log model for

CAGR, OLS model, pooled OLS model, Individual within effects, followed by first difference model, random effects model, between effects model and Poisson and Quasi-poisson model. It uses the panel data on gravity model to analyze India's factors affecting trade from ASEAN and EU. Variables used are GDP, distance, population and FTA (dummy variable), country dummies to explain the gravity model in an unbalanced panel.

The analysis reveals that India's trade with EU countries has surely improved over a period of time. But the direction of trade has remained confined to a few countries like Belgium, Germany and United Kingdom, whereas countries like Estonia, Luxemburg and Slovak republic remain at the lowest position.

Similar is the case with India's trade with ASEAN countries. Trade has been confined mostly to countries like Indonesia, Malaysia and Singapore. The least developed countries have benefitted more under the trade relationship with India.

Trade pattern of India and EU indicates more volume in the case of gems and jewelry and machinery & engineering goods sector. Among ASEAN countries minerals, machinery and engineering goods and food processing industries are the major drivers of trade.

The OLS estimation results indicate that population and trade volumes are mainly dependent on trade relations between countries. A significant observation here is the differentiation between developed and developing countries. Coefficients of developed countries, with respect to population is also showing negative relation. Further if we look at distance as a variable we found that it is highly significant with trading partners in ASEAN like Singapore and Malaysia showing a direct relation. While in EU; Spain, UK, Portugal, Ireland, France and Germany are highly significant and their coefficients with respective to p-value is also showing negative results. Further results of the OLS models also conclude that there is an embedded relationship in exports and imports, however population is supporting malthusian theory of high economic growth leading to high population in most of the EU countries, where it is mostly significant and both imports and exports are showing an impact. Thus with the available data set of panel OLS regression, our analysis signify the Gravity Model for India with EU and ASEAN and we found different factors

w.r.t to both the blocs and the results, are as per our synthesis in the theory. After the experiments with the gravity model, attempts have been made to have deeper insight into the magnitude of trade volume with the help of Poisson and Quasi Poisson function. Our analysis with the model concludes that there is an existence of Gravity model, however comparative advantage of and from trade cannot be ignored with respect to developed and developing countries, as developed countries have a higher technological carrying capacity and their gains from trade when trading with developing countries are more profitable in the dynamic environment of trade relations.

The analysis shows that on the policy formulation three effective aspects are needed to be looked at ; firstly the cost benefit analysis of FTA, secondly the economies of scale in FTA and thirdly the economic efficiency which arises after doing a careful analysis of the FTA and being able to generate effective and high economies of scale. India's trade with developed countries in EU and ASEAN is efficient adhering to Heckscher-Ohlin theory of comparative advantage, however the countries with lower trade volume will gain from India's FTA as there will be a lower transaction cost to their goods. But this may pose a threat to and might hamper India's medium and small scale industries. Therefore, India needs to trade in those products that are in abundance and need those products from ASEAN and EU countries, which it cannot produce.

The recent policy of 'MAKE IN INDIA' is also likely to get a boost if India reduces all sorts of trade barriers with EU as well as UK now as the research indicates that a major composition of India's imports from EU is of capital goods. India has a strategic choice to make here. In the current context of "slowing demand and excess capacity with threats of circumvention of trade rules, progress on FTAs, if pursued, must be combined with strengthening India's ability to respond with WTO-consistent measures such as anti-dumping and conventional duties and safeguard measures" as pointed by economic survey 2015-2016. To conclude the study points that the effort of the policy makers in improving the 'ease of doing business' in India in the current scenario will have far reaching effect on the volume, composition and direction of India's trade and trade agreements with the two studied blocs, viz EU and ASEAN.

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INTRODUCTION

Chapter 1

INTRODUCTION

With globalization gaining momentum, international trade across various regions has flourished over the years because of the benefits it has offered to different countries across the globe. International trade accounts for a good part of a country's gross domestic product (GDP) as well as global GDP. At the same time it is also one of the important sources of revenue for any country. The World trade report, (2014) states that the rapid economic growth in many developing economies has been combined with deeper integration into the global trading system. This experience has emphasized the role that trade can play in enhancing per capita incomes, helping developing countries to achieve wider societal goals and in improving access to advanced technologies and knowledge, thereby setting the stage for future growth[1]. Hence, in the context of the globalization wave Indian economy witnessed extensive economic reforms in its policies governing international trade in 1991. These reforms have led to a dramatic rise in the trade flows as well as has increased the volume of bilateral trade with several economic cooperation arrangements with different countries. On July 24th, 2016 India completed its silver jubilee of twenty five years of economic reforms that have led to increased volumes of trade in the country and has also led to significant market diversification in products thereby helping the economy to cope with sluggish global demand. Estimating the total merchandise trade economic survey 2014-2015 states that "it has increased from US$ 467 billion in financial year (FY) 2010 to US$ 757 billion in financial year 2015. The compounded annual growth rate in exports has been 11.6 per cent in FY 2015. India's Export to GDP ratio increased from 13.3 per cent in FY 2010 to 15.6 per cent in FY 2015.[2] Foreign Trade Policy 2015-2020 aims at increasing India's merchandise and services exports to US$ 900 billion by FY 2020 by forming several economic cooperation arrangements with different countries in Asia and rest of the world." Over the years, since 2003-04 India has been strategically expanding its share in the world trade by making use of free trade agreements (FTAs) as a strategic element of its trade and foreign policy. The

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[1]   World Trade Report 2014, World Trade Organization https://www.wto.org/english/res_e/ booksp_e/world_trade_report14_e.pdf.

[2]   Economic Survey 2014-2015

Economic survey 2015-16 states that the FTA with Association of South East Asian Nations (ASEAN) has had the greatest impact on India. This can be possibly because of a greater tariff reduction on the Indian side. Against this backdrop of proliferating FTAs and the growing mega-regionalism, a review of India's FTAs with ASEAN and its proposed FTA with European Union (EU) is overdue. The present chapter is divided into eight sections. The introduction to the global trade environment is discussed in section 1.1 and the overview of India's trade is discussed in section 1.2. The background to India's trade policy is discussed in section 1.3. A brief introduction to both the blocs i.e. ASEAN and EU is done in section 1.4. From section 1.5 to 1.8 the problem statement is described along with research objectives and importance of the study along with the chapterisation scheme.

1.1   GLOBAL TRADE ENVIRONMENT: A BRIEF

Rapid globalization in the past fifty years have brought drastic changes in the global economy. These changes have led to the development of world economic integration and standardization of products across the globe. Along with trade, capital movements have become the driving force of the global economy. The social, economic and political significance of global trade has been theorized since the industrial age. The importance of international trade has been highlighted in economic theories of Adam Smith, David Ricardo, Hecksher Ohlin and many more. Increasing global trade is the foremost outcomes of globalization. It has led to various benefits for the countries in form of enhancement of domestic competition, maintenance of comparative advantage, reduced dependence on existing market, economic stabilization, benefits of international technology, gaining global market share etc. The international trade system has been growing and spreading fast due to the modern techniques of production along with highly advanced transportation systems and well developed communication. Over the years with the global trade gaining momentum countries have tried to impose tariff and non-tariff barriers to trade. And this imposition of barriers to trade has resulted into loss of economic, social and political benefit derived from the global trade. Hence countries are making efforts to deepen the economic relations by forming various multilateral and regional trade agreements in form of free trade agreements (FTAs) and preferential trade agreements (PTAs) and so on. The

major objective of the FTAs and PTAs is the liberalization of trade and creation of more open, equitable and non-discriminatory international trading system.

As stated by World Trade organization (WTO) in the annual report of EXIM bank 2014-15 that the growth in volume of global merchandise trade was recorded at 2.8 percent in 2014, in comparison to 2.4 percent in 2013. This marked a three year continuation phase where the trade had grown by less than 3 percent.[3] As per the estimates of International Monetary Fund (IMF) in the same report the global exports of goods and services were estimated at US$ 23.5 trillion in 2014, an estimated increase of 1.6 percent over the previous year's total of US$ 23.1 trillion. It also needs to be noted that the world trade prices of non-fuel primary commodities contracted by 4 percent in US$ terms in 2014 while oil prices lost momentum and contracted by 7.5 percent during the same period[4].The development in global trade over a decade is presented in table 1.1 and figure 1.1 below.

Table 1.1: The Global Trade Statistics

Year	Trade Volume (Million US $)	Growth Rate
2005	12823928	13.86
2006	14767860	15.48
2007	17232901	15.61
2008	19755019	15.18
2009	15827416	-22.25
2010	18831672	21.87
2011	22392669	19.85
2012	22693641	0.86
2013	23374919	2.44
2014	23769279	0.25
2015	20951483	-13.23

Source: United Nations Trade Statistics

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[3]   Annual Report 2014-15, Export Import Bank of India http://www.eximbankindia.in/sites/ default/files/English%20Annual%20Report_0.pdf.

[4]   Ibid

Fig. 1.1: Global Trade and Growth in Trade
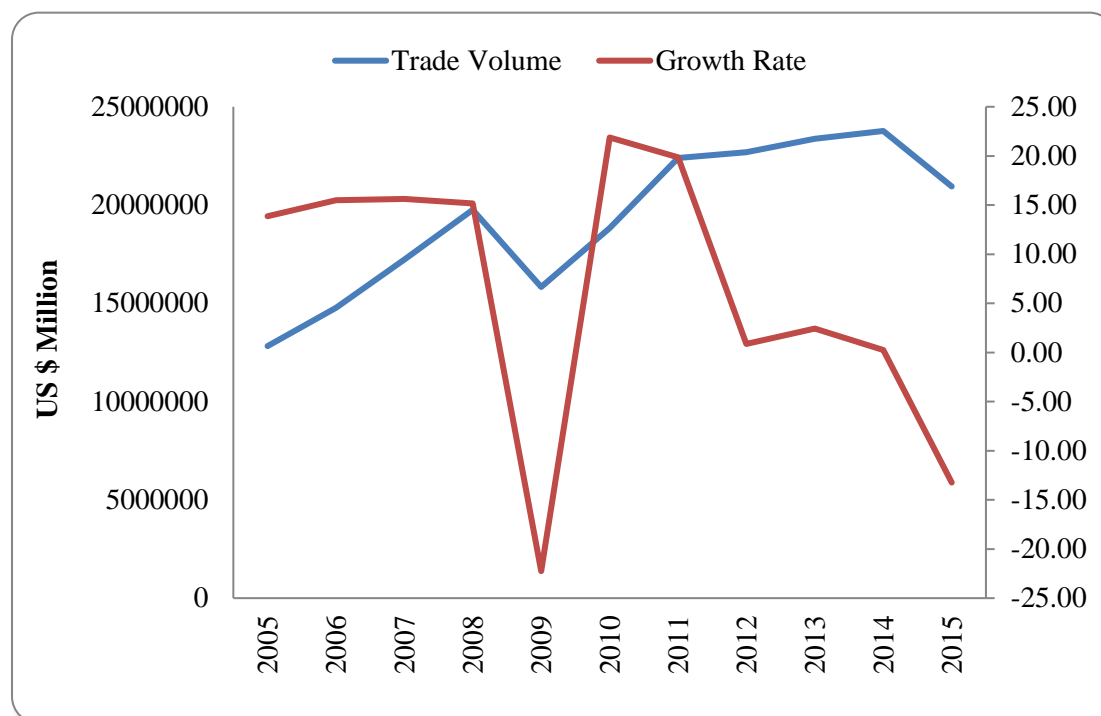
Source: Compiled from United Nations Trade Statistics

It can be seen from the data that global trade has increased from 12823928 million US $ during 2005 to 20951483 million US $ during 2015. The growth in international trade has been fluctuating over a period of time. For the time period taken into consideration, year 2009 and 2015 registered a decline in world trade. Highest growth rate of 21.87 percent has been registered during 2010 followed by 19.85 percent registered during 2011. On the other side lowest growth of -22.25 percent in international trade has been registered during 2009 followed by -13.23 percent registered during 2015. The decline in international trade during 2009 was considered as impact of global recession while recent decline during 2015 was majorly on account of decline in emerging economies for the fifth consecutive years and a particular rebalancing of the Chinese economy. "Reflecting the weak global demand and trends, India's exports have been declining since December 2014. However rupee has remained resilient in the recent downfall and turmoil signifying to a strong macroeconomic outlook for India."[5]

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[5]   The External Sector, Chapter 04, The economic survey 2015-2016, Vol.2.

1.2   OVERVIEW OF INDIA'S TRADE POST LIBERALIZATION

As explained by Panagariya (1999) traditionally India has been one of the most protected countries in the world. Even as late as 1990, imports of nearly 65 percent of commodities were subject to non-tariff barriers. The share of manufacturing value added protected by various non-tariff barriers was as high as 90 percent. The average rate of tariff was estimated at 79 percent with the highest rate of tariff reaching 355 percent. Because of various tariff and non-tariff barriers the exports to GDP ratio was less than 5 percent. New economic policy of liberalization, privatization and globalization has given boost to India's international trade. Tariff and non-tariff barriers to trade were reduced to minimum in a phased manner. Over the years there has been a rapid and tremendous growth in exports of India reaching a valuation of US$ 300 billion in 2011-2012. Ever since 2014-2015 both developed and developing countries are facing a downward trend in trade especially in exports. The main reasons for the same are weak economic conditions worldwide and a downward spiral in crude oil prices.

The data about the progress of India's foreign trade along with growth rates since 1970-71 to 2015-16 is presented in table 1.2 and in figure 1.2 & 1.3 below. It can be seen from the data that India's international trade remained at very low levels in the pre-liberalization era but started increasing post the 1991. The major shift in international trade in terms of exports and imports can be seen after 2000-01. The volume of exports has increased from 2031.3 million US $ in 1970-71 to 18145.2 million US $ in 1990-91 and further increased to 314415.72 million US $ in 2013-14. Similarly imports have also increased from 2162.3 million US $ in 1970-71 to 24072.5 million US $ in 1990-91 reaching 490736.68 million US $ during 2012-13[6]. In terms of growth rates, it can be seen from the data that growth rate of exports and imports have been fluctuating widely over a period of time. Further it can be noticed that imports have fluctuated at a rate faster than that of exports. Wide fluctuations in imports can be attributed to fluctuations in crude oil prices and foreign exchange rates.

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[6]   RBI Handbook of Statistics on Indian Economy, Reserve Bank of India.

Table 1.2: India's Trade Balance (US $ million)

India's Trade Balance (US $ million)									
Year	Exports	Exports Growth (in %)	Imports	Imports Growth (in %)	Year	Exports	Exports Growth (in %)	Imports	Imports Growth (in %)
1970-71	2031.30	-	2162.30	-	1993-94	22238.30	19.97	23306.20	6.51
1971-72	2151.90	5.94	2441.50	12.91	1994-95	26330.50	18.40	28654.40	22.95
1972-73	2568.70	19.37	2433.10	-0.34	1995-96	31794.90	20.75	36675.30	27.99
1973-74	3238.30	26.07	3792.60	55.88	1996-97	33469.70	5.27	39132.40	6.70
1974-75	4192.10	29.45	5690.60	50.04	1997-98	35006.40	4.59	41484.50	6.01
1975-76	4648.70	10.89	6063.70	6.56	1998-99	33218.70	-5.11	42388.70	2.18
1976-77	5728.40	23.23	5651.70	-6.79	1999-00	36822.40	10.85	49670.70	17.18
1977-78	6298.60	9.95	7011.80	24.07	2000-01	44560.30	21.01	50536.50	1.74
1978-79	6960.30	10.51	8278.70	18.07	2001-02	43826.70	-1.65	51413.30	1.73
1979-80	7926.40	13.88	11290.60	36.38	2002-03	52719.40	20.29	61412.10	19.45
1980-81	8484.70	7.04	15866.50	40.53	2003-04	63842.60	21.10	78149.10	27.25
1981-82	8703.90	2.58	15172.90	-4.37	2004-05	83535.90	30.85	111517.40	42.70
1982-83	9107.60	4.64	14786.60	-2.55	2005-06	103090.50	23.41	149165.70	33.76
1983-84	9449.40	3.75	15310.90	3.55	2006-07	126414.10	22.62	185735.20	24.52
1984-85	9878.10	4.54	14412.30	-5.87	2007-08	162904.20	28.87	251439.20	35.38
1985-86	8904.50	-9.86	16066.90	11.48	2008-09	185295.00	13.74	303696.31	20.78
1986-87	9744.70	9.44	15726.70	-2.12	2009-10	178751.43	-3.53	288372.87	-5.05
1987-88	12088.50	24.05	17155.70	9.09	2010-11	251136.20	40.49	369769.11	28.23
1988-89	13970.40	15.57	19497.20	13.65	2011-12	305963.88	21.83	489319.53	32.33
1989-90	16612.50	18.91	21219.20	8.83	2012-13	300400.66	-1.82	490736.68	0.29
1990-91	18145.20	9.23	24072.50	13.45	2013-14	314415.72	4.67	450213.68	-8.26
1991-92	17865.40	-1.54	19410.50	-19.37	2014-15	310352.01	-1.29	448033.41	-0.48
1992-93	18537.20	3.76	21881.60	12.73	2015-16	262003.69	-15.58	380356.30	-15.11

Source: Handbook of Statistics on Indian Economy, Reserve Bank of India

Fig. 1.2: India's International Trade
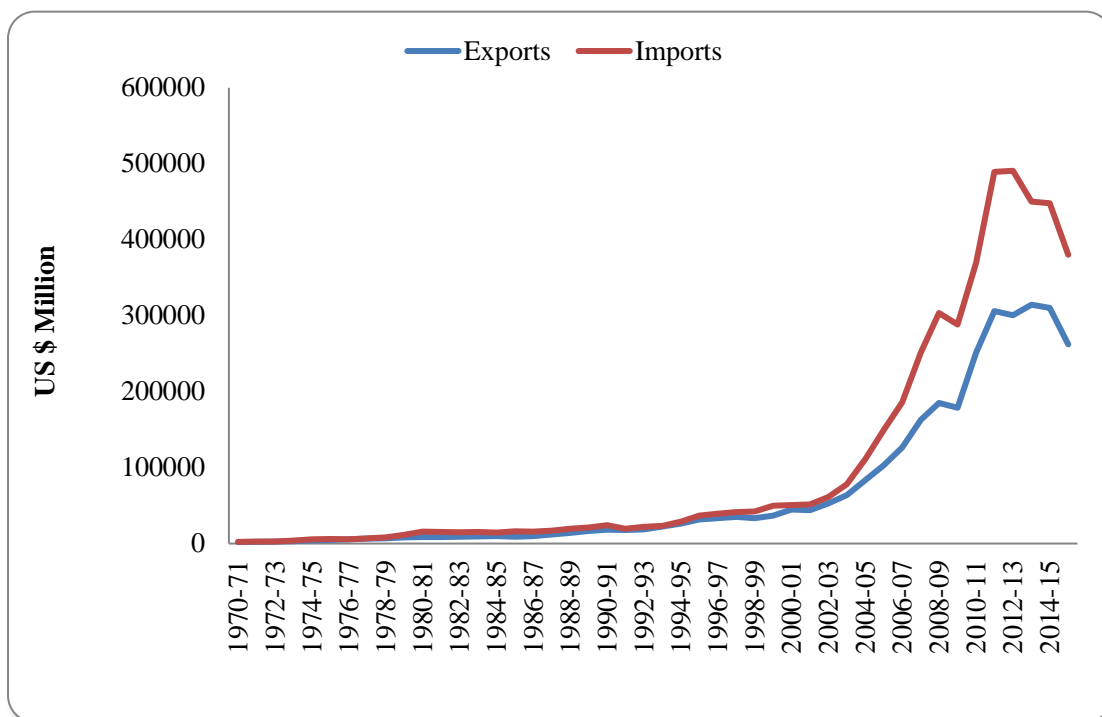
Source: Compiled from Handbook of Statistics on Indian Economy, Reserve Bank of India

Fig. 1.3: Growth in Exports and Imports
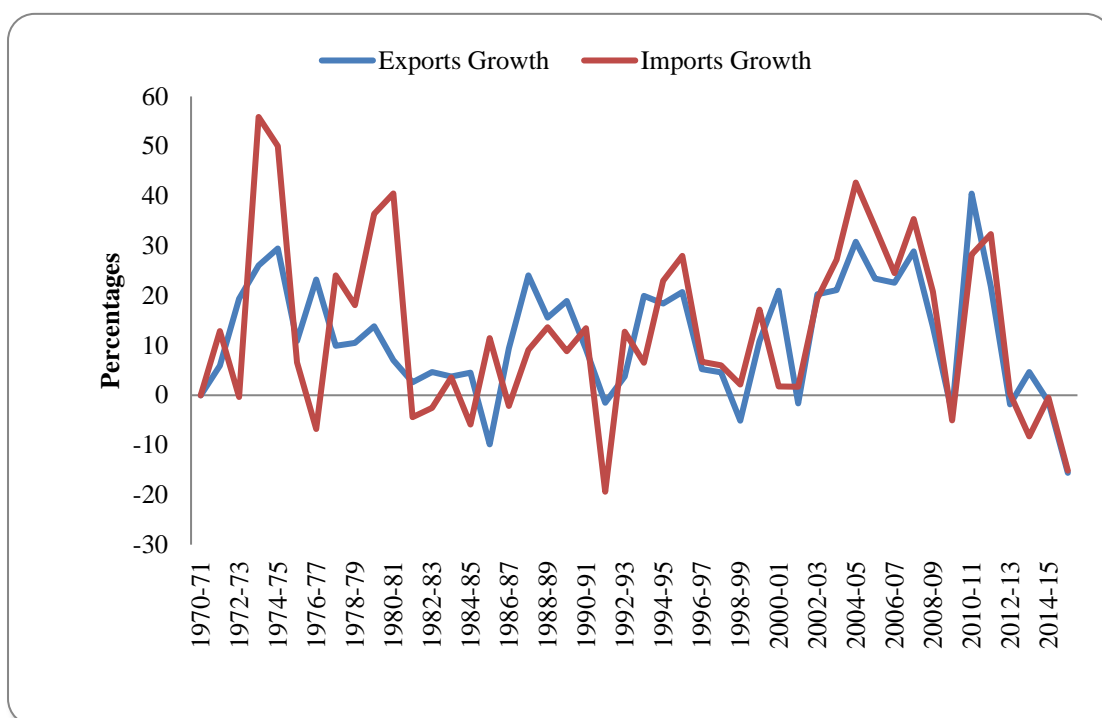
Source: Compiled from Handbook of Statistics on Indian Economy, Reserve Bank of India

The growth rate in exports too has fluctuated a lot. Highest growth in exports (40.49 percent) was during 2010-11 and the lowest growth in exports was recorded at -15.58 percent during 2015-16. Similarly growth rates in imports were as high as 55.88 percent in 1973-74 whereas the lowest growth rate of -19.37 per cent was recorded during the year 1991-92. Devaluation of Indian rupee was also one of the causes behind it. Fluctuations in exports and imports can be attributed to many factors including change in oil prices, global recession, international relations etc. But the gap between growth of exports and imports had reduced after implementation of new economic policy.

1.2.1 India's Merchandise trade

The data in table 3 describes the growth in India's foreign trade in terms of CAGR post the reform period. There is a significant rise in exports (8.46 percent), imports (9.39 percent) and total trade (8.95 percent) during the first decade of reforms i.e. 1991- 2002. The growth in exports, imports and total trade continue in the phase of 2002 to 2007 and hovers around 20.65 percent, 25.43 percent and 23.39 percent respectively. There is a fall in total trade during the global crisis of 2008 and both exports and imports got a setback thereby the growth in exports declined to 8.39 per cent, imports to 7.5 percent and the total trade to 7.8 percent.[7]

Table 1.3: Growth in India's Foreign Trade

CAGR (in %)	1991-92 to 2001-02	2001-02 to 2007- 08	2007-08 to 2014-15	1990-91 to 2014-15
Exports	8.46	20.65	8.39	21
Imports	9.39	25.43	7.5	12.2
Total Trade	8.95	23.39	7.8	12.3

Source: PHD Research Bureau, Compiled from Ministry of Commerce and Industry

1.2.2 Composition of India's trade

The composition of India's foreign trade has undergone various changes since independence, especially after 1991. Pre independence period India used to export

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[7] PHD Research Bureau, Compiled from Ministry of Commerce and Industry.

agricultural products and raw materials like jute, cotton, tea, oil seeds, leather, food grains, cashew nuts and mineral products. Trade liberalization policies, factor endowments, technology have a strong bearing on the composition of India's trade over the years. Now India's export basket includes mostly manufactured items. The top eight export sectors for India are petroleum products, gems and jewellery, textiles and readymade garments, agriculture and allied sector, chemicals and metals &machinery, electronic goods, especially hardware's and software's which occupy important place in exports. Similar situation has been witnessed in composition of India's import basket. In earlier times India used to import mostly consumption goods like medicines, clothes, motor vehicles, electrical goods, iron, steel, etc. This has changed drastically. Presently, India is mostly importing petrol and petroleum products, machines, chemicals, fertilizers, electronic goods and gold. The composition of India's exports and imports is presented in table 1.4 and figure 1.4 below.

Table 1.4: Composition of Indian Exports

Year	1991-92		2001-02		2013-14	
Commodities	Amount (US $ million)	% Share	Amount (US $ million)	% Share	Amount (US $ million)	% Share
Primary Products	4132.2	23.13	7163.6	16.35	48173.1	15.41
Engineering Goods	2253.1	12.61	6957.8	15.88	69539.4	22.24
Textile and Textile Products	4693.1	26.27	10206.5	23.29	31476.2	10.07
Gems and Jewellery	2738.2	15.33	7306.3	16.67	41067.4	13.14
Handicrafts (excluding Handmade Carpets)	241.5	1.35	549.0	1.25	283.2	0.09
Other Manufactured Goods	84.9	0.48	388.3	0.89	2677.4	0.86
Petroleum Products	414.7	2.32	2119.1	4.84	62687.2	20.05
Others (All Commodities)	170.1	0.95	1174.3	2.68	9637.0	3.08
Total Exports/All Commodities	17865.4	100.00	43826.7	100.00	312620.7	100.00

Source: Reserve Bank of India database

Fig. 1.4: Composition of India's Exports
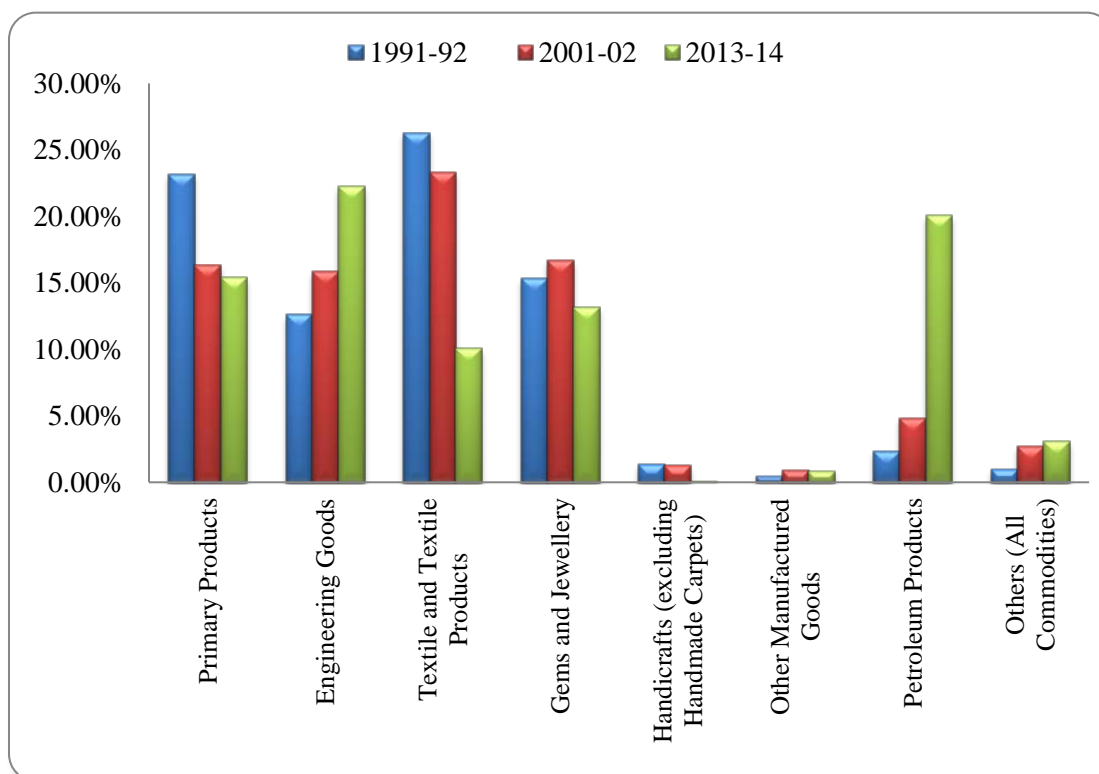
Source: Compiled from Reserve Bank of India database

It is evident from the data that composition of India's exports and imports have significantly changed over the years. The share of primary products in total exports has declined from 23.13 percent during 1991-92 to 15.41 percent during 2013-14, whereas the share of engineering goods has increased from 12.61 percent during 1990-91 to 22.24 percent during 2013-14. The contribution to textiles has declined from 26.27 percent during 1991-91 to 10.07 percent during 2013-14 whereas the contribution of petroleum products has increased from 2.32 percent to 20.05 percent during the same period.

Table 1.5: Composition of Indian Imports

Year	1990-91		2001-02		2013-14	
Commodities	**Amount (US $ million)**	**% Share**	**Amount (US $ million)**	**% Share**	**Amount (US $ million)**	**% Share**
Petroleum, Crude and Products	6028.1	25.04	14000.3	27.23	165153.7	36.69
Bulk Consumption Goods	556.5	2.31	2043.2	3.97	11547.6	2.57
Other Bulk Items	4263.3	17.71	4219.6	8.21	39283.1	8.73
Capital Goods	5835.6	24.24	9882.2	19.22	85177.9	18.92
Mainly Export Related Items	3680	15.29	8260	16.07	48928	10.87
Others	3709	15.41	13008	25.30	99991.8	22.22
Total Imports/All Commodities	24072.5	100.00	51413.3	100.00	450082.2	100.00

Source: Reserve Bank of India database

Fig. 1.5: Composition of India's Imports
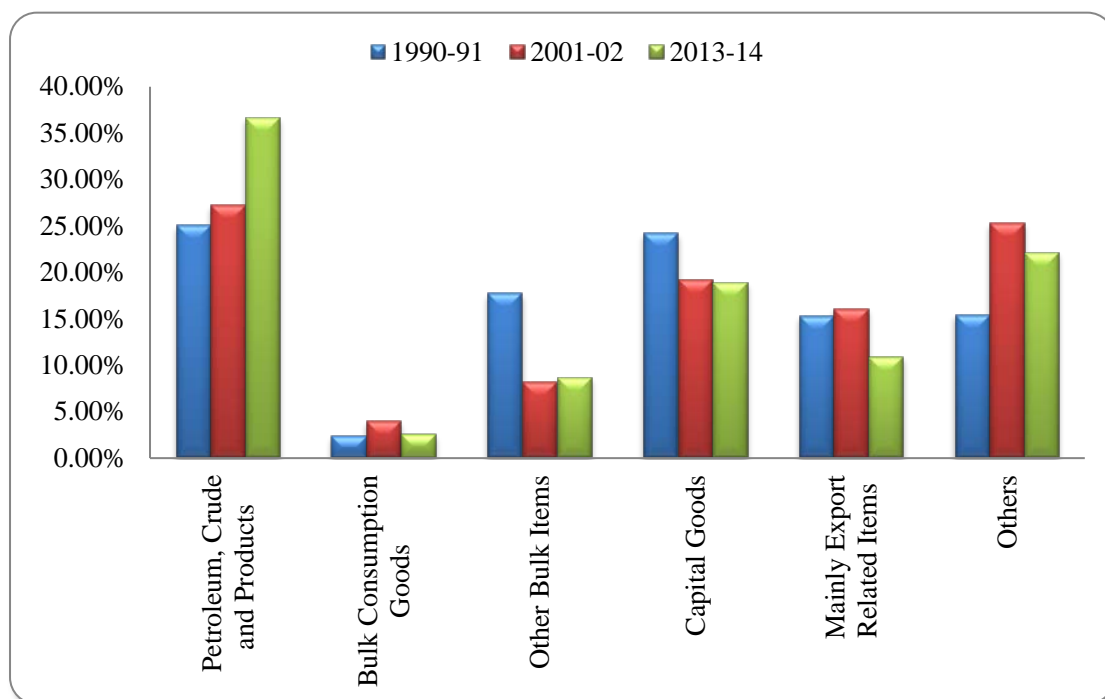
Source: Compiled from Reserve Bank of India database

The composition of India's imports after new economic policy shows significant changes. The share of petroleum and petroleum products has increased from 25.04 percent during 1990-91 to 36.69 percent during 2013-14 whereas the share of capital goods declined from 24.24 percent to 19.92 percent during the same period.

1.2.3 Direction of Trade

There has been remarkable shift in the direction of India's international trade in the recent years. The share of advanced economies affected to a larger extent by the economic slowdown have shown a fall in the percentage of India's exports significantly. The share of Europe and America in India's exports has declined in 2014-15 whereas the share of African countries have increased during the same time.

The changing pattern of India's international trade in terms of exports and imports from major regions has been presented in table 1.6 and figure 1.6 below. It can be seen from the data that the share of African countries, Asian Countries and OPEC countries in India's exports has increased while the share of OECD and EU countries has been declining over a period of time. It is worth noting that OCED countries continue to remain major export partners for India but their share in total exports of country has declined from 56.48 percent during 1990-91 to 34.81 percent during 2013-14. Similarly the share of OPEC countries in India's exports has increased from 5.62 percent during 1990-91 to 19.38 percent during 2013-14.

Table 1.6: Exports by Region

Year	1990-91		2000-01		2013-14	
Export	US $ Million	% Share	US $ Million	% Share	US $ Million	% Share
African Countries	393.6	2.17	1956.4	4.39	26339.2	8.43
Asian Countries	2610	14.38	10037.9	22.53	90594.5	28.98
Latin American countries	95.2	0.52	1018.2	2.28	12708.6	4.07
EU Countries	4988.5	27.49	10410.8	23.36	51715.9	16.54
OECD Countries	10248.8	56.48	23473.6	52.68	108808.6	34.81
OPEC	1020.4	5.62	4850	10.88	60592.1	19.38
China	18.2	0.10	831.3	1.87	15009.3	4.80

Source: Compiled from Reserve Bank Handbook on Indian Economy

Fig. 1.6: Exports by Region
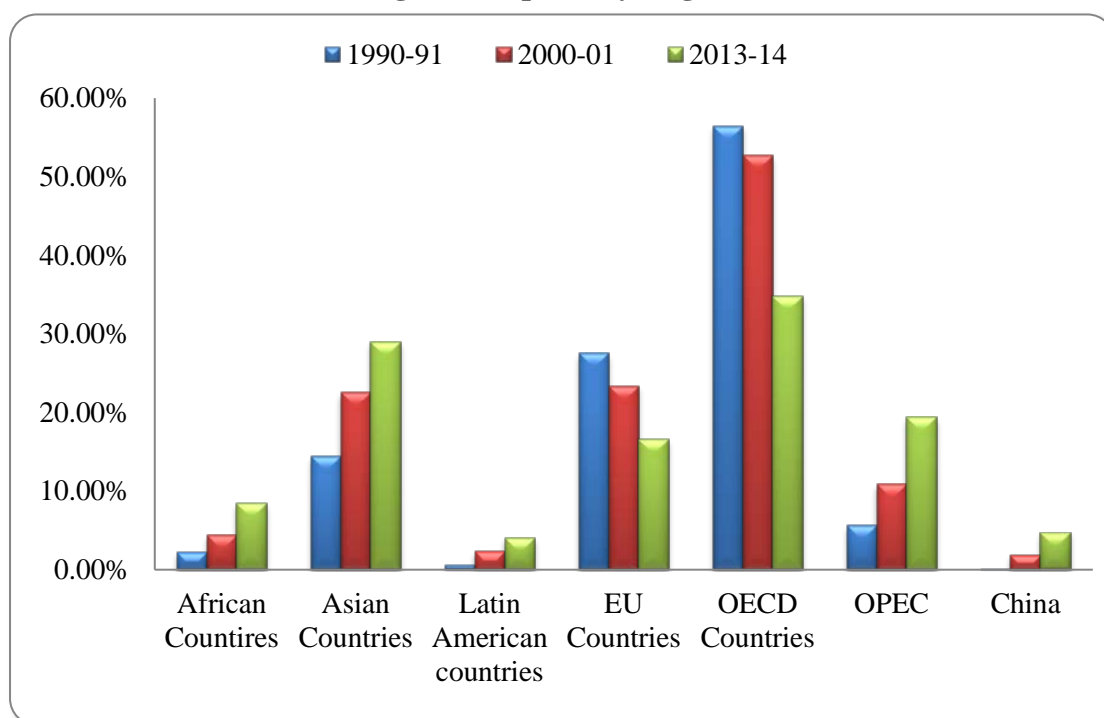
Source: Compiled from Reserve Bank Handbook on Indian Economy

The direction of India's imports show that Asian countries contributed 14.01 percent of total imports during 1990-91 which increased to 24.76 percent during 2013-14 whereas the share of OEPC has increased from 16.30 percent to 39.53 percent during the same period. The share of Asian countries in total imports has been increasing while that of EU and OECD countries shows a declining trend.

Table 1.7: Imports by Region

Year	1990-91		2000-01		2013-14	
Import	US $ Million	% Share	US $ Million	% Share	US $ Million	% Share
African Countries	572.7	2.38	1996.1	3.95	14992.9	3.33
Asian Countries	3371.9	14.01	8459.5	16.74	111422.4	24.76
Latin American countries	545.8	2.27	700.6	1.39	18389.1	4.09
EU Countries	7067.1	29.36	10510.2	20.80	49338.5	10.96
OECD Countries	13773	57.21	20157.9	39.89	115138.7	25.58
OPEC	3924	16.30	2688.8	5.32	177903.4	39.53
China	31	0.13	1502.2	2.97	51069	11.35

Source: Compiled from Reserve Bank Handbook on Indian Economy

Fig. 1.7: Imports by Region
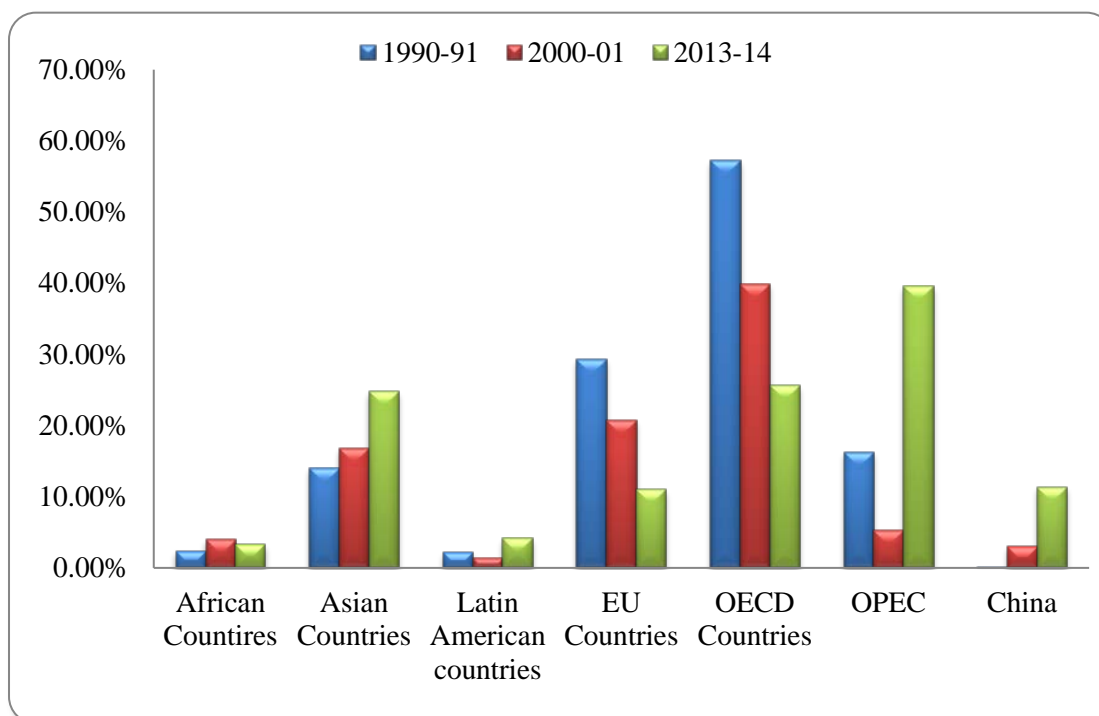
Source: Compiled from Reserve Bank Handbook on Indian Economy

1.2.3.1 Trade deficit

India's trade deficit has been increasing over the years. It was US $ 28.0 billion in 2004 -05 and increased to US$ 118.6 billion in 2010-2011 and further rose to US $ 135.8 billion in 2013-2014. In 2014-2015 it was slightly higher at US$137.7 billion.[8] This marginal increase was due to fall in international oil prices by around 20 per cent. Over the years India is working on an export oriented model of growth so that the trade deficit levels are kept at reasonable levels.

1.3 BACKGROUND OF INDIA'S TRADE POLICY

The new economic policy of 1991 witnessed various structural changes in India's trade policy regime. Along with the focus on export oriented growth, the tariff and the non-tariff barriers were brought down significantly, technological up-gradation was facilitated by inviting foreign investments, complicated and lengthy procedural formalities were done away with and there were attempts to integrate with world economy through multilateral and bilateral trade arrangements[9]. (See appendix I for

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[8]   The External Sector, Chapter 04, The economic survey 2015-2016, Vol.2.
[9]   Department of Commerce, Ministry of Commerce and Industry, Government of India.

detailed trade policy changes of 1991) Over the years this strategy has helped the country to improve in international trade.

1.3.1. Trade policy measures

The foreign trade policy 2009 -2014 initiatives provided the much needed momentum to the overall trade for India in form of various free trade agreements, preferential trade agreements and comprehensive economic partnership agreement. As part of this initiative various trade negotiations with different countries were initiated. It was during this time that the FTA with ASEAN countries was firmed up in 2010 by forming the ASEAN India Free trade agreement (AIFTA). Rounds of negotiations with the EU countries had already begun by this time.

In the current scenario weak global demand has made the Indian exports less buoyant. A rapid growth in exports is the only key to rapid and sustained growth rate for India. The union budget of 2015-2016 tried to promote the export oriented growth model for India. A new foreign trade policy (FTP) (2015- 2020) came into effect from 1st April, 2015. The main focus of the policy is on expanding the manufacturing and services exports. This is followed by improving the 'ease of doing business' index, raising the India exports to nearly US$ 900 million by 2020, providing a road map for the Make in India and Digital India programmes.

1.3.2 World Trade Organization (WTO) and India

India is one of the founding members of WTO along with 134 other countries. India has actively participated in WTO to create a rule based system in governance of international trade, which would ultimately lead to better prosperity for the nation. India has also played an important role in the formulation of major trade policies of WTO. WTO membership has really benefited India as several countries are now trading with India, thus giving a boost to production, employment, standard of living and an opportunity to maximize the use of the world resources. India has been a taking clear stand at each and every negotiation of WTO. India strongly believes that any new round of talks at WTO depends upon a full convergence of views amongst the entire WTO membership on the scope and framework of such negotiations. Under the WTO, regional trade agreements (RTAs) and preferential trade agreements (PTAs) have become increasingly prevalent. As of 1st July, 2016 there were approximately 635

notifications of RTAs on goods and services received by the WTO. As per the Economic Survey (2015-16) "India has always stood for an open, equitable, predictable, non-discriminatory and rule based international trading system. It views RTAs as building blocks to the process of trade liberalization under the WTO". The Trans pacific partnership (TPP) agreement is one the latest and the largest agreements under the WTO and has implications for India. It is considered as one of the most comprehensive mega regional FTA including countries like Australia, Canada, Japan, United States, New Zealand, Peru, Singapore, Chile, Vietnam, Malaysia and Mexico. This agreements is likely to be a game changer for the global trade. The TPP may not directly affect India but it requires a careful analysis in adapting and responding to the challenges imposed by it in the long run. Hence India needs to conclude on a priority basis its ongoing FTAs, like the India –EU bilateral trade and investment agreement on a fast track basis. This along with other agreements should wind up at the earliest.

1.3.3 Bilateral and Regional cooperation

At the outset Liz Brownsell Allen & Overy (2012) describe "a bilateral or regional trade agreement as an agreement entered between two or more countries under which the participants agree to reduce tariffs, quotas and other restrictions on trade between them. Bilateral and regional agreements cover both trade in goods and trade in services and also deals with issues such as the protection of intellectual property. Such agreements also frequently contain provisions on dealing with protection for foreign investments. Bilateral and regional agreements are also referred as preferential trade agreements because they benefit only particular states or countries to which they relate. Bilateral agreements can broadly be divided into two categories viz. customs unions and FTAs. Under the custom union there are two or more countries entering into an agreement to remove tariffs and other restrictions on trade among themselves, but apply a common external tariff to trade with any other countries (e.g. Southern African Customs Union). Whereas under the free trade agreements there are two or more countries entering into an agreement to remove tariffs and other non-tariff restrictions on trade among themselves, but each continues to decide the tariffs that apply to trade with any other countries (e.g. North American Free Trade Agreement).

1.3.3.1 India's proposed new RTAs

Till date India has signed ten FTAs and six PTAs and they are already in force. Economic Survey 2015-16 reported about some of the new proposed RTAs like:

- India-Thailand Comprehensive Economic Cooperation Agreement (CECA)
- India- New Zealand FTA/CECA
- India-SACU (South Africa, Botswana, Lesotho, Swaziland and Namibia) PTA
- BIMSTEC (Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan and Nepal) FTA
- India-Canada FTA
- India-Australia CECA
- Regional Comprehensive Economic Partnership (RCEP) Agreement among ASEAN + six FTA partners

1.3.3.2 PTAs with different countries

India has been actively engaged in trade agreements with different countries across the world. PTAs helps the countries to improve the terms of trade resulting in strong international relations. India has been following the policy of PTAs with countries based on the strategy of comparative advantages. Following trade agreements as reported by Ministry of Commerce, Government of India are already concluded and are in force:

- MoU with Argentina
- MoU with Colombia
- Agreement of Cooperation with Nepal to Control Unauthorised Trade
- Agreement on Economic Cooperation between India and Finland
- Agreement on SAARC Preferential Trading Arrangement (SAPTA)
- Agreement on South Asia Free Trade Area SAFTA
- Asia Pacific Trade Agreement APTA
- India Singapore CECA
- India Malaysia CECA
- Agreement on implementation of India – Malaysia CECA
- India ASEAN Agreements
- India Africa Trade Agreement
- India Chile PTA
- India-Ecuador Joint Economic and Trade Committee (JETCO)

- India Afghanistan PTA

- India Bhutan Trade Agreement

- India Japan CEPA

- India Korea CEPA

- India MERCOSUR PTA

- India Nepal Trade Treaty

- India Sri Lanka FTA

- SAARC Agreement on Trade in Services SATIS

- Treaty of Transit between India and Nepal

1.3.3.3 India and the Free trade agreements

India's approach towards trade liberalization has really benefited in terms of improved trading relations. Government has been shifting focus from PTAs to RTAs as it provides wide and comprehensive coverage of goods as well as services. After the success of RTAs government is now focusing on FTAs as a strategic tool to proceed in foreign trade especially from 2003-04 onwards. The main focus has been the partnership with Asian countries mostly in goods trade. India has signed free trade agreements with many countries. Since the mid- 2000s, India's FTAs have doubled to about 42 today. (See fig.1.8) An attempt is made to have a closer look at one of the three most important FTAs for India. The below sections discusses the same in brief.

Fig. 1.8: FTAs sign by India from 1970-2010
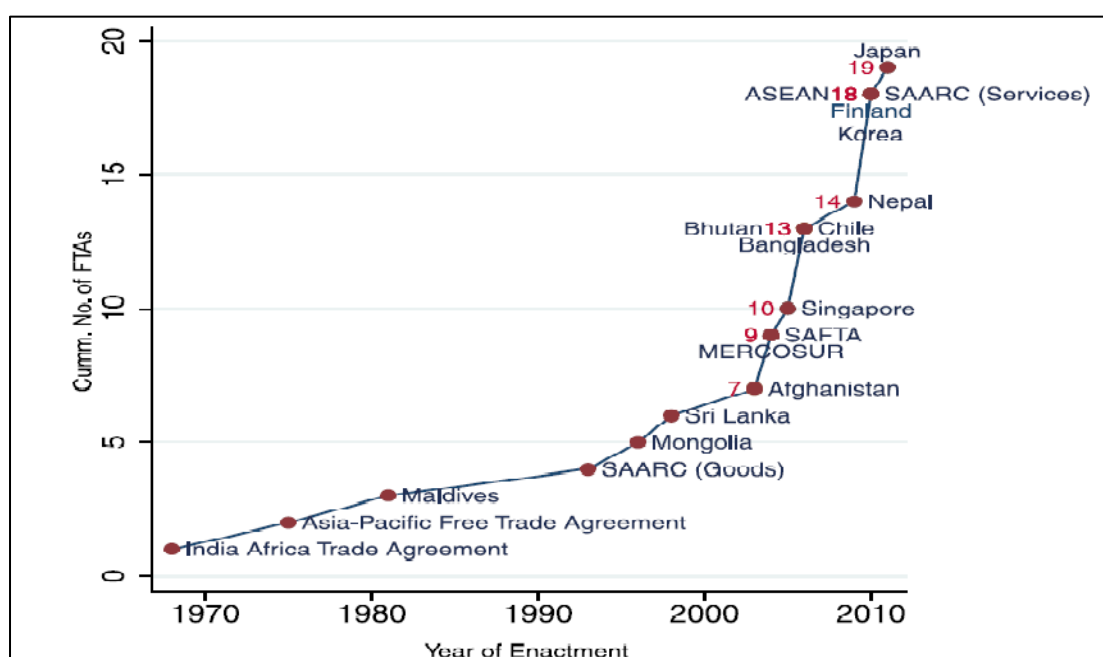
Source: Economic Survey 2015-2016

India Japan CEPA: The Comprehensive Economic Partnership Agreement (CEPA) between India and Japan was signed on 16th February, 2011 and came into force from 1st August of the same year. The agreement aimed to eliminate tariffs on 90 percent of Japanese exports to India such as auto parts and electric appliances and 97 percent of imports from India including agricultural and fisheries products until 2021[10]. Since inception of CEPA, India–Japan merchandise trade has increased significantly. A marginal export growth, a fair amount of trade creation and improvement in the welfare of both the countries by 2020 is expected through the CEPA. This Trade agreement between India and Japan has two major concerns; the infrastructure in India and non-tariff barriers in Japan. On the infrastructure front, the two countries agreed to collaborate on the huge US $90-billion Delhi–Mumbai Industrial Corridor (DMIC) project. The key agenda of the of the project involved the development of nine industrial zones, a high-speed freight line, three ports, six airports, a six-lane intersection-free expressway and a 4,000-megawatt power plant. The project agreement appears highly promising in the environment of the new manufacturing policy and has a potential to create 100 million jobs. Government of India has urged Japan to remove all non-tariff barriers particularly in the Japanese pharmaceutical market.

India South Korea CEPA: India signed the CEPA with South Korea in 2009. The agreement has provisions for substantial reduction of both tariffs and non-tariff barriers in a phased manner. Under the agreement South Korea will cut tariffs on 93 percent of goods from India and on the other side India will cut 75 percent of total tariffs. The agreement will help in providing better access to the Indian service industry in South Korea.

1.4   PROSPECTS OF INDIA WITH ASEAN AND EU COUNTRIES

The partial talks between India and EU representatives and implications of the India-ASEAN FTA have given rise to considerable interest among researchers across the world. Empirical studies have used various models to analyses the possible impact of both the agreements. Following section gives an overview of the India's trade relationship with the two trading blocs.

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[10]   http://www.orfonline.org/research/india-japan-economic-partnership-agreement-gains-and-future-prospects/

1.4.1 Overview of India and ASEAN countries

Ever since the introduction of 'Look East Policy' in 1991 by the Rao government and rigorously pursued by the successive administrations of Mr. Atal B. Vajpayee and Dr. Manmohan Singh and currently Mr. Narendra Modi, the importance of ASEAN countries in India's trade has increased tremendously. The diversity of cultures between India and ASEAN countries has the potential to spur both economic and social growth resulting into steady rise in trade and investment flows. Between 1993 and 2003, ASEAN-India bilateral trade grew at an annual rate of 11.2 percent. Seeing this opportunity, leaders signed the ASEAN-India Framework Agreement on Comprehensive Economic Cooperation to explore the economic potential of their partnership. Some of the sectors identified for trade & investment comprised of tourism, agriculture, health & pharmaceuticals and information & technology.

1.4.1.1 Forming of the AIFTA

The FTA with ASEAN was formulated with a lot of difficulty spread across a time line of five years. India's agriculture ministry was keen on excluding commodities like rubber, pepper, tea, coffee and palm oil from the deal. Rules of origin were not being clearly defined. Also tremendous fears about the impacts of the India-ASEAN FTA on farmers continued to rattle the discussion. By early 2007, in the midst of boom in biofuels, palm oil became a central blockage point as Indonesia and Malaysia, both top palm oil exporters, struggled to get India to lower its tariffs. Finally on 28th August 2008, a deal was concluded which was signed in 2009 and took effect (trade in goods) with five of the countries in ASEAN (Singapore, Malaysia, Brunei, Myanmar and Thailand) and India on 1st January 2010.

1.4.1.2 Basic Facts and Trend of the AIFTA

ASEAN-India FTA agreement was only for trade-in-goods, and did not include software and information technology. Negotiations on an FTA with regards to the services and investment sectors started in October 2008 and was finalized on December 20th, 2012.[11] ASEAN is India's fourth-largest trading partner after the

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[11] http://www.aseanbriefing.com/news/2013/02/07/asean-india-free-trade-area-part-i-introduction. html

European Union, the United States and China. Trade between India and ASEAN is likely to receive a significant boost with the finalization of the services and investment FTA. The trade-in-goods FTA eliminated tariffs for about 4,000 products including electronics, chemicals, machinery and textiles etc. between the regions. Tariffs for 3,200 products was proposed to be reduced in December 2013, and duties on the remaining 800 products will be brought down to zero or near zero by December 2016.There are a total of 489 items excluded from the list of tariff concessions, and 590 items excluded from the list of tariff eliminations pertaining to farm products, automobiles, certain auto-parts, machinery, chemicals, and crude and textile products. ASEAN and India have agreed to allow between 7 percent and 9 percent of tariff lines or products to be excluded from tariff reduction commitments[12]. A detailed view on the tariff commitments is provided in the table below:

Table. 1.8: India's tariff commitments under India-ASEAN trade in goods agreement

Tariff elimination	Tariff reduction	Negative List/Exclusion List
Normal Track 1: 7,775 products (at the HS 8-digit level) through annual cuts between 1 January 2010 and 31 December 2013.	**Sensitive Track:** Reduction to 5% on 1,805 (at HS 8-digit level) products through annual cuts between 1 January 2010 and 31 December 2016.	No tariff concession is offered for 1,297 products (at the HS 8-digit level).
Normal Track 2: 1,252 (at the HS 8-digit level) products through annual cuts between 1 January 2010 and 31 December 2016.	**Highly Sensitive Track: Reduction** to 37.5% on crude palm oil, 45% on refined palm oil, coffee, tea and 50% on pepper through annual cuts between 1 January 2010 and 31 December 2019.	

Source: Compiled from Dash, 2010[13]

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[12] http://www.aseanbriefing.com/news/2013/02/07/asean-india-free-trade-area-part-i-introduction. html

[13] http://www.smetimes.in/smetimes/in-depth/2010/Jan/20/india-asean-trade-in-goods-agreement 900432.html Dash, P. K. (2010). 'India-ASEAN: Trade in goods agreement', SME Times, 20 January 2010. New Delhi, India

India's exports to ASEAN region included (a) petroleum products (b) oil meals (c) gems and jewelry (d) electronic goods (e) cotton yarn and wool (f) machinery and instruments (g) primary/semi-finished iron and steel (h) transport equipment (i) marine products (j) drugs and pharmaceuticals (k) inorganic, organic, and agro chemicals (l) dyes and intermediates, etc. The import basket of India from ASEAN region includes (a) Coal, coke, briquettes (b) vegetable and petroleum oils (c) electronic goods (d) organic chemicals (e) non-electrical machinery (f) wood and wood products (g) non-ferrous metals, metalliferous ores and metal scrap etc.

1.4.1.3 Gains and losses of the AIFTA

The gains from AIFTA can be accessed through the improved trade relationship. The information about India ASEAN trade is presented in table below. The share of ASEAN in India's exports has been increasing since the negotiations started for AIFTA. ASEAN contributed nearly 11.19 percent to India's exports.

Table 1.9: The Share of ASEAN in India's Exports

Year	Percentage Share
2000-01	6.54
2001-02	7.89
2002-03	8.76
2003-04	9.12
2004-05	10.09
2005-06	10.1
2006-07	9.97
2007-08	10.06
2008-09	10.33
2009-10	10.13
2010-11	10.2
2011-12	12.01
2012-13	10.99
2013-14	11.19

Source: DGCI & S, Kolkata, Department of Commerce, Ministry of Commerce & Industry, Govt. of India

Table 1.10: India's Bilateral Trade with ASEAN (figures in US$ million)

Year	Exports	Imports	Total Trade	Trade balance
2000-01	2913.78	4147.48	7061.26	-1233.7
2001-02	3457.01	4387.22	7844.23	-930.21
2002-03	4618.54	5150.17	9768.71	-531.63
2003-04	5821.71	7433.11	13254.82	-1611.4
2004-05	8425.89	9114.66	17540.55	-688.77
2005-06	10411.3	10883.67	21294.97	-472.37
2006-07	12607.43	18108.48	30715.91	-5501.05
2007-08	16413.52	22674.81	39088.33	-6261.29
2008-09	19140.63	26202.96	45343.59	-7062.33
2009-10	18113.71	25797.96	43911.67	-7684.25
2010-11	25627.89	30607.96	56235.85	-4980.07
2011-12	36744.35	42158.84	78903.19	-5414.49
2012-13	33008.21	42866.36	75874.57	-9858.15
2013-14	25649.03	31384.74	57033.77	-5735.71

Source: DGCI & S, Kolkata, Department of Commerce, Ministry of Commerce & Industry, Govt. of India

India's exports to ASEAN region has increased from mere US$ 2913.78 million in 2000-01 to US$ 36744.35 million in 2010-11 and US$ 33 billion in 2012-13 which is almost 11-12 times over the period from 2000-01 to 2012-13. India's exports to this region were at an average of US$ 15 billion per year during this period registering an average annual growth rate of 20.2 percent and compound annual growth rate of 22.4 per cent over the period from 2000- 01 to 2012-13. Similarly in terms of imports from ASEAN region has registered an average annual growth rate of 19.4 per cent and compound annual growth rate of 21.4 percent during the analysis period, i.e., from 2000-01 to 2012-13. Total trade between India and ASEAN region registered an average annual growth rate of 19.8 percent and compound annual growth rate of 21.8 percent during 2001-20120-13.

1.4.1.4 Future prospects of AIFTA

Considering the growth in trade between ASEAN and India, there are better prospects for India to increase exports to the region. Also the India AIFTA will give

boost to Indian industries. As pointed out by Francis (2011) that, "Under the ASEAN-India FTA, members will have increased access to the Indian market for semi-processed and processed agricultural products and close substitutes, which could adversely impact the Indian agricultural sector. Indian small and medium enterprises in food and other agriculture-related products, some intermediate goods and light manufacturing products are also likely to suffer. But import liberalization in intermediate goods will encourage multinational corporations to undertake production rationalization across the region in the transport equipment, machinery, chemicals and iron & steel sectors. This could lead to India's deeper integration in production networks in such sectors"

1.4.2 Overview of India and EU countries

India-EU relations dates back to the early 1960s, with India being amongst the first countries to establish diplomatic relations with the European Economic Community. "A cooperation agreement between India and EU signed in 1994 took the bilateral relationship beyond trade and economic cooperation. This relationship was upgraded to a 'Strategic Partnership' during 5th India-EU Summit at The Hague in 2004. Both the side adopted a Joint Action Plan in 2005 that provided for strengthening dialogue and consultation mechanisms in the political and economic spheres, enhancing trade and investment, and bringing peoples and cultures together (Ministry of External Affair, GOI)"[14]. Over the years a large number of bilateral agreements were signed between India and the EU. Important agreements between India and EU which included Science & Technology Agreement (2001), Joint Vision Statement for promoting Cooperation in the field of Information and Communications Technology (2001), Customs Cooperation Agreement (2004), Memorandum of Understanding on Cooperation in Employment and Social Affairs (2006), Horizontal Civil Aviation Agreement (2008), Joint Declaration in the field of Education & Training (2008), Joint Declaration on Multilingualism (2009) MoU on Statistics (2012),Joint Declaration on Research and Innovation Cooperation (2012) and Joint Declaration on Enhanced Cooperation in Energy (2012).

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[14]   MEA (2013) India-EU Relations, Ministry of External Affairs, Government of India.

1.4.2.1 Launch of talks between India –EU strategic partnership

India being an emerging global power is an important trade partner for the EU. The value of goods exported to EU stood at $49.3 billion in 2014-2015 and the imports were of the value of $48.3 billion during the same time period.

In the year 2000 the Indian cooperation with Europe reached greater heights with the Indian Prime Minister Atal Bihari Vajpayee attending the first-ever India-EU Summit in Lisbon.[15] The summit was aimed at giving greater heights to the economic relations between the two partners. Further as stated in the report of Cuts International (2013) that India EU broad-based Bilateral Trade and Investment Agreement (BTIA) popularly called FTA started in 7th summit which took place in Helsinki in 2006. Post this summit negotiations for EU-India FTA were launched in June 2007 in Brussels and were expected to be over in a time frame of two years but as there is a deadlock on various issues in negotiation from both sides and it has missed deadlines. The work is on-going but with a slow progress.

1.4.2.2 Various rounds of negotiations

Although India is a far more open economy now, it still maintains considerable tariff and non-tariff barriers that hamper trade with the EU. There are hopes amongst both the EU and India to increase their trade in goods and services and investment through the FTA negotiations that they launched in 2007. Negotiations were expected to be concluded in early 2012, but they are still ongoing. The economic survey 2012 - 2013 states that "EU-India trade has grown impressively and more than doubled from €28.6 billion in 2003 to over €67.9 billion in 2010." However, India's trade regime and regulatory environment still remain comparatively restrictive. The last EU-India Summit took place on 10th December 2010 in Brussels. The last round of talks on the pact was held in 2013 with dialogue stalled since. Trade between India and the EU stood at $101.5 billion in 2013-14 and it was $57.25 billion during April-October 2015.[16] Recent studies, which analyze the trade effects of FTAs, present ample evidence on the trade creation and diversion effects of the proposed EU-India FTA.

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15 http://www.rediff.com/money/2000/jun/27pm.htm
16 http://www.livemint.com/Politics/fuy3ORgUU0hpDC0bYOBToN/EUIndia-summit-off-as-Italian-marines-case-rankles.html

1.4.2.3 Indo-EU bilateral trade

According to European Commission, India is an important trade partner for the EU and an emerging global economic power. The country combines a sizable and growing market of more than 1 billion people. The value of EU-India trade grew from €28.6 billion in 2003 to €72.5 billion in 2014. EU investment stock in India is €34.7 billion in 2013. Trade in commercial services quadrupled in the past decade, increasing from €5.2billion in 2002 to €23.7 billion during 2013[17].

1.4.2.4 Negotiations issues between India and EU w.r.t to the proposed FTA under the bilateral trade

Major items for exports to EU includes petroleum products, textiles, apparels, gems and jewllery and machinery and transport. India's imports from EU includes machinery, gems and jewllery, chemical products and transport equipments. The EU and India are committed to further increase their trade flows in both goods and services as well as bilateral investment and access to public procurement through the Free Trade Agreement negotiations that they launched in 2007. The proposed FTA is expected to boost trade and investment between the two regions. Though there has been substantial progress regarding the same, however both the regions have their own demands to be met. Demand from India's side include data security issues for the country, liberalization of visa norms for Indian professionals traveling to EU and easier market accessibility rules for sectors like pharmaceuticals, chemicals, textiles and garments and so on. On the EU side, it's keen on liberalization of professional services (especially accounting and legal), massive cuts in tariff on automobiles, auto components, wines and spirits from the Indian side. India has higher stakes in getting the agreement finalized at the earliest as it will get an opportunity to deal with a set of developed countries in the EU.

1.5   IMPORTANCE OF THE STUDY IN THE PRESENT CONTEXT

The EU is India's largest trading partner accounting for approximately 13 percent of its total world trade. The EU is also one of the largest sources of Foreign Direct Investment (FDI) for India. Success in agreements between two sides will

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[17]   http://ec.europa.eu/

increase FDI flow in India which will support India's growth, increase employment opportunities and also help in technological developments. The ASEAN countries too hold high importance for India under its Act East policy. The least developed countries in ASEAN can be looked as potential markets for Indian exports as well as India can explore comparative and regional advantage from the set of developing and developed countries from the bloc. EU is largely a set of developed countries and ASEAN is largely a set of developing countries. The study holds importance not only in terms of analyzing increased trade between India and the two blocs but also seems crucial for understanding the gains from trade with the two blocs. The present scenario of slowdown in Eurozone and its excess capacity in capital goods gives strong arguments for trade negotiations and liberalization with the trading bloc. The developed countries in EU have a larger technological carrying capacity and India is sure to benefit from the same. On one side FTA with ASEAN countries is already formulated and India's is trying to make the best use of it in terms of increased trade and exchange of technical knowhow. On the other side negotiations with EU are ongoing. Hence the study holds importance and relevance in terms of analyzing the trade creation and diversion effects of FTAs for India.

1.6   PROBLEM STATEMENT W.R.T TO THE CURRENT RESEARCH WORK

In line with multilateralism under WTO (world trade organization) agreements, India has tried making use of free trade agreements (hereafter; FTAs) as a strategic element of its trade and foreign policy, right from 2003-04 onwards. Economic survey 2015-16 looks at the positive outcome of FTA and states that "the average impact of a FTA is to increase the imports, exports and overall trade by roughly around fifty per cent in four years approximately." However, there is a possibility that FTA can be beneficial for one region over another. The reason is that FTA though gives rise to trade creation, it may in all possibility can lead to trade diversion towards less efficient firms within the FTA trade bloc. Thus, FTA requires a careful empirical analysis. Hence in order to take the investigations further there was an attempt to explore if any growth in trade with countries in EU and ASEAN had taken place over the years or not. There was also an attempt to explore the growth rate in commodities.

In order to assess the impact of AIFTA on trade, comparison in growth during pre and post trade agreements was computed from data collected from Ministry of Commerce. Growth in exports and imports during pre and post FTA between India and ASEAN countries is presented in Table 1.11.

Table: 1.11: Growth of Exports and Imports to ASEAN Countries: Pre and Post FTA

Country	Growth of Exports to ASEAN Countries: Pre and Post FTA (in % share)		Growth of Imports to ASEAN Countries: Pre and Post FTA (in % share)	
S. No.	**2005-2010**	**2010-2015**	**2005-2010**	**2010-2015**
BRUNEI	-43	16	48610	29
CAMBODIA	88	214	547	978
INDONESIA	122	-8	188	52
LAO PD RP	210	124	19950	798
MALAYSIA	144	31	114	75
MYANMAR	88	415	145	-24
PHILIPPINES	51	84	33	73
SINGAPORE	40	2	92	13
THAILAND	62	72	142	88
VIETNAM SOC REP	166	186	297	391
Total US$ million	74	39	137	55

Source: Author's calculation from the data of Ministry of Commerce, GOI

It can be seen from the data that trade with ASEAN countries had increased by 74 percent during 2005-2010 but had actually declined to 39 percent during post FTA period i.e. 2010-2015. Similarly total imports for ASEAN had increased by 137per cent during 2005-2010 but had declined to 55 per cent during 2010-2015. Biggest improvement in trade in terms of growth in exports could be seen for countries like Cambodia, Myanmar, and Brunei whereas trade growth had declined for Indonesia, Malaysia and Lao Pd Rp. On the other hand growth in imports had increased for

countries like Cambodia, Vietnam Soc Rep and Philippines. Sharp decline in trade growth can be seen for Lao PD RP, and Brunei. These results led to more curiousness in exploring the trade relationship between India and ASEAN.

Further an attempt was made to explore the commodity wise growth rate from EU and ASEAN countries which is shown in table 1.12 and 1.13. There were a total of 99 commodities undertaken for the research work. But the results were analyzed only w.r.t those commodities where significant change in growth had taken place. The results created more curiosity to investigate this growth rate in terms of its contribution to specific sectors. And hence various commodities under the HS code two were grouped together to form a specific sector. (Discussed in detail in section 3.4 of the research methodology chapter.)

Table 1.12: Growth Rate in Exports between India and EU
for Selected Commodities

Commodity	Growth 2000-2007 (in %)	Growth 2007-2015 (in %)	Change in Growth Rate (in %)
Cocoa and Cocoa Preparations.	0	1618	1618
Photographic / Cinematographic Goods.	-48	153	201
Arms And Ammunition; Parts And Accessories Thereof.	169	316	147
Works Of Art Collectors' Pieces And Antiques.	25334	-86	-25419
Zinc And Articles Thereof.	30792	-98	-30890
Mineral Fuels, Mineral Oils And Products Of Their Distillation; Bituminous Substances; Mineral Waxes.	36158	-2	-36160

Source: Author's calculation from the data of Ministry of Commerce, GOI

It can be seen from the data that remarkable growth in exports has taken place for commodities like cocoa, photographic goods, arms and ammunition. While for commodities like mineral fuels and oils, bituminous substances, mineral waxes, works of art collectors' pieces and antiques represent largest decline in terms of growth rate.

Table 1.13: Growth Rate in Exports between India and ASEAN for Selected Commodities

Commodities	Growth 2005-2010 (in%)	Growth 2010-2015 (in%)	Change in Growth Rate (in%)
Aluminium and Articles Thereof.	69	8077	8007
Sugars and Sugar Confectionery.	-74	7826	7900
Products of the Milling Industry; Malt; Starches; Insulin; Wheat Gluten.	-16	1099	1115
Paper and Paperboard; Articles of Paper Pulp, of Paper or of Paperboard.	950	-95	-1045
Zinc and Articles Thereof.	2033	-13	-2045
Ships, Boats and Floating Structures.	6422	-19	-6440

Source: Author's calculation from the data of Ministry of Commerce, GOI

Likewise, the exports from India to ASEAN show a significant increase for commodities like aluminum, sugar and sugar confectionery and products of the milling industry, while for commodities like paper and paperboard, zinc, ships, boats and floating Structures have registered declining in growth rate.

Table 1.14: Growth Rate in Imports between India and EU for Selected Commodities

Commodities	Growth 2000-2007 (in%)	Growth 2007-2015 (in%)	Change in Growth Rate (in%)
Cereals.	500	1350	850
Edible Fruit and Nuts; Peel or Citrus Fruit or Melons.	127	513	386
Animal or Vegetable Fats and Oils and their Cleavage Products; Pre. Edible Fats	-7	374	381
Works of Art Collectors' Pieces and Antiques.	4529	398	-4131
Aircraft, Spacecraft and Parts Thereof.	9820	-59	-9879
Mineral Fuels, Mineral Oils and Products of their Distillation; Bituminous Substances; Mineral Waxes.	19278	-30	-19307

Source: Author's calculation from the data of Ministry of Commerce, GOI

The data on growth in imports between India and EU for selected commodities is presented in table 1.14. It can be seen from the data that significant growth in imports has taken place for commodities like cereals, edible fruit and nuts, animal fats have registered significant growth rate while commodities like mineral fuels, mineral oils, mineral waxes, aircraft, spacecraft, antiques have registered significant decline.

Table 1.15: Growth Rate in Imports between India and ASEAN for Selected Commodities

Commodities	Growth 2005-2010 (in %)	Growth 2010-2015 (in %)	Change in Growth Rate (in %)
Aluminium and Articles Thereof.	92	6826	6734
Zinc and Articles Thereof.	40	1046	1006
Photographic or Cinematographic Goods.	0	900	900
Cocoa and Cocoa Preparations.	1206	-96	-1303
Works of Art Collectors' Pieces and Antiques.	1747	-53	-1800
Tanning or Dyeing Extracts; Tannins and their Deri. Dyes, Pigments and Other Colouring Matter; Paints and Ver; Putty and Other Mastics; Inks.	52300	23	-52277

Source: Author's calculation from the data of Ministry of Commerce, GOI

The imports from India to ASEAN has increased significantly for commodities like aluminium, zinc, tanning or dyeing extracts, antiques and art works have registered declining growth rate.

Hence, it was necessary to understand that proliferating FTAs and the growing mega-regionalism has led to increased trade for India with it member countries in ASEAN and EU or not. This exploratory testing of the relationship between AIFTA and India –EU (in the above tables) trade in commodities raised further interest in exploring the potentials of trade for India from the two blocs. It was felt that empirical investigation of this relationship could help the government and the policy makers to take India-EU relations forward in the right direction. And also look for any loops in

the India ASEAN FTA and take corrective measures for the same. India's comparative advantage and national interest was kept in mind. Hence the problem statement was studied in detail to empirically investigate India's country wise trade, sector wise trade and factor wise analysis in terms of Gravity model with EU and ASEAN countries.

1.7   OBJECTIVES OF THE RESEARCH WORK

1.   To analyze the trade volume and composition of India's trade with ASEAN and EU.

2.   To identify factors influencing trade between India – EU and India –ASEAN.

3.   To study the impact of trade agreement (FTA) with ASEAN and lessons for India – EU FTA, negotiations for the same are ongoing.

4.   Policy suggestions for future trade agreements of India with EU and ASEAN.

1.8   OUTLINE OF THE THESIS

The information collected and analysis performed during the course of research is arranged in five chapters.

Chapter 1: Introduction

First chapter gives an overview of the subject under consideration. It include the introduction of various trade agreements, importance, types of trade agreements, India trade agreements with various countries and blocks etc.

Chapter 2: Review of Literature

Second chapter gives an overview of literature available on the subjects. Various studies undertaken at national and international level are reviewed.

Chapter 3: Research Methodology and theoretical framework

Third chapter gives an overview of research methodology used in research. It gives an overview of sources of data collected, scope of the study and methods of data analysis.

Chapter 4: Data Analysis and Interpretation

This chapter is divided in two parts. The first part looks at the descriptive analyses of the data using mean and correlation etc. with the countries in ASEAN and

EU. It also uses a long term trend and looks at the growth in trade with each country. The chapter also looks at sector wise analysis. The second part of the chapter looks at the econometric estimations in form of OLS model, pooled OLS model. It uses the gravity model to analyse India's factors affecting trade from ASEAN and EU.

Chapter 5: Conclusions and Policy Suggestions

This chapter looks at the conclusions drawn and the policy suggestions for the policy makers. It looks at the cost benefit analysis of the formation of FTA, the economic benefits and economic efficiency of the same. It analyses the effects of the AIFTA in terms of increased trade majorly on the import side. The FTA formulation with the EU are also weighed properly in terms of gains and losses on both sides which can bring out important policy lessons.

Thus to conclude global trade environment has changed significantly over the years. Trade liberalisation policies of India have helped in significantly increasing its share in world trade. The strategy of forming regional trade agreements has helped India in increasing the overall trade volume of the country. In the next chapter a detailed literature review is undertaken to understand the theoretical framework of India ASEAN agreement and the proposed partnership between India and EU.

Chapter 2

REVIEW OF LITERATURE

CHAPTER 2
REVIEW OF THE LITERATURE

2.1   INTRODUCTION

The economic reforms of 1991 helped the Indian economy to get a high average annual growth rate in the past twenty five years. Much of the growth can be attributed to an open – market oriented model, which helped the country to become one of the fastest growing economies. A major reform in trade policy regime was effected since 1991 for the Indian economy. The import licensing system was dismantled and all non-tariff barriers were phased out except for consumer goods. All the finance ministers starting from Manmohan Singh in 1991, P. Chidambaram, Yashwant Sinha, Jaswant Singh and again Chidambaram forcefully fought on the subject of tariff and the tariffs have indeed been substantially done away with. Besides, India also undertook major commitments to liberalise the trade regime under the world trade organisation (WTO) agreement.

Panagariya (1998) stated that India has made considerable progress in opening the economy for competition both foreign and domestic since the launch of economic reforms in June 1991. He further explained that the economy responded well to liberalization as the export to GDP ratio rose by 10 percent. Thus sustainable policies helped the economy to grow smoothly.

As stated by Ahluwalia (2002) in 1991 the Indian government signaled a systemic shift to a more open economy. Before the reforms, trade policy was characterized by high tariffs and pervasive import restrictions. Criteria for import licensing were not transparent and the corruption was unavoidable, hence import licensing was abolished in 1993.The restrictions on import of manufactured consumer goods and agricultural products was discontinued on April 1, 2001. This was in response to a complaint brought by the United States to WTO against India under reducing tariff protection, the second element in the trade strategy. He further stressed the fact that the impact of ten years of gradualist economic reforms in India presents a mixed picture. The trade and industrial policy reforms need to be supplemented by labor market reforms, which are a critical missing link.

Balasubramanyam (2003) described the post reform growth and development in the Indian economy as impressive. After a decade, post the reforms India's real GDP posted an annual growth rate of around six per cent. There was a steady decline in poverty and infant mortality rates. Exports and inflows of foreign direct investment (FDI) did register an upward trend. He further examined the reforms in the trade area and stressed upon the fact that statutory peak rate of tariffs went down from four hundred per cent in 1990 to fifty percent in 1996. Thus the average tariff rates went down drastically. The quantitative import restrictions (QRs) were removed and export restrictions on a number of goods were eliminated and the FDI regime was relaxed.

Ideas (2009) states that one of the significant impacts of high growth in the Indian Economy is the extraordinary high and sustainable growth for the economy in the recent past that has increased its share in the global output. The high growth is accompanied by an acceleration of its foreign trade especially exports. This has helped the country to increase its trade volumes and share in world trade. India's journey of increased integration with the global economy has been accompanied by significant changes in its pattern of trade. The most striking aspect of this change is that of increased integration with the developing world in general and developing Asia in particular. Mukherjee & Mukherjee (2012) point out that the export performance of India post 1991 has been fluctuating a lot. It was seriously impacted during the East Asian crisis in 1997, than in 2001-02 once again the exports went down on account of a semi recession in US which was the one of the largest trading partners of India. The attack on World trade tower caused the economy a net loss of 0.25 percent of US GDP. Another setback was received by the US subprime crisis followed by the sovereign debt crisis in the Euro Zone. Between 1991 and 2009, India's share in world exports rose from 0.56 percent to 1.52 percent. The unusual model of development followed by the Indian economy may be a major cause behind this change wherein the economy grew largely more in the service sector than agriculture or industrial sector. This has helped the country to improve its share in the world trade over a period of time.

Thus along with trade liberalisation and increase in exports, there has been a significant market diversification in India's trade in recent years which has helped the country to cope with the sluggish global demand. Linking its advances with the trends

globally and its long-standing obligation to multilateralism under WTO agreements, India has tried making use of FTAs as a strategic element of its trade and foreign policy, right from 2003-04 onwards.[18] India has mainly focused on partnering with Asian countries in both goods and services. Within Asia, India has signed bilateral FTAs with Sri Lanka (1998), Afghanistan (2003), Thailand (2004), Singapore (2005), Bhutan (2006), Nepal (2009), Korea (2009), Malaysia (2011) and Japan (2011). There have also been two regional trade agreements, the South Asian Free Trade Agreement (SAFTA, 2004) and the India-Association of Southeast Asian Nations Agreement (ASEAN, 2010). Outside Asia, FTAs have been agreed with Chile (2006) and MERCOSUR (2004).[19] Subsequently the ASEAN FTA has made the greatest impact on India's trade largely due to the higher tariff reductions by country on the same. Against this backdrop of proliferating FTAs and the growing mega-regionalism, a review of India's FTAs with ASEAN and its proposed FTA with EU is overdue.

This chapter mentions the results of the research work done by different researchers previously nationally and internationally on the various aspects of bilateral and multilateral trade agreements impacting trade in different countries, empirical studies on India –ASEAN FTA and theoretical framework of India – EU relationships. The literature is sub- divided in four sections for a better understanding. The first section explains the existing literature on the formation of various bilateral trade agreements (BTAs) and multilateral trade agreements (MTAs) across countries. It also seeks to understand the sustainable strategies India adopted to survive and grow in the international trade by forming RTAs and FTAs with other member countries of WTO. The second section looks into various researches analyzing the various aspects of the ASEAN-India free trade agreement (AIFTA) and pointing out its limitations. The section also looks at the possibilities of further making strong ties in specific sectors. The third section looks into the India – EU relationships. It analyses the proposed strategic partnership between the two nations. The fourth section looks into the literature gap and states the objectives of the current research work.

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[18]   Preferential trade agreements, Chapter 8, Economic survey 2015-16 http://indiabudget.nic.in /es2015-16/echapvol1-08.pdf

[19]   ibid

2.2   EXISTING LITERATURE ON IMPACT OF BTAS AND MTAS

Twenty five years of reforms have led to increased volumes of trade in the country thereby helping the Indian economy to grow by leaps and bounds. India adopted a strategy to flourish in the international trade by forming BITs (bilateral investment treaties), multilateral trade agreements (MTAs), regional trading arrangements (RTAs), preferential trade agreements (PTAs) and free trade agreements (FTAs). This strategic move helped the country in achieving trade liberalization. To understand the trade pattern and the possible impact of forming regional trade agreements for India and other countries there have been many research studies using gravity model to analyze the effects of the same.

Nowak. L (2005) investigated the trade impact of inclusion of Turkey into the EU by using simulations on agricultural goods as well as iron and steel products. The time period of the study was 1998-2002. The study observed the impact on Turkey's sixteen major export sectors in a panel data using extended version of gravity model. Some of the key factors looked at are role of price competition, EU's protection, and transport costs in the export trade between Turkey and the EU. Nowak. L, D, Felicitas & Martinez (2005) examined the effect on MERCOUSR exports with international trade liberalization policies in EU using a dynamic panel analysis. The study uses the time period from 1988 to 1996. MERCOUSR is considered an emerging market from investor's point of view. The EU was importing much larger amount from MERCOUSR than from United States., thus leading to considerable rise in trade. Some variables used to analyze the proposed FTA negotiations between EU and MERCOUSR are market access, trade expansion, international bargaining and credibility considerations. The results reveal that a more competitive real exchange rate could improve MERCOUSR's export performance. EU's protectionist measures affected the export growth rates in the MERCOUSR region negatively. Thus, trade talks between EU and MERCOUSR should be looked at from realistic perspective. Batra (2006) tried to analyze the global trade potential of India with 146 countries using OLS with cross section data. The coefficients obtained are used to analyze the trade potential of India with these countries. The results indicate that the three traditional variables of gravity are naturally reasonable with a significant t statistic. Variables like gross national product and purchasing power parity do not change the

significance of explanatory variables. If the countries have cultural similarities then it affects the bilateral trade positively. The study indicated a high trade potential with China if the non - tariff barriers are removed. Pakistan also seems to have higher trade potentials for India. Bhattacharya & Banerjee (2006) observed the direction of trade in the Indian context. Their findings suggest that a core gravity model can explain 46 per cent (approx.) variations in India's direction of trade in the second half of the twentieth century. The trade of India responds less than proportionately to size and more than proportionately to distance. However size has a more determining influence on India's trade than the level of development of the trading partner. Likewise there have been specific research studies analyzing the direction of trade from ASEAN to India and its possible impacts. Eita (2008) tried to analyze the factors that determine trade flows between Namibia and its trading partners using a gravity model. The results indicated that increased GDP of importers and Namibia's GDP causes the exports to go up while distance and importers GDP per capita are associated with fall in exports. The GDP per capita of Namibia and the real exchange rate has no impact on its exports. Stack (2009) uses a panel data set of bilateral export flows from twelve EU countries to twenty OECD trading partners over the years 1992-2003 to evaluate the effect of European regional integration on trade. Kepaptsoglou *et al.* (2010) explains that gravity model is used extensively in the international trade for the last forty years. It has been considered for its empricial robustness and explanatory powers. The paper also provided an overview of FTA effects on international trade. Moghaddam & Ratha (2011) employ a gravity model to understand the trade relationship between EU and Turkey and further investigate the reasons for EU being reluctant to formalize the trade relationship with Turkey. Nag (2011) tried to capture the India-Sri Lanka free trade agreement that was signed in 1998. Deriving lessons from the FTA both the countries negotiated a 'Comprehensive Economic Partnership Agreement' (CEPA) in 2005. It included agreements on trade, investment, and technology transfer etc. Both the countries formulated the CEPA with the objective of widening and deepening of the existing FTA on goods and extending it to services also. Arabi & Ibrahim (2012) explain the bilateral trade pattern between Sudan and sixteen Arab countries over a period of 1990-2009 using augmented gravity model. Data analysis results shows that the gravity equation is fitting well and the estimates of population, GDPs of Arab countries and distance elasticity's are as anticipated. The

Heckscher-Ohlin theory explains inter-industry, instead of intra-industry, highlighting competitiveness rather than complementarity between Sudan and Arab countries. Azeem *et al.* (2012) investigated the determinants of foreign investment in Pakistan from 1999 to 2009 by using Gravity model. The variables used are gross domestic product, gross domestic product per capita, gross domestic product growth rate, inflation rate, trade, total government expenditure, population growth and distance. The results suggest there is strong evidence of gravity between Pakistan and its investing partners. Rahman & Dutta (2012) tried to analyze Bangladesh's bilateral trade pattern using panel data estimation technique. Their results indicate a positive relationship of Bangladesh with variables like size of economies, product differentials, per capita gross domestic product and openness of trading countries. The exports of the country are positively influenced by its income, partner countries total import demand and openness. But there is a negative influence on exports due to partner countries income and domestic inflation. Likewise the imports of Bangladesh are influenced in a positive way by the income of the trading countries and the degree of openness of the partner countries. High amounts of transportation cost affect the trade of the country positively. Tripathi & Leoitao (2013) examined the relevant determinants of India's bilateral trade flow to its major trading partners by using a gravity model for the time period of 1998-2012. There are twenty major trading partners which contribute nearly seventy per cent to India's trade flows. The study indicated that political globalization, cultural proximity, economic size and common border positively influence bilateral trade for India with its trading partners. Sahu (2014) assessed the Malaysia-India Comprehensive Economic Cooperation Agreement (MICECA) by looking at the potential sectors where Malaysia can possibly engage in a strong trade with India thus benefitting from the FTA. It also tried to look at prospective FDI inflows by making use of Granger causality test for the period 2004-2011. The results of FDI analysis show that total export and total import does not Granger-cause FDI from the FTA partners. Also in case of manufacturing, it is proposed that manufacturing exports could not be established between the FTA partners.

Das (2014) used firm level panel data to investigate whether the trade policy reforms of 1991 have led to inflow of more FDI inflows in the country or not. He

further investigated as to whether these trends contributed to significant factor productivity improvements since 2000. The results suggest the existence of significant productivity improvements and also identifies variables such as imports of raw materials and capital goods, size of operation, quality of employment captured by wage rates, and technology imports as crucial determinants of productivity. The foreign firms have catered to the domestic market and as a result, India is yet to develop as an export platform. Ranjan (2014) explains that post the economic reforms, India adopted a strategy to flourish in the international trade by forming BITs (bilateral investment treaties) and FTAs. India formed BITs and FTAs with about eighty six countries of which seventy three are already in force. India entered its first BIT with United Kingdom in 1994 followed by all major European countries including Germany, France, Italy, Belgium, Denmark, Switzerland and Sweden from 1999 to 2000. After the year 2000 India strategically extended its BITs with developing countries including China, Thailand, Indonesia, Saudi Arabia and Argentina. Apart from these treaties India made efforts to form several FTAs with countries like Singapore, Korea, Malaysia and Japan. One of the recent developments in this direction was the forming of AIFTA in Jan, 2010. Extending its investment liberalization India is still negotiating FTAs with EU, Indonesia, Australia, Mauritius and New Zealand. Thus, India's efforts to integrate with the global economy over the last two decades increased the foreign investment from a mere US$393 million in 1992-93 to close to US$ 65,000 million by 2012-13.

Economic Survey (2014) examined the trade integration strategy of India over the years which was based on multilateral trading systems to regional trading agreements over the recent years. This has helped the country to serve as 'building blocks' for achieving trade liberalization and complementing the MTS. India has signed ten FTAs and five preferential trade agreements (PTAs) and these FTAs/PTAs are already in force. Further, India is currently negotiating seventeen FTAs, including review/expansion of some of the existing ones. In the current situation when WTO negotiations are stalled, world trade has slowed down, and the shadow of protectionist measures looms large, a strategy of diversifying technology intensive exports through the regional process could lead to further trade promotion with trade liberalization. The report states that though there are many challenges on the trade front but India

has successfully diversified its export basket but it needs more of product diversification. It also has to reposition itself in its traditional areas of strength like textiles and leather & leather manufactures where it has lost considerable ground, while at the same time making forays into new areas. With multilateral trade negotiations stalled, and RTAs on the rise, India also has to follow a strategic regional trading policy focusing on the potential technology-intensive items in the more important RTAs. Though geopolitical considerations are important, India may have to bargain more in its regional trade negotiations, particularly in cases where livelihood concerns of large pockets of the population are involved. There is also a need to address the inverted duty structure in sectors like electronics, textiles, and chemicals and the artificial inverted duty structure caused by some FTAs/RTAs. On the services front, a gold mine of opportunity in sectors like tourism including health tourism is waiting to be tapped.

CUTS International (2015) report suggested that there has been a stagnation in multilateral trade negotiations under the aegis of the World Trade Organization (WTO) where now mega regional trade agreements (mega RTAs) are gaining momentum. The three main mega RTAs concerning India are the Trans-Pacific Partnership (TPP), Transatlantic Trade and Investment Partnership (TTIP), and the FTA between the European Union and the ASEAN. For all the three mega RTAs India is not a member, hence it makes it interesting to look at the various opportunities and challenges they can pose before India. The probable effects of these RTAs is a loss in market access for India. Though there is abundant space for new and alternative markets in Latin America, Central Asia and Eastern Europe, and Africa. But India does have an opportunity in streamlining and updating its domestic regulations relating to tariff and non-tariff barriers so that it can possibly reach new markets and derive benefits of increase in global economic growth. There is abundant space for new and alternative markets in Latin America, Central Asia and Eastern Europe, and Africa. Domestic reforms can address gaps in specific trade regulations. Also Indian industry can be encouraged to integrate deeper into value chains in mega RTA regions, predominantly in ASEAN, and elsewhere. This can be achieved by producing high-value products that, with the assistance of domestic reforms and more comprehensive trade agreements, will satisfy the increasingly high standards based on mega RTAs.

Accordingly, India needs to optimize its tariffs and arrive at a balanced policy while engaging in future bilateral/regional trade agreements. Also, domestic policy tools, such as the 'Make in India' programme, can assist India in broadening its portfolio at both ends of the value chain.

2.3   INDIA AND ITS TRADING PARTNERS

2.3.1   India - ASEAN trade relationship

Ever since the introduction of 'Look East Policy' in 1991 by the Rao government and rigorously pursued by the successive administrations of Mr. Atal B. Vajpayee and Dr. Manmohan Singh and currently Mr. Narendra Modi, the importance of ASEAN countries in India's trade has increased tremendously.

At the outset Sharma & Chuja (2000) observed the trade within the ASEAN countries. They used a gravity model from 1980 to 1995 to estimate the trade in ASEAN countries and found that the trade increases with the increase in the size of the economy. The analysis as indicated by the dummy variables reflects that the ASEAN integration scheme did not increase the intra ASEAN trade. It infact indicates that the increase in trade occurred with members of a wider APEC group. ASEAN region could generate larger gain in trade by forming unilateral and multilateral reduction in trade barriers among themselves and with other countries in the Asia Pacific Region.

Sen (2003) investigated the new emerging economic relationship between ASEAN and India as early as in October 2003. He pointed out that ever since the East Asian Crisis in 1997-98 India has grown faster than ASEAN particularly during 1996-2000 period. While the annual average growth rate for India was 6 percent it was only 0.7 percent for the ASEAN-5[20] economies and the annual average growth rate for the group was 1.4 percent. Post 2002, there has been a growth in bilateral trade between India and ASEAN under the comprehensive economic co-operation agreement between India and ASEAN. The two way trade between them was worth US$12.1 billion in 2002, thus accounting for 2 percent of ASEAN's total trade. With this trade potential in mind, India therefore was pursuing a policy of speedy alignment of its

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[20]   **ASEAN-5** countries – Indonesia, Malaysia, the Philippines, Singapore and Thailand – the biggest economies in Southeast Asia

tariff levels with the ASEAN region. Some specific sectors which were on the list of India under the bilateral trade were pharmaceuticals, metal scrap, leather goods, gems and jewellery, textiles, machinery components, food, energy security, science and technology and manpower. Along with the focus on sectors, Indian tourists were increasingly becoming important markets for tourism in several ASEAN countries. Thus the author pointed out clearly the range of existing complementarities between ASEAN and India and the possibility of exploring the existing unutilized potential for future trade.

Gaur (2003) stressed on the fact that apart from the bilateral trade, ASEAN India FTA would go a long way in helping to increase the trade potential and investment between the two groups. However India needs to be cautious so that the private sector does not face a burden of higher cost of doing business if it leads to trade diversion and investment distortion. The author refers to the "spaghetti bowl effect"[21] in context of ASEAN's simultaneous negotiations for regional trade investment agreements with China and Japan along with India, which posses' possibilities of overlapping and inconsistent agreements with a web of complex preferential tariff schemes and complicated rules of origin for the same products and same groups. Lastly, the author points out that both ASEAN and India will have to complete necessary reforms to make their economies more competitive and resilient to withstand pressure of trade liberalization.

As a result of the success of the comprehensive economic agreement India was keen on forming the FTA with the ASEAN region as a whole. However, the FTA with ASEAN was formulated with a lot of difficulty spread across a time line of five years. India's agriculture ministry was keen on excluding commodities like rubber, pepper, tea, coffee and palm oil from the deal. Rules of origin were not being clearly defined.[22] Also tremendous fears about the impacts of the India-ASEAN FTA on farmers continued to rattle the discussion. By early 2007, in the midst of boom in biofuels, palm oil became a central blockage point as Indonesia and Malaysia, both

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[21]   With the increase in FTAs in the world economy and large amount of bilateral and multilateral trade partners, there has been a paradoxical and often contradictory outcomes. The term spaghetti bowl effect was first used by Prof. Jagdish Bhagwati in his paper titled as *U.S. Trade Policy: The Infatuation with Free Trade Agreements*. In 1995. He has used term often to describe the problems of FTA's.

[22]   http://bilaterals.org/?-India-ASEAN-

top palm oil exporters, struggled to get India to lower its tariffs. Finally on 28th August 2008, a deal was concluded which was signed in 2009 and took effect (trade in goods) with five of the countries in ASEAN (Singapore, Malaysia, Brunei, Myanmar and Thailand) and India on 1st January 2010.[23]

Analyzing the prospective impact of AIFTA Pal & Gupta (2008) examined that a strategic partnership with ASEAN countries holds importance for India if it aspires to play a prominent role in the global economy and governance. They propose that in the short run India may not benefit from the AIFTA. However in the long run this strategic move may benefit India especially in the area of services exports. Pal & Gupta (2009) further did a comprehensive analysis of the signing of trade in goods agreement between ASEAN and India. They studied the tariff schedule of India and did a ground work of the AIFTA. Theoretically, the basis of trade liberalization is the comparative advantage between the countries and the inter industry trade leads to winners and losers. To make sure that there is an increase in total welfare due to the trade agreement, the government needs to redistribute some of the increased wealth from the gainers to the losers. The AIFTA shows signs of such inter-sectoral trade-offs thus evoking mixed reactions in India. The authors investigate that some sectors like plantation, marine products and light manufacturing may be vulnerable by the deal. From the analysis of India's commitment schedule as well as looking at the production structure of the ASEAN countries, it can be assumed that the agricultural sector in India, particularly plantation sectors like tea, spices, coffee and rubber will be negatively affected. There can be a stiff competition for marine products, textiles and garments and the auto components industry. But some sectors in manufacturing hold a positive outlook on the same. Given such inter-sectoral trade-offs, the role of the government in negotiating the trade agreements and adopting policies for alleviating the burden falling on those sectors which will be adversely effected is of crucial importance.

Ahmed (2010) has made an attempt to investigate the sectoral dimensions of India – ASEAN FTA post liberalization. Using a GTAP and SMART model this study reveals that both India and ASEAN gain in terms of welfare while the terms of

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23   Ibid http://bilaterals.org/?-India-ASEAN-

trade for India deteriorates. The study states that India will be affected significantly in processed food products, grain crops, textile and wearing apparel, light manufacturing and heavy manufacturing sectors. As a result, India's trade balance will be worsened and it will cause revenue losses for India. Francis (2011) points out that India's global imports from ASEAN in 1995 as well as during 2007-08 were dominated by petroleum & petroleum products followed by gems and jewellery sector, non-electrical machinery; electrical machinery & parts; iron and steel; and organic chemicals. Their cumulative share in India's global imports was 71 percent in 2008. This suggests that trade increases have been on a positive front with the ASEAN bloc for India.

Nag, B. & Sikdar (2011) observed the implications of India ASEAN FTA through a simulation based study. There results point out that India's gain is mainly from the allocative efficiency. The authors suggest that there are chances of terms of trade deteriorating for India. Though the same can be corrected and economies of scale is achievable but there is a possibility of the trade diversion taking place post the FTA. The authors further point out by econometric estimations that India will be in a position to arrest fall in terms of trade if the productive efficiency increases along with the assumption of economies of scale in the export related sectors. This will help the country to capture the fall in welfare gains and thus move upward.

Veeramani & Saini (2011) attempted a study to understand the impact of the ASEAN-India Preferential Trade Agreement on plantation commodities (coffee, tea and pepper) using the SMART and gravity models. The study reveals that the agreement may cause a significant trade creation rather than trade diversion for India's plantation sector. This will cause a significant increase in imports, causing loss of tariff to government but consumer welfare will increase. The amount of trade creation was the highest for tea, coffee and pepper in decreasing order. However the trade diversion affecting the non ASEAN countries the most is Uganda for coffee, Kenya for tea and Sri Lanka for pepper.

Raghurampatruni (2012) examined the revealed comparative advantage between ASEAN and India by computing India's export intensity indices (EII) as well as import intensity indices (III) with the ASEAN for the years 1990 to 2010. The value

of the index for EII and III is higher than one for most of the years under study. This explains the strong connection between India's exports and imports with the ASEAN countries compared with its trading pattern with rest of the world. For ASEAN the EII is higher than III as it exports more to India compared to its imports. The author also investigated country wise trade intensity and found that India's export Intensity is above one for Indonesia, Malaysia, Myanmar, Singapore, Thailand and Vietnam. While for the smaller countries (Brunei, Laos, Cambodia and Philippines) the export intensity is unstable over the years. Looking on the import intensity side India is importing smaller volumes from the less developed countries of the ASEAN which is reflected in the low III with Brunei, Cambodia and Lao PDR. The import intensity below one from Philippines and Vietnam indicated a restricted trade from these countries. Though over the years India's import intensity was small with Thailand but it has developed strongly after signing the bilateral trade agreement. India's imports a larger quantity from Singapore and Malaysia as well as Myanmar as it shares geographical border with India.

Yean and Yi (2014) sought to compare the impact of AIFTA on the export of manufactured goods from ASEAN to India and vice versa. It also looks at the scheduled tariff liberalization from both sides. The study has used an augmented gravity model that allows for the control of other trade related variables and quantifies any changes in a country's trade due to these trade agreements. Their findings suggest that ASEAN countries will gain more than India on account of tariff reductions. The results show that the advantages will be more for ASEAN specifically in the manufacturing sector as tariffs are high in India. An increase in 1 per cent of the GDP of ASEAN countries will result in a 1.5 percent increase of ASEAN'S exports to India. An increase in the India's GDP will induce an increase in export to ASEAN as well, but with a smaller magnitude in terms of impact of the reduction in tariffs will lead to an increase in India's exports to ASEAN by less than 1 per cent. Thus, specific trade facilitation measures need to be included in the agreement so that there is an increase in the flow of manufactured goods from ASEAN to India and vice versa.

Alam (2015) attempted to analyze bilateral trade between India and ASEAN region-wise, country-wise and commodity-wise and identifies complementary and competing commodities of trade between India and ASEAN countries. He highlights

that India's total trade with ASEAN region has increased at an average annual growth rate of 19.8 percent and compound annual growth rate of 21.8 percent during the analysis period. The bilateral trade between India and ASEAN has almost increased ten times during a time span of ten to twelve years. Singapore, Indonesia, Malaysia and Thailand are the most important markets for India within ASEAN. His findings conclude that India's main export commodities to ASEAN region include mineral fuels, mineral oils and products, ships, boats and floating structures, organic chemicals, meat, edible meat offal, cereals, vegetables and fruit, nuclear reactors, boilers, machinery and mechanical appliances, parts thereof while the main imports items by India from the ASEAN region are mineral fuels, animal and vegetable fats, electrical machinery and equipment's and parts thereof, nuclear reactors, boilers, organic chemicals, wood products, rubber products, etc. He also measured India's export and import intensity with ASEAN and found that it is greater than one for most of the years. This means India's exports and imports are intense with ASEAN countries as compared to its trading pattern with the rest of the world.

Economic Survey (2015-16) states that the ASEAN FTA has had the greatest impact, possibly because tariff reduction by India has been greater under it. India has benefitted on both sides of trade flows with a significant 33 percent increase in exports and 79 percent increase in imports.[24] There has been a considerable increase in trade with ASEAN especially in industries like metals on the import side and apparels on the export side.

With Prime Minister Mr. Narendra Modi according a high priority to turn erstwhile 'Look East policy' into 'Act East' policy, the trade ties can further be strengthened and the tariff commitments on both sides can be speeded up. While addressing at a plenary session at the East Asia Summit in November 2014 he said "no other forum brings together such a large collective weight of global population, youth, economy and military strength. Nor is any other forum so critical for peace, stability and prosperity in Asia-Pacific and the world"[25].

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[24] Preferential trade agreements, Chapter 8, Economic survey 2015-16 http://indiabudget.nic.in/es2015-16/echapvol1-08.pdf

[25] http://m.thehindu.com/news/national/look-east-policy-now-turned-into-act-east-policy-modi/article6595186.ece

2.3.2 India -EU trade relationship

India is an important trade partner for the EU and a growing global economic power. EU is now India's largest trading partner, prominent FDI destination and the prime source of technical know - how and developmental aid. The liberalization process of India in 1991 infused new dynamism to the India-EU ties and from then there has been a qualitative shift in the perceptions and outlook towards each other.

Baroowa (2007) describes the EU-India relationship in depth stating that for EU, India's emerging global profile as a fastest developing economy, its newly acquired political identity of a nuclear weapons power and its active association with institutions such as the WTO provided the rationale to upgrade the traditional diplomatic ties into a more functionally significant political relationship. The EU was looking at immense potential of India whose largely untapped market offered immense opportunities. The bilateral trade between the two sides increased by a considerable amount in the 1990s. By 1998, India's exports to the EU (15 percent) grew faster than to other parts of the world (11 percent) per year. There was a high growth rate registered in handicrafts, textiles, agriculture heavy machinery, cars, chemicals and in infrastructure. EU's exports to India grew by almost 83 percent in a time frame of eight years post the reforms (i.e. from 1991 to 1998). The author further states that in 2005, EU imports from India were in the tune of 18.9 billion euros, while EU exports to India amounted to 21.1 billion euros. In 2005, bilateral trade between India and the EU grew by 20.3 percent and since 2001 has grown by 11percent on a yearly average. In year, the EU accounted for 21 per cent of India's exports and imports.[26] The EU appreciated the comprehensive reforms undertaken by the country in the insurance and telecom sectors and in foreign exchange management. Thus, the stage was set for the initiation of all-encompassing political partnership and the idea of a strategic partnership between India and EU germinated with the first India-EU summit held in Lisbon on 28th June 2000. Both India and EU were determined to discuss and resolve certain issues like international drug trafficking, drug abuse, putting an end to chemical and biological weapons on nuclear proliferation. There were also talks on enhancing the flow of trade in goods and services, energy, telecommunications, infrastructure and so on.

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[26] European Commission Data

In the year 2000 the Indian cooperation with Europe reached greater heights with the Indian Prime Minister Atal Bihari Vajpayee attending the first-ever India-EU Summit in Lisbon.[27] The summit was aimed at giving greater heights to the economic relations between the two partners. Cuts International (2013) in its report stated that the background over India EU broad-based Bilateral Trade and Investment Agreement (BTIA) popularly called FTA started in 7th summit which took place in Helsinki in 2006. Post this summit negotiations for EU-India FTA were launched in June 2007 in Brussels and were expected to be over in a time frame of two years but as there is a deadlock on various issues in negotiation from both sides it has missed deadlines. The work is on-going but with a slow progress.

There have been various research studies analyzing the potential between EU and India with the proposed FTA. Jain (2008) and Malami (2008) describes the India EU relationship as complex on grounds of short term interests, national rivalries and forging common position. The proposed FTA negotiations between has greater commercial aspects. Nevertheless there are problems too. There exist basic differences in both perceptions and interest between EU and India in fields like trade, development and globalization. On one side EU is too ambitious and it wants a comprehensive agreement whereas India is not so keen on the trade liberalization. But in spite of differences there seems to be considerable potential in areas of scientific and technical cooperation and energy (coal and natural gas) largely on the Indian front.

The report by Agence Europe (2007) estimates that the EU will be benefitting more than India in the goods trade specifically. The report estimates that India's exports will grow by merely 19 per cent whereas the exports for EU will grow by nearly 57 per cent if the India EU FTA is formulated. There seems to be a positive outlook for motor vehicles and automotive sector on both sides if the dynamic FDI's are included. Both sides should benefit on the investment flows and reduction in trade barriers, the benefits of the same are estimated at €17.7 billion. But the study predicts an adverse effect for the Indian manufacturing sector with a larger negative impact on

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[27]   http://www.rediff.com/money/2000/jun/27pm.htm

employment changes in sectors like paper production, publishing, transport equipment, processed food and beverages, and tobacco products.[28]

Caris & Cuts International (2007) carries out an in-depth analyses to identify the scope and issues involved in the proposed EU India FTA. The analyses suggests that India will incur huge costs in entering the FTA but undoubtedly there are a number of benefits to be looked upon which should outweigh the costs for India. The trade liberalization will enhance trade between India and EU in form of Indian companies acquiring businesses in EU and vice versa. The report points out that the Indian policy makers should initiate these trade liberalization reforms by keeping the state governments fully informed and involved. This will ensure that the policies and procedures are implemented in uniformity and will help the country to deliver as per the international trade regime. The report stresses the need to revise the FDI equity caps and open up the closed sectors like legal services and accountancy for foreign investment. It also highlights that strong IPRs will benefit the software companies across sectors and will encourage strong product development in India. Signing of the FTA by India provides good platform to examine the relationship between India's competition policy and trade policy.

The Traidcraft (2008) report examined key aspects of the proposed EU-India FTA in 2007. The report investigates the likely impacts on sectors that are important for poverty reduction and development of India. The report seeks to understand liberalization in some sectors from Indian perspective like trade in goods, retail, financial services and government procurement. The retail sector in India is the second largest source of employment after agriculture. But the opening of European conglomerates can definitely risk the small scale farmers, can curb the independent decision making of the state governments in regulating the retail sector and the small retailers can be in a worse situation. The goods in the manufacturing sector will be hit badly as a significant proportion of the sensitive list (list of products that will not be subject to reduction of duties) will go towards shielding sensitive agricultural products. Other sectors affected will be transport, foods and beverages and so on. There is also

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[28]   Agence Europe (2007), Council's green light to launch of negotiations for Bilateral Free trade agreements with ASEAN, South Korea and India, April, Brussels Available at http://wwwcaionet. org/pbei/oxfam/0003418/f_0003418_2529.pdf

an underlying negative effect on employment in the trade in goods agreement. On the EU's part, in the European media India is increasingly characterized for higher and sustainable growth, high technology in service sector and bullish outlook of its major conglomerates in European markets. Thus, it raises its concerns over EU's Global Europe Strategy which may risk India's re-balancing strategy of economic growth with inclusive growth. There are doubts on EU-India FTA being the best way forward for development as there is an estimated a net welfare loss of about US$ 250 million for India from the potential FTA.

Khorana & Perdikis (2010) point out that the proposed EU India FTA will have far reaching implications. The elimination of trade barriers (tariff and non-tariff) will increase effective market access and allow exporters to realize potential economies of scale. The applied tariff rates for the EU were 5.4 percent on an average for industrial and agricultural goods in 2009 with 14.9 percent on agricultural products and 3.8 per cent on industrial goods. So the tariffs levied on industrial goods are lower than on agricultural goods hence Indian consumers are likely to benefit as industrial goods accounts for nearly three fourth of the total EU exports to India.

D. Chakraborty *et. al.* (2012) made an attempt to analyze the opportunities and challenges between the proposed India-EU BTIA. The multidimensional RTA strategy followed by both the EU and India on one side helped them to have a strong presence in global trade but on the other side has posed challenges for the RTA collaboration. The first challenge pointed out by the author is with EU-15[29] and EU-12[30] countries which are not homogenous by nature. Each country in the stated two groups has a diverse cultural background and history. This will result in varying degrees of readiness for the BTIA integration. Another challenge is the non-tariff barriers of EU which are quite different and complex and their harmonization seems complicated especially in case of services trade which involves possible movement of Indian professionals to the European countries. The anticipated EU-India BTIA is therefore conceivably welfare-augmenting, but loads of challenge for India as well. Thus on the

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[29] Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, United Kingdom. https://stats.oecd.org/glossary/detail.asp?ID=6805.

[30] Bulgaria, Czech Republic, Estonia, Cyprus, Latvia, Lithuania, Hungary, Malta, Poland, Romania, Slovenia and Slovakia https://stats.oecd.org/glossary/detail.asp?ID=6805.

Indian side there are a few broad policies to look at. Firstly, while reforming the tariffs India needs to cautiously weigh it's negative and sensitive list for commodities which should be prepared keeping in mind the livelihood security concerns associated with such measures. Secondly, it is an opportunity for India to put pressure on EU to curb its farm subsidies along with other negotiating points. Thirdly, all the WTO related apprehensions in the area of environment, labour standard, and TRIPS-plus have to kept strictly outside the gamut of BTIA. Finally, Indian economy needs to focus on those sectors which are of strategic importance to boost the firm level productivity through the WTO –plus concerns.

The CUTS International (2013) briefing paper focuses on the issues involved in the India- EU FTA. At the outset, it proposes that the FTA being negotiated between India and the EU may begin a new generation of trade liberalization as it is for the first time that India is proposing to sign an agreement outside South Asia with a group of developed nations. The issues involved in the negotiations for the FTA are labour mobility, financial sector liberalization in financial sector, manufacture of generic medicines, patent issues and so on. The FTA will increase EU investments in India in financial and defence sectors and will certainly benefit some industries like pharmaceuticals, textiles, gems and jewellery. India's fastest and sustainable growth in the past few years with higher per capita income, liberalized trade regulations and untapped market opportunities in various sectors is quite attractive for the EU. But there has been a constant deadlock over certain issues from both the sides which has hindered the progress of signing the FTA. The first issue highlighted by the report is w.r.t to the Indian banking and financial sector which is of particular interest to UK, Germany and France seeking market access and export gains for their banking and financial institutions. They want India to remove restrictions on bank branches, numerical quotas, limits on equity, voting rights, priority sector lending, borrowing limits and other regulatory measures. A very limited and positive movement in this area has been by an upward revision in equity caps by India. Second issue is related to Indian custom duties on European automobiles and alcohol. Though the duties on other manufactured goods have been reduced by India but there is a stalemate over automobiles and alcohols. There is a continuous fear of loss of competitiveness if the duties are slashed. Along with this there are concerns over the small scale units as

there are risks of them being thrown out of the market if the duties are slashed. The third issue is related to services where India is demanding ease of rules and regulations for the IT sector which is in high demand in Europe. But the unemployment problem is large in EU due to the sovereign debt crisis and hence EU is not very keen on outsourcing from India also India lacks a data secure status which restricts EU companies to carry out business in India. Fourth issue which is analyzed is related to strict Sanitary and Phyosanitary (SPS) standards under which EU does not allow the dairy products to be imported from India. EU's demand for farm certification cannot be met from the Indian farmers as the farm sizes are small in India unlike in EU where they much larger in size. There are various other issues analyzed by the report on intellectual property and government procurement. Thus the report concludes that "an FTA is favorable for both partners but it has to be finalized soon despite the economic and political challenges. Continuous deadlock on negotiations poses a challenge for political class from both the sides in their efforts to justify the status of India-EU strategic partnership".

Nataraj. G (2015) describes the India - EU FTA as significant to both the parties in terms of welfare gains, production, international trade, wages and boost in productivity. The welfare effects of the same as analyzed by the author are 0.3 per cent growth rate for the India economy in the short run and 1.6 percent growth rate in the long run. On the EU side, it can significantly gain on account of tariff reductions by India. However looking at the in depth analysis in the Indian context the way forward is to initiate more reforms in the manufacturing sector (which is still struggling from regulatory and governance issues), bring the tariffs down and clearly lay out the process of government procurement. All these can speed up the trade talks between India-EU.

India was EU's eighth largest trading partner in 2010. The EU investment in India has been increasing tremendously over the years especially from 2003 to 2010 the investments tripled from €759 million in 2003 to €3 billion in 2010.[31] The EU is also one of the largest sources of foreign direct investment (FDI) for India. The most

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[31]   http://www.ficci-ineupf.com/trade.html.

important countries in the EU for FDI into India are Germany, UK, France and Italy.[32] India received $ 24.91 billion in FDI equity flows from EU between April 2012 to May 2015[33]. The two way commerce between EU and India stood at USD 99 billion in 2014-15 while it was USD 101.5 billion in 2013-14.[34]

Thus the proposed EU-India FTA has high potentials for trade. Both trading partners should try to reach a consensus on the terms of trade and agreement. The long term integration between the EU and India will help in creating and enabling a business environment which both side can benefit from.

2.4   LITERATURE GAP

The review of literature points out that there are studies doing empirical analysis of India's trade with ASEAN countries and theoretical analyses of the trade relations between India and EU. But there is paucity of specific empirical research done on analyzing the trade potential of India with European Union separately. There is also a dearth of research studies doing a comparative analysis of ASEAN and EU trading blocs with India expressing the direction and volume of trade potential expected from both the blocs. Very few studies are available focusing on India's trade relations with special emphasis on selected sector specific industries. A comparative study of India's trading volume with the EU and the ASEAN (country wise and sector wise) is expected to provide important policy lessons for prospective trade agreements. Such a study will help the government and policy makers to take India-EU relations forward in right direction. It will also help the policy makers to identify countries and commodities within EU and ASEAN region for trade purpose keeping in mind India's competitive advantage and national interest.

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[32]   http://www.ficci-ineupf.com/trade.html ibid.
[33]   http://timesofindia.indiatimes.com/business/india-business/India-received-24-billion-in-FDI-from-EU-in-last-3-years/articleshow/48413502.cms.
[34]   http://timesofindia.indiatimes.com/business/india-business/India-received-24-billion-in-FDI-from-EU-in-last-3-years/articleshow/48413502.cms ibid.

2.5   OBJECTIVES OF THE THESIS

1.   To analyze the trade volume and composition of India's trade with ASEAN and EU.

     This objective analyses the trade potential of India's with ASEAN and EU for the last nineteen years. It also looks at sector wise potential from both the regions.

2.   To identify factors influencing trade between India – EU and India –ASEAN.

     This objective explains the variables which are strong enough to explain the trade relationship between EU and ASEAN. A basic gravity model is used for the analysis.

3.   To study the impact of FTA with ASEAN and lessons for India – EU FTA, negotiations for the same are ongoing.

     This objective is explained with the help of results obtained in 1 and 2.

4.   Policy suggestions for future trade agreements of India with EU and ASEAN.

     This objective clearly lays down the things lacking in the India ASEAN FTA and lessons of the India EU FTA.

Thus the literature review provides a detailed analysis of India's trade liberalization framework along with its trade relationship with ASEAN and EU. From here a theoretical understanding of the AIFTA and the India –EU proposed partnership is developed keeping in mind the empirical investigations. The next chapter will discuss the research methodology adopted in order to analyze the trade relationship of India with ASEAN and EU.

Chapter 3

RESEARCH METHODOLOGY AND THEORETICAL FRAMEWORK

CHAPTER 3
RESEARCH METHODOLOGY AND THEORETICAL FRAMEWORK

The research methodology chapter helps in identifying the problem, states the methods of data collection and interpretation and helps in deriving conclusions to the problem stated. These conclusions can be further generalized and used for theoretical and policy formulation. This chapter describes the problem statement, objectives of the study, research design, data structure and sampling frame and the various statistical techniques employed in the study.

Since 1991, India has witnessed extensive economic reforms in its policies governing international trade. These reforms have led to a dramatic rise in the trade flows as well as has increased the volume of bilateral trade with several economic cooperation arrangements with different countries. Under the economic reforms, India's trade liberalization policies have played an increasingly important role in its growth of specific industries in the last two decades. Along with trade liberalization there has been a significant market diversification in India's trade in recent years which has helped the country to cope with the sluggish global demand. Foreign Trade Policy 2015-2020 aims at increasing India's merchandise and services exports to US$ 900 billion by financial year 2020 by forming several economic cooperation arrangements with different countries in Asia and rest of the world.[35]

3.1   DESCRIPTION OF THE PROBLEM

In line with multilateralism under WTO (world trade organization) agreements, India has tried making use of FTAs as a strategic element of its trade and foreign policy, right from 2003-04 onwards. Economic survey 2015-16 describes "FTA as a preferential arrangement in which members reduce tariffs on trade among themselves, while maintaining their own tariff rates for trade with non-members." The economic survey report 2015-16 also looks at the positive outcome of FTA and further states that "the average impact of a FTA is to increase the imports, exports and overall trade by roughly around fifty per cent in four years approximately." However, there is a

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[35]   Economic Survey 2015-2016.

possibility that FTA can be beneficial for one region over another. The reason is that FTA though gives rise to trade creation, it may in all possibility lead to trade diversion towards less efficient firms within the FTA trade bloc. Hence, FTA requires a careful empirical analysis, as it has major implications on the policy framework of a country. Since the mid- 2000s, India's FTAs have doubled to about 42 today.[36] (As mentioned in the introduction chapter section 1.3.3.3)

The major trade challenge ahead of India is the stagnation in multilateral trade agreements. On one hand, the Indian exports have become less buoyant and the trade environment is more challenging than before and on the other hand negotiations of mega regional trade arrangements are threatening to exclude India. The FTA with ASEAN has had the greatest impact on India. It can possibly be because of a greater tariff reduction by India under the FTA which was formulated in 2010. For the India – EU trade agreement fifteen rounds of negotiations have been held till date. The negotiations were launched in 2007 and they are still incomplete. The proposed FTA is expected to boost trade and investment between the two regions. India as a developing country has higher stakes in getting the FTA implemented as soon as possible. The major reason behind this is the EU-United States proposed partnership under the two mega regional trading agreements i. e. Trans Pacific Partnership (TPP) and Transatlantic Trade and Investment Partnership (T-TIP), both of which India is not a member. If these mega regional agreements are finalized there is a possibility of Indian goods facing market access difficulty in European markets.

Hence, it is plausible to hypothesize that proliferating FTAs and the growing mega-regionalism can lead to increased trade for India with it member countries in ASEAN and EU. Testing the relationship between AIFTA and the proposed India – EU FTA could help the government and the policy makers to take India-EU relations forward in the right direction. It will also help the policy makers to identify countries and commodities within EU and ASEAN region for trade purpose keeping in mind India's comparative advantage and national interest. Hence the problem statement can be studied with the help of the empirical investigations of India's trade-country wise, commodity wise and factor wise with EU and ASEAN countries. The above mentioned

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[36]   Economic survey 2015-2016.

research problem poses certain research questions which can be studied by laying down relevant objectives for the same.

3.2   RESEARCH QUESTIONS
This research study will try to answer the following research questions:

1.   What is the effect on the exports, imports, trade volume of India under the two regions ASEAN and EU?

2.   What is the impact on trade in goods under the AIFTA (ASEAN India free trade agreement) on India? Has it helped the country in terms of increase in trade?

3.   What factors under a basic gravity model influence the trade relationship of India with ASEAN and EU?

4.   Will the proposed India -EU FTA benefit India's trade more or will it be advantageous for EU?

5.   What policy lessons should be kept in mind for India while framing its future agreements with ASEAN or EU or any other regional association?

3.3   OBJECTIVE OF THE STUDY
The main objective of the study is **"to carry out empirical investigation of India's trade with EU and ASEAN countries."** In addition to the main objective of the research study, the research attempts to identify various sub-objectives of the study stated as follows:

Objective 1. *To analyze the trade volume and composition of India's trade with ASEAN and EU.*

This objective analyses India's trade history with ASEAN and EU for the last nineteen years. It also looks at sector wise data from both the regions for a time frame of twenty years.

Objective 2: *To identify factors influencing trade between India – EU and India – ASEAN.*

This objective explains the variables which are strong enough to explain the trade relationship between EU and ASEAN. A basic gravity model is used for the analysis.

Objective 3: *To study the impact of trade agreement (FTA) with ASEAN and lessons for India – EU FTA, negotiations for the same are ongoing.*

This objective is explained with the help of results obtained in 1 and 2.

Objective 4: *To provide policy suggestions for future trade agreements of India with EU and ASEAN.*

This objective clearly lays down the things lacking in the India ASEAN FTA and lessons of the India EU FTA.

3.4 HYPOTHESIS TESTED IN THE STUDY

On the basis of defined objectives, the following hypotheses are tested in the research study:

$H_{0 (1)}$ **:** There exists no significant impact of EU and ASEAN countries on India's trade.

$H_{1 (1)}$ **:** There exists a significant impact of EU and ASEAN countries on India's trade.

$H_{0 (2)}$ **:** There are no significant variables that influence trade between India - EU and India -ASEAN

$H_{1 (2)}$ **:** There are significant variables that influence trade between India - EU and India -ASEAN

$H_{0 (3)}$ **:** There is no significant impact of EU and ASEAN countries on India's sector wise exports and imports.

$H_{1 (3)}$ **:** There is a significant impact of EU and ASEAN countries on India's sector wise exports and imports.

$H_{0 (4)}$ **:** There will be no significant impact on trade for India under the proposed India-EU FTA.

$H_{1 (4)}$ **:** There will be a significant impact on trade for India under the proposed India-EU FTA.

3.5 RESEARCH DESIGN

The research design is a detailed plan which guides the methods and procedures for collecting and analyzing the required information. The research design of the study is *descriptive as well as causal research*. The chosen research design is based on collection of secondary data of exports and imports of the countries in EU

and ASEAN with India. The data is collected for region wise exports and imports as well as commodity wise exports and imports. Other variables for which secondary data is sourced is GDP, population, distance, FTA (dummy variable and country dummies).

3.6   DATA STRUCTURE AND SAMPLING FRAME

In order to carry out an empirical investigation of India's trade with EU and ASEAN the research used a secondary data. A time series and cross sectional data is used for the panel data analysis. The sampling frame consist of thirty seven countries having trade relationship with India. Twenty seven countries from EU and ten countries from the ASEAN bloc were studied under the current research work. The EU countries include Austria, Belgium, Bulgaria, Republic of Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Poland, Portugal, Romania, Slovak republic, Slovenia, Spain, Sweden and the UK. The ASEAN countries include Brunei. Cambodia, Indonesia, Laos, Malaysia, Myanmar, Philippines, Singapore, Thailand and Vietnam. The variables chosen for the country wise analysis are exports, imports and trade volume[37] (exports + imports), GDP, population, distance, FTA (dummy variable), country dummies.

The trade pattern in respect of selected industries is analyzed under the Harmonized System (HS) code II. The HS code is an international product nomenclature. It was developed by World Customs Organisation (WCO). It encompasses around five thousand commodities classified by a six digit code and arranged in a legal and logical structure. This helps in achieving universal rules and uniformity for trade across countries. The system is used by more than two hundred countries including India. It serves as a basis of uniform collection of custom tariffs and international trade statistics. Nearly 98 percent of the merchandise in international trade is categorized under the Harmonized System. This harmonization of customs trade and procedures help in reducing the costs associated with International trade. The HS procedure is used by governments, international organizations and the private sector. The HS serves the purpose of internal tax calculation, trade policies and

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[37]   Trade volume is derived by adding the annual exports and imports for country wise analysis as well as sector wise analysis.

procedures with respect to bilateral trade partners, defining the rules of origin, tariffs and non-tariff measures, data related to transport, compilation of national accounts and research analysis in economics. The HS is thus "a universal economic language and code for goods, and an indispensable tool for international trade."[38] In the current research, the trade pattern of India with respect to selected industries under the HS code II is analyzed for EU and ASEAN countries. The data for the HS code is sourced from Export Import Data Bank, Department of Commerce, Ministry of Commerce, Govt. of India. Various commodities under the HS code two have been grouped together to form an industry (the basis of classification of goods under the HS code two was the amount of trade volume coming from each commodity). (See Appendix II for the 99 commodities listed under HS Code II).The study has tried to focus on the following seven industries:

1.   Food processing (from HS Code 2 to 5 and 7 to 22),

2.   Textiles and garments-2 (HS Code 50 to 63),

3.   Minerals (HS code 25 to 27),

4.   Chemicals (HS code 28 to 38),

5.   Gems and jewellery (HS code 71),

6.   Metals and metallic goods (HS code 72 to 83) and

7.   Machinery and engineering goods (HS code 84 to 89)

The historical span for the study was chosen keeping in mind the years of association with the countries in EU and ASEAN. The data for the exports and imports on the Ministry of Commerce website was available from 1996 onwards. However, during the time data was collected for exports and imports, it was only available till the year 2014. Hence the country wise analysis is based on 19 years export and import data i.e. from 1996 to 2014. For the sector wise analysis the data for exports and imports was collected from the year 1996 to 2015 (up to the month of December 2015 only; the data after this was not available during the time of compiling data). All the data for the exports and imports with countries in EU and ASEAN as well as for the exports and imports under specific sectors was sourced from Export Import Data Bank, Department of Commerce, Ministry of Commerce, GOI. The data for the variables

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[38]   World Custom organization (WCO) http://www.wcoomd.org/en/topics/nomenclature/overview/what-is-the-harmonized-system.aspx.

GDP, population and distance has been sourced from World Bank. All the trade (exports and imports) and GDP data is in US dollars ($) and the value is in million. Data for distance is in kilometres (km). Population data is based upon counts of residents in the country as shown by the World Bank statistics.[39]

There were various techniques used in the research work to carry out an empirical investigation of India's trade with EU and ASEAN countries. Following techniques have been used for the research i.e. mean of exports, imports and trade volume from the countries in EU and ASEAN, mean of exports, imports and trade volume from the countries in EU and ASEAN under specific sectors, correlation in exports, imports and trade volume in the sectors, Linear Regression Model for long term trend analysis & semi log model for CAGR, OLS model, pooled OLS model, Individual Within Effects, followed by First Difference model, Random effects model, between effects model and Poisson and Quasi-Poisson model. It uses the panel data on gravity model to analyse India's factors affecting trade from ASEAN and EU. Variables used are GDP, Distance, Population and FTA (dummy variable), country dummies to explain the gravity model in an unbalanced panel. The research has made use of unbalanced panel. There are various software's used for the research analysis. They are Microsoft Excel, SPSS 19 and R software.

3.7 DATA ANALYSIS AND METHODS

Various statistical techniques are to be used for testing the hypothesis and drawing the inferences and conclusions about the relationship. In the research study following methods are applied:

3.7.1 Descriptive Analysis

In the research study the secondary data of India's trading partner's i.e countries in EU and ASEAN is collected from Ministry of Commerce. (As stated above) The data is analyzed using SPSS software. The data is collected for the variables: exports and imports. The trade volume data is arrived at by adding the exports and the imports of each year. The descriptive analysis of the variables is done and represented. In descriptive analysis of the variables the measure of central

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[39] Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship--except for refugees not permanently settled in the country of asylum, who are generally considered part of the population of their country of origin.

tendency like MEAN is used.[40] Correlation is also used for the analysis. The descriptive analysis is carried out in two parts. The first part covers country wise analysis and the second part covers sector wise analysis. The details of the same are given below:

Country Wise Analysis

The descriptive analysis is carried out with the twenty seven countries of EU and ten countries of ASEAN. The mean values for countries in EU and ASEAN are analyzed w.r.t to India. Countries with higher or lower trade potential with India are looked at and analyzed further. **Sector wise analysis:** The descriptive analysis is carried out for the seven sectors as listed above and the trade relationship is analyzed w.r.t each sector. Mean values along with Correlation is used to structure the trade association of each sector from ASEAN and EU with India.

3.7.2 Trend Analysis

There can be long term increasing or decreasing trend in a time series data. The movement of a time series variable in one direction with time is known as trend. The trend requires a longer time period to be analyzed. In the research study the long term trend of the variables related to trade i.e. exports, imports and trade volume is analyzed. The analysis is carried out in two parts. First part covers the country wise analysis and the second part covers sector wise analysis. **(a.) Countries wise analysis:** Under the country wise analysis the trend relationship is investigated for all the 37 countries from EU and ASEAN. The trend analysis is carried out for exports, imports and trade volume from these countries w.r.t to India. **(b.) Sector wise analysis:** Under the sector wise analysis the trend in all the seven sectors listed above is analyzed w.r.t the thirty seven countries from EU and ASEAN. The sector specific trend analysis is carried for exports, imports and the overall trade volume from all the countries in EU and ASEAN.

The trend analysis for countries and sectors is carried out with the help of the following model:

$$Y_t = \alpha + \beta * Time + \epsilon_t \qquad (3.1)$$

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[40] Dispersion (standard deviation), distribution minimum and maximum values were also estimated. However during the oral defence of the work, the Departmental research evaluation committee (DREC) asked to remove the values of Standard deviation, min and max. Hence the needful was done.

Where, '*Time*' is the time variable. The slope coefficient ($\boldsymbol{\beta}$ (beta)) of the regression model represents the long term trend in the series. If the P value of T statistic is less than five percent level of significance, it indicates the presence of a statistically significant long term trend in the time series. Hence for the research study under country wise analysis β (slope coefficient) represents the long term trend behavior for exports/imports/trade volume of India with EU and ASEAN. The slope coefficient $\boldsymbol{\beta}$ can be interpreted as the rate of change in exports/imports/trade volume of the countries in one year. The T statistic of the slope coefficient in the regression model test the null hypothesis, "there exists an insignificant long term trend in the trade volume of the countries with India". If the p value of t statistic in the regression model is found to be less than 5 % level of significance that the null hypothesis can be rejected.

3.7.3 Growth Rate Estimation

In the research study the growth rate in the behavior of selected variables is estimated with the help of semi-log model. The model is used both for country wise and commodity wise analysis. The exponential annualized growth rate of a series can be estimated with the help of following model:

$$\log Y_t = \alpha + \beta * Time + \epsilon_t \qquad (3.2)$$

Where, '*Time*' is time variable in years. The slope coefficient ($\boldsymbol{\beta}$) of the regression model represents the value of the growth rate of the time-series variable. If the P value of T statistic is less than five percent level of significance, it indicates that the growth rate of the time series variable is statistically significant. Hence for the research study, the slope coefficient $\boldsymbol{\beta}$ represented the calculated value of compounded annual growth rate (CAGR) in exports/imports/trade volume of the countries with India. The t statistic in regression model test the null hypothesis that 'the growth rate is statistically insignificant.' If the p value of the t statistic is found to be less than 5 % level of significance than with 95% of confidence level the null hypothesis can be rejected. Similar analysis is done for the sector wise study where the compounded annual growth rate is found out in sectors chosen for the study.

3.7.4   Regression analysis

Regression analysis is largely used to establish cause and effect relationship between different variables. These variables are the ones used to study the research problem. They are classified as dependent and independent variables. The main purpose of the regression model is to find out the impact of independent variables on the dependent variable. The independent variables are used to estimate the expected values of dependent variable.

A multiple regression model can be represented as

$$\mathbf{Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4} \; \ldots\ldots\ldots \; \varepsilon_i \tag{3.3}$$

Where α is the intercept, β is the slope coefficients, Y is the dependent variable and Xi represents independent variables.

3.7.4.1 Pooled regression model

The most popular approach in panel data modeling is to ignore the variability of the variable with respect to cross section units as well as with time. In this case the dataset is just a combination of the observations for each country with other. The pooled regression model can be analysed by applying the OLS regression. The pooled regression model can be represented as follows:

$$\widehat{Y} = \alpha \; + \; \beta_1 X_1 \; + \; \beta_2 X_2 + \cdots + \beta_n X_n \tag{3.4}$$

Where Y is the dependent variable, α and β are regression coefficients and X_1 are independent variables. The result of pooled regression is interpreted similar to any multiple regression model. In the research pooled regression analysis has been used for variables like exports, imports, distance and trade volume. The results are than interpreted with respect to countries in EU and ASEAN.

3.7.4.2 Panel data regression model

A panel data or longitudinal data set has both cross-sectional and a time series dimension. The dataset follows the same units (these units may be individuals/ firms / states/countries etc.) over time. In short, panel data has the *space* and *time* dimensions. In the study the time series data of different variables like exports, imports, trade volume, GDP, distance and population is studied across ten countries of ASEAN and thirty seven countries of EU. Hence the nature of the data is panel. In

order to analyze the panel data, the fixed effect model is applied in the study. The panel data linear regression model can be represented as:

$$Y_{it} = \beta_i + \beta_1 X_{1it} + \beta_2 X_{2it} + \ldots\ldots \beta_k X_{kit} + u_{it} \tag{3.5}$$

The subscript *i* indicate the cross-sections considered in the study and t represents the time series behaviour of the variables. The Panel data models are useful for carrying out program evaluation studies, where typically data consists of two groups - one which participated in a program (the treatment group) and one which did not participate in the program (the control group), for time period(s) before the program started and after the program has been made operational. As per Baltagi (1995), Hsiao (1986) Green (1993) and Wooldridge (2000) to estimate a relationship between variables using panel data, econometricians can use either (a) the pooled OLS estimator, or (b) the first differenced estimator, or (c) the fixed effects estimator or (d) the random effects estimator**.** The choice of fixed effect model and random effect model depends on the results of f test as well as Hausman test. If we have the same number of observations over time for each i for all n units then we have a balanced panel. If we have missing data we have what we call an unbalanced panel. The required modifications are relatively simple. With a balanced panel the sample size is n = mT. With an unbalanced panel it is ΣT_i. Hence instead of calculating group means on the basis of a sample size of n we have to have a specific sample size T_i for each group. In the research unbalanced panel is used and fixed effect model is applied.

3.7.5. Gravity Model of international trade

At the outset Battacharya & Banerjee (2006) describe the gravity theory borrowed from the Newtonian law of gravity which states that the trade flows between two countries increases with the product of their GDP and decreases with the distances between them. The literature has tried to establish this relationship in several attempts by different authors like Anderson (1979) published a paper in which he provided the first serious micro- foundations of the gravity equation based on Armington preferences. However, the Anderson's theoretical concept of gravity models was based on some strong and simplifying assumptions that each country is fully specialized in production of one good. In the later study Anderson & van

Wincoop (2003), authors avoid these weaknesses and enhance the micro- founded theory. Santos – Silva and Teneryro (2006) pointed out that in the presence of heteroskedasticity the obtained estimates from log –linearized gravity models are biased. They suggest the use of poisson pseudo-maximum likelihood estimator as an alternative. Likewise the literature has made several attempts to derive the relationship between trade, GDP and distance from theoretical considerations. The trade flows between two countries are positively determined by their incomes and negatively determined by the distance between them using the gravity model has been put forward by various authors as mentioned in the literature review chapter like Nowak. L (2005) used it on Turkey and EU, Nowak. L, D, Felicitas & Martinez (2005) for MERCOUSR, Batra (2006), Bhattacharya & Banerjee (2006) and Tripathi & Leoitao (2013) used for India, Eita (2008) used it for Namibia' exports, Stack (2009) used it for 12 EU countries to 20 OECD countries, Moghaddam & Ratha (2011) for Turkey and EU, Nag (2011) for India and Srilanka, Arabi & Ibrahim (2012) for Sudan and Arab countries, Arabi & Ibrahim (2012) for Pakistan and Rahman & Dutta (2012) used it for Bangladesh. Likewise Anderson (2016) point out that structural gravity is a static model with parameters identified by cross section of bilateral trade flows between countries, it is also applied on a panel data.

The current research has made use of three variables suggested by the gravity theory to determine India's direction of trade from EU and ASEAN countries. Along with these three variables FTA is taken as a dummy variable (the value assigned is one if the FTA has been formulated with country which in case of ASEAN is one and in case of EU where the FTA is not formulated it is zero).

Describing the basic frame work of the model: According to the Newtonian law of gravity if two objects A and B, D_{ab} distance apart, have masses M_a and M_b respectively then the force of mutual attraction F is given by Equation 6.

$$\mathbf{F} = \mathbf{G} \, \frac{\mathbf{Ma \ Mb}}{\mathbf{D_{ab}}} \qquad \qquad (3.6)$$

Where G is a constant. We can replace F by the total volume of trade between the two trading partners i and j (TV_{ij}). M_a and M_b by the GDP of i and j (Y_i and Y_j) and D_{ab} by the distance between i and j (D_{ij}) the gravity model of international trade is derived:

$$TV_{ij} = G \frac{Y_i Y_j}{D_{ij}} \qquad (3.7)$$

In order to facilitate the econometric estimations, log is applied in the gravity equation to obtain a linear relationship as follows:

$$Ln\ Fij = ln\ G + \alpha\ ln\ Yi + \beta\ ln\ Yj - \delta\ ln\ Dij \qquad (3.8)$$

Where lnG corresponds to the intercept, while α, β and δ are elasticity's.

The research has used a standard gravity model to explain the direction of India's trade with all the 37 countries (27 from EU and 10 from ASEAN). Variables used are GDP, Distance, Population and FTA (dummy variable), country dummies to explain the gravity model in an unbalanced panel. In the panel data models cross-sectional data is used to see significant changes where coefficients are capturing the magnitude of those significant changes. A simple panel data model is conducted and further an attempt is made to prove the gravity model wherein after the synthesis, changes are found as per the existing theory. Fixed effect in panel is used for establishing the relationship. The justification for fixed effect can be found with Baltagi, Egger, & Pfaffermayr (2014). The authors state that the use of fixed country effects is now viewed as an acceptable procedure in structural modeling of trade flows.[41] The authors point out that the "appeal for using fixed effects is that the parameters on the regressors which are not fully collinear can be estimated with less danger of an endogeneity bias".

Thus, the present chapter explains the data structure, sampling frame and the methods of data analysis. After this chapter the data analysis and interpretation chapter looks into the descriptive analysis where the volume of exports, imports and trade with EU and ASEAN countries has been analyzed. Attempt is also made to analyze the trade across specific sectors in terms of imports and exports of India with EU and ASEAN countries. Further the econometric estimations are carried out in an unbalanced panel.

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[41]   See Feenstra (2002), Eaton and Kortum (2002), Anderson and Van Wincoop (2003), Egger and larch (2012) and Bergstrand, Egger and larch (2013).

Chapter 4

DATA ANALYSIS AND INTERPRETATION

CHAPTER 4
DATA ANALYSIS AND INTERPRETATION

With the advancement of trade agreements and trade relationship, it is anticipated that volume of trade between India -EU and India -ASEAN will grow. It is interesting to know the pattern of trade across various countries from EU and ASEAN in terms of exports and imports and growth in trade volume. Increasing trade can be attributed to trade agreements and trade relations. Present chapter covers the data and descriptive analysis of trade between India and EU/ASEAN. The volume of exports, imports and trade with EU/ASEAN has been analyzed. Attempt is also made to analyze the trade volume across various sectors India, EU and ASEAN countries along with factors affecting trade from the two blocs are identified.

This chapter is divided into two sections. The first section (4.1) looks into the descriptive analysis where the volume of exports, imports and trade with EU/ASEAN has been analyzed. Attempt is also made to analyze the trade across various industries/sectors for imports and exports among India, EU and ASEAN countries. Various statistical tools such as descriptive statistics, correlation, trend analysis etc. has been used for the purpose of analysis. The second section (4.2) looks into the econometric estimations. It explains econometric estimations in form of OLS model, pooled OLS model, Individual Within Effects, followed by First Difference model, Random effects model , between effects model and Poisson and Quasi-Poisson model. It uses the panel data on gravity model to analyse India's factors affecting trade from ASEAN and EU. Variables used are GDP, Distance, Population and FTA (dummy variable), country dummies to explain the gravity model in an unbalanced panel.

4.1   DESCRIPTIVE ANALYSIS
4.1.1   Country wise analysis of Mean

In order to find out the average value of India's exports, imports and trade volume from both the blocs mean values were calculated for a period of 19 years for EU/ASEAN. The results for the calculation of mean of exports, imports and trade volume from the EU for a period of 19 years (1996 to 2014) are indicated below in table 4.1 and Fig 4.1.

Table 4.1: Mean of Exports, Imports and Trade Volume between EU -India from
1996 to 2014- COUNTRY WISE

S. No.	Countries in EU	Mean of exports	Mean of imports	Mean of Trade volume
1	Austria	204.864	440.06	644.928
2	Belgium	3266.660	5440.14	8706.798
3	Bulgaria	57.857	46.83	104.689
4	Cyprus	48.481	30.76	79.243
5	Czech Republic	87.934	301.91	389.848
6	Denmark	411.568	329.62	741.189
7	Estonia	32.988	42.95	75.937
8	Finland	179.128	682.15	861.279
9	France	2460.676	2720.73	5181.409
10	Germany	4151.113	7046.84	11197.956
11	Greece	340.607	72.45	413.055
12	Hungary	162.439	119.39	281.833
13	Ireland	244.574	216.38	460.958
14	Italy	2777.135	2468.00	5245.133
15	Latvia	42.340	49.70	92.042
16	Lithuania	48.006	67.81	115.812
17	Luxemburg	9.034	24.16	33.197
18	Malta	198.229	25.76	223.988
19	Netherlands	3835.436	1301.37	5136.805
20	Poland	369.183	236.41	605.595
21	Portugal	314.462	82.83	397.295
22	Romania	171.259	197.35	368.611
23	Slovak republic	39.280	39.04	78.316
24	Slovenia	101.952	60.06	162.016
25	Spain	1617.390	691.27	2308.664
26	Sweden	387.939	1108.67	1496.613
27	United Kingdom	4948.627	4088.97	9037.599

**Figure 4.1: Mean of Exports, Imports and Trade Volume between
EU-India from 1996 to 2014**
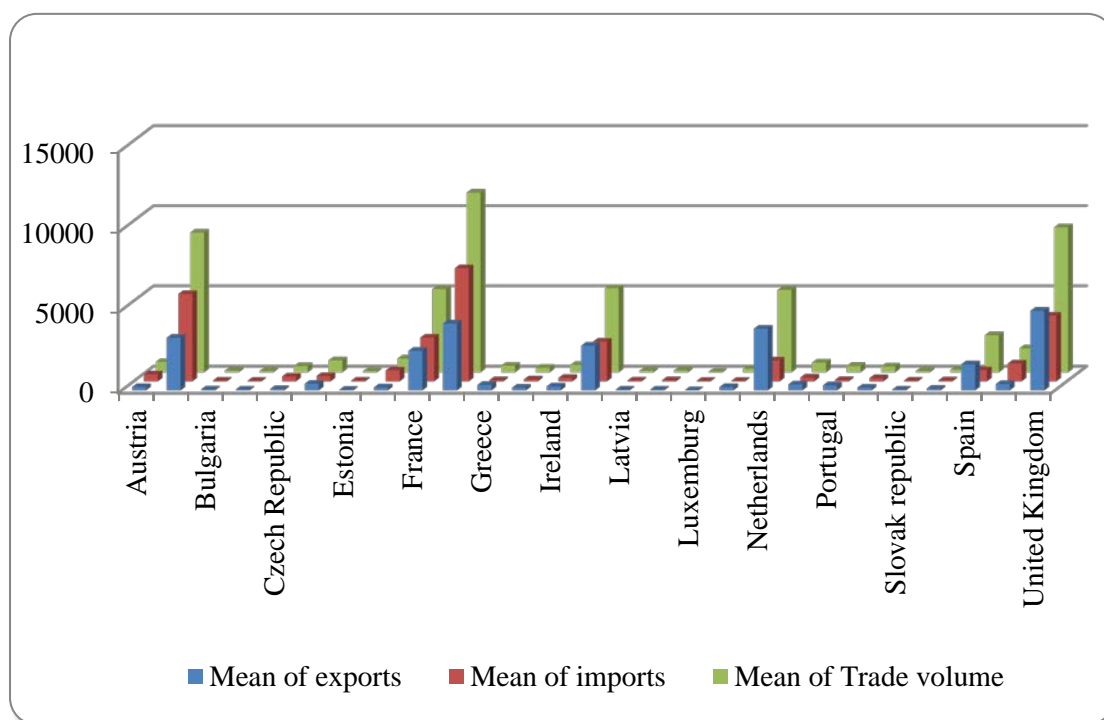
The results indicate that United Kingdom (4948.627) has the highest mean of exports with India. India – UK relationship has grown over the years and on both sides there is a positive and renewed energy for future collaborations. The high mean values for export are also seen with Germany (4151.11), Netherlands (3835.44), Belgium (3266.66), Italy (2777), France (2460.67), Spain (1617.39) and Denmark (411.568). Rest of the countries have a very low mean of exports i.e. Austria (204), Bulgaria (57.85), Cyprus (48.48), Czech republic (87.93), Estonia (32.98), Finland (179), Greece (340.60), Hungary (162.43), Ireland (244.57), Latvia (42.34), Lithuania (48), Malta (198.2), Poland (369.18), Portugal (314), Romania (171), Slovak Republic (39.2), Slovenia (101.29) and Sweden (387.93). The country with the lowest mean of exports from the EU is Luxemburg (9.034).

Analyzing the imports from EU it is found that India has highest imports from Germany (7046.84). The bilateral relations between India and Germany have strengthened over the years under the 'Strategic Partnership' since 2000. The partnership allows for a comprehensive review of future collaborations between the two countries. High mean values for imports are followed by Belgium (5440.14), United Kingdom

(4088.97), France (2720.73), Italy (2468), Netherlands (1301.37) and Sweden (1108.67). The lowest import intensity is from Luxemburg (24.16) and Malta (25.76) which are not very developed countries in EU. Hence it does not affect much in terms of imports from these countries.

Analyzing the mean of trade volume (exports + imports) it is found that the highest trading partner of India is Germany with a mean of 11197.956. This is followed by United Kingdom (9037.59), Belgium (8706.79), France (5181.40), Italy (5245.13), Netherlands (5136.80), Spain (2308.66) and Sweden (1496.61). The lowest mean for trade volume is from Luxemburg (33.19). The bilateral trade value between India and Luxemburg was $37.17 million in 2014. There has been a decline in trade (around 26%) with Luxemburg since 2013 on account of global economic slowdown. However at the 13th India – BLEUJCM[42] India hopes to increase and strengthen its trade ties with Luxemburg in EU.

Table 4.2: Mean of Exports, Imports and Trade Volume between ASEAN- India from 1996 to 2014 –COUNTRY WISE

S. No	Countries in ASEAN	Mean of Exports	Mean of Imports	Mean of trade volume
1	Brunei	61.27	236.95	298.22
2	Cambodia	44.78	4.01	48.79
3	Indonesia	2265.47	5551.86	7817.33
4	Laos	11.42	18.56	29.99
5	Malaysia	2033.79	4463.57	6497.36
6	Myanmar	223.75	687.83	911.58
7	Philippines	588.41	211.25	799.66
8	Singapore	5729.11	4212.27	9941.37
9	Thailand	1508.91	2087.83	3596.74
10	Vietnam	1599.52	620.55	2220.07

The results in table 4.2 and figure 4.2 indicate that Singapore (5729.11) has the highest mean of exports with India followed by Indonesia (2265.47), Malaysia (2033.79), Vietnam (1599.52), and Thailand (1508.91).The rest of the countries in

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[42] www.mea.gov.in

ASEAN have a very low mean w.r.t to exports with India. This indicates that India has major export relations with the above listed countries. Since 1990's Singapore has been instrumental in helping India to have strong trade ties with South East Asian countries like Malaysia, Indonesia and Thailand.

Similarly analyzing the imports it is found that India imports largely from Indonesia (5551.86) followed by Malaysia (4463.57), Singapore (4212.27) and Thailand (2087.83). Some amount of imports are also coming from Vietnam (620.55) and Myanmar (687.83). In 2013-14 Myanmar was the largest supplier of beans and pulses to India. It also supplied timber and wood to India[43]The rest of the countries i.e. Philippines (211.25), Laos (18.56), Brunei (236.95) and Cambodia (4.01) in ASEAN have a very low import intensity with India.

Figure 4.2: Mean of Exports, Imports and Trade Volume between ASEAN-India from 1996 to 2014
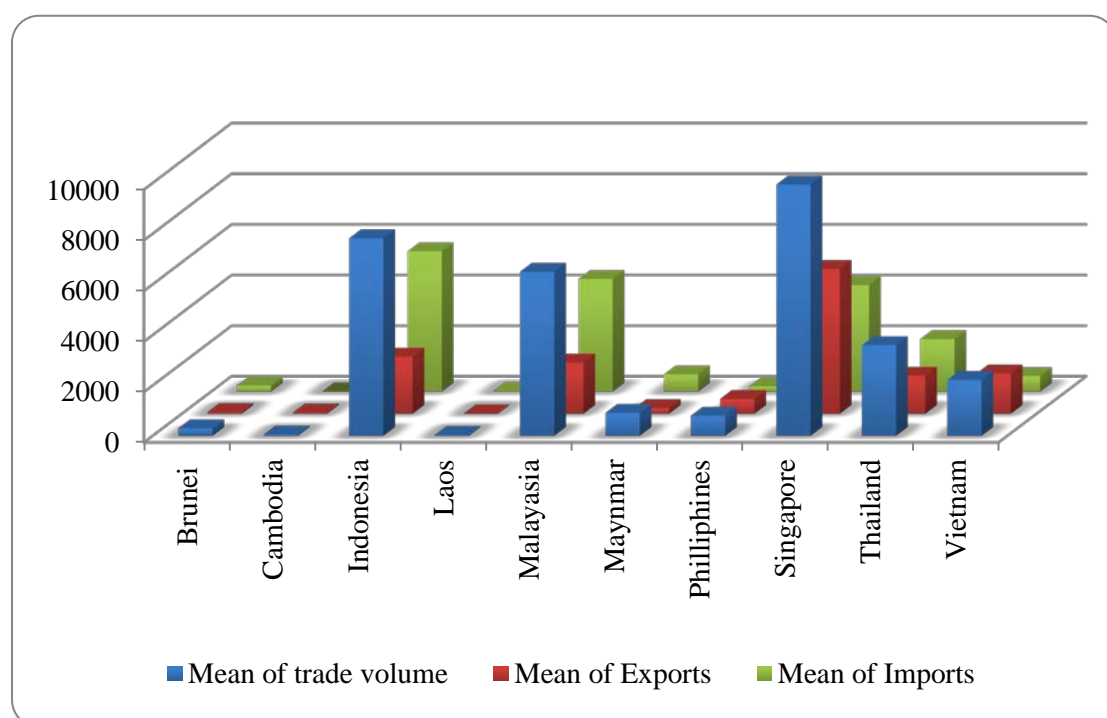
For the mean of trade volume with ASEAN it is found that Singapore (9941.37) has the highest trade volume with India. This high trade volume can be due to the CECA which India formulated with the country in 2005. Singapore accounted for

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[43]   www.indianembassyyangon.net

nearly 26 per cent of the overall trade of India with ASEAN in 2013-14. The bilateral trade value between India and Singapore was $17.1 billion in 2014-15[44]. It is followed by Indonesia (7817.33), Malaysia (6497.36), Thailand (3596.74) and Vietnam (2220.07). As these countries are under the ASEAN-5[45]. Among the ASEAN-5 growth is expected to remain high in Indonesia and Vietnam. For Philippines growth is expected to remain moderate and for Thailand and Malaysia it is expected to contract slightly. The lowest mean of trade volume is from Laos (29.99). Other countries in ASEAN too have a very low mean in trade volume with India. They are Brunei (298.22), Cambodia (48.79), Myanmar (911.58), and Philippines (799.66).

Thus we find that lowest trading partners w.r.t nineteen years of average exports, imports and trade volume from both the blocs are Luxemburg and Laos countries. This is of not much concern to India as both are not amongst the developed countries. For Laos which is a least developed country India has been a major supporter in form of reduction of duties for the country. In 2009, India accorded the Duty Free Tariff Preference Scheme (DFTP) to Least Developed Countries which included Lao PDR. Under the scheme Laos has duty free access to 94 per cent of India's total tariff lines.[46] Post the AIFTA India has been a major contributor to Laos in form of purchasing copper ores and concentrates and Laos has provided market for Indian exports in the area of electrical equipments and pharma products. For Luxemburg the average trade volumes have been lower as it is an inconsistent trading partner. Over the years India has been importing engineering goods, metals and plastics from the country and has been mainly exporting textile and garments and chemicals to the country. Luxembourg has immense potentials for the Indian IT companies like TCS, Tech Mahindra and Wipro seeking market access in EU. These companies have already set up successful operations in Luxemburg.

However we find here that amongst the EU countries major share of trading partners is from developed countries whereas from ASEAN the major share is of developing countries in India's trade except for Singapore.

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[44]   www.mea.gov.in
[45]   http://www.economywatch.com/economic-statistics/country/ASEAN-5/
[46]   http://indianembassylaos.org/eoi.php?id=Bilateral.

4.1.2 Sector wise analysis of Mean

In order to find out the sector wise average values of India's exports, imports and trade volume from both the blocs mean values were calculated for a period of 20 years for EU/ASEAN.

Table 4.3: Mean of Exports, Imports and Trade Volume between EU- India from 1996 to Dec. 2015: SECTOR WISE

S. No.	Industry wise groups for EU	Mean of Exports	Mean of Imports	Mean of Trade volume
1	Food processing	2064.31	279.75	2344.06
2	Textiles and garments	6040.14	269.75	6309.89
3	Minerals	3214.03	463.54	3677.57
4	Chemicals	2978.2	2790.9	5769.1
5	Gems and Jewellery	2239.91	6453.03	8692.94
6	Metals and metallic	2277.93	2887.52	5165.45
7	Machinary and Engineering goods	4083.49	10913.27	14996.76

Fig 4.3: Sector wise Mean of Exports between EU - India
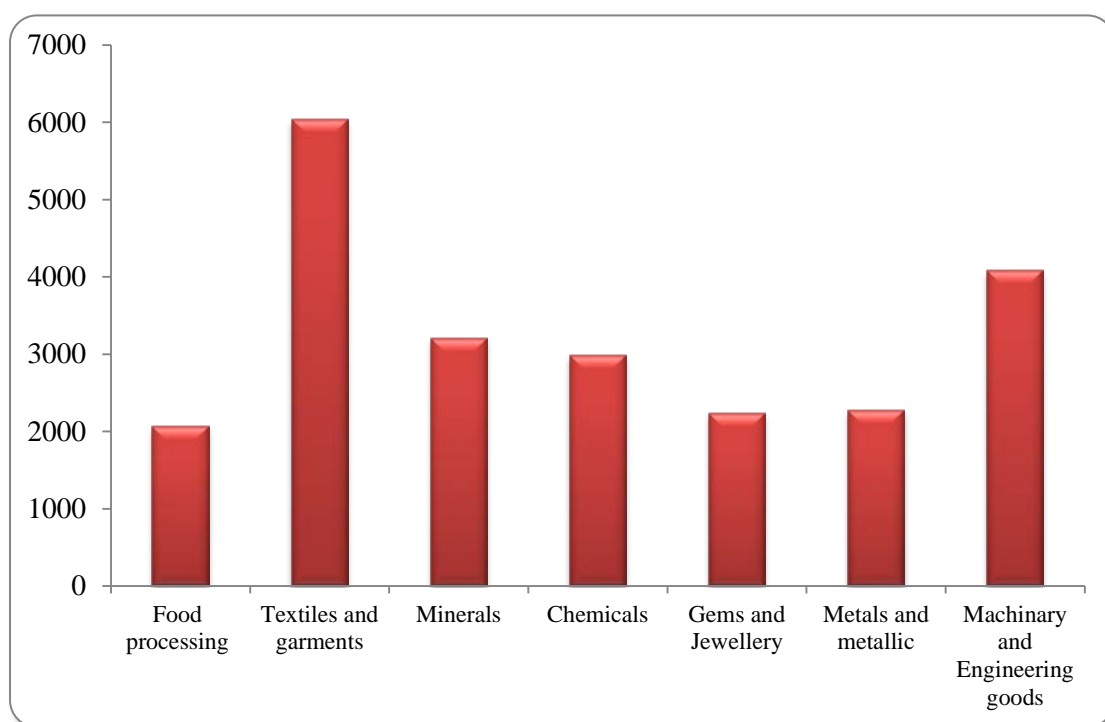
Fig 4.4: Sector Wise Mean of Imports between EU - India
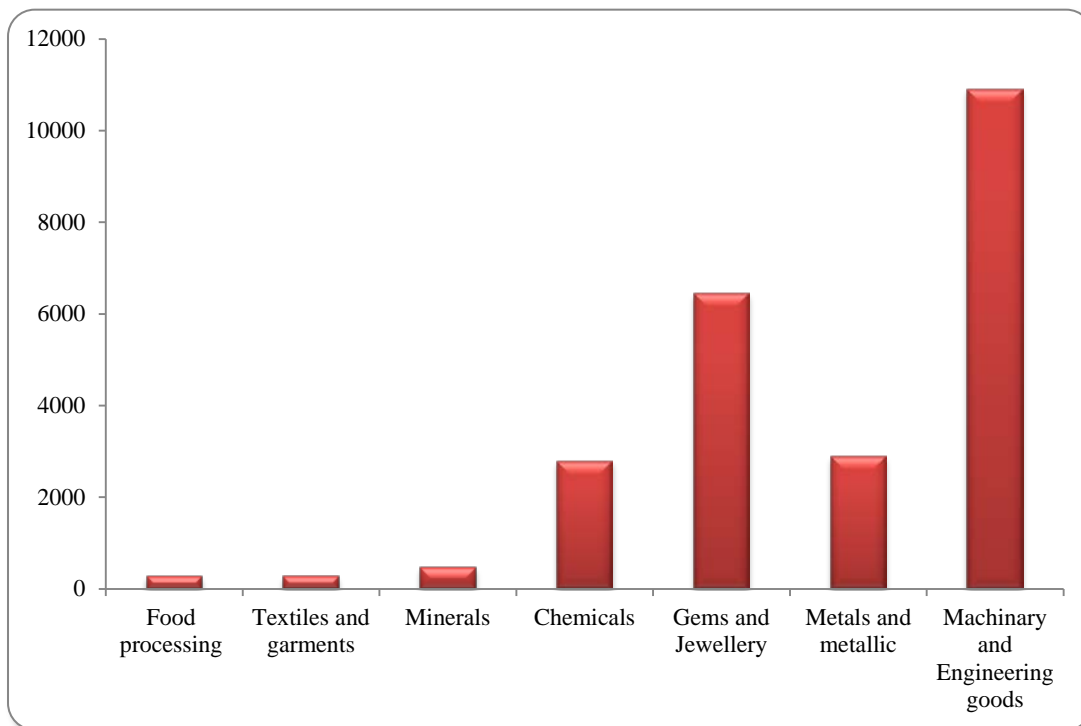
Fig 4.5: Sector Wise Mean of Trade Volume between EU - India
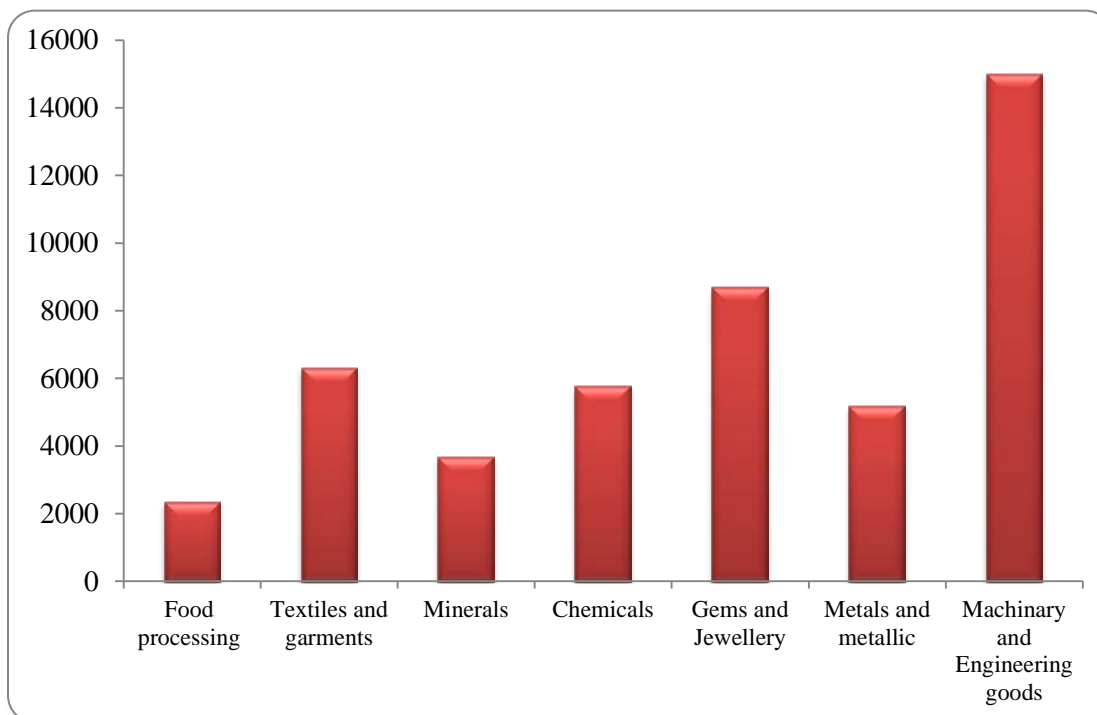
In table 4.3 and 4.4 and Fig 4.4,4.5,4.6 (for EU) and Fig. 4.6,4.7,4.8 (for ASEAN) average values of export and imports sector wise from the two trading blocs is analyzed.

The results for imports from EU in Table 4.3 indicate that for the food processing industry the mean value of imports is very low (279.75) whereas the mean export value is very high (2064.31). Overall the trade volume (2344.06) seems to be largely influenced by the exports. But comparing this with ASEAN the trade volume is 5845 as shown in table 4.4. This shows that it is sufficiently higher for ASEAN thus supporting a positive impact of the FTA formulated in 2010. As far as imports are concerned India imports in larger quantity from ASEAN compared to EU in the respective sector. Almost all the commodities under this sector have registered a positive growth rate in the last five years except for cereals. However there are a few exceptions like in case of cocoa. As revealed in the pre investigations (mentioned in the introduction chapter section1.7) commodities like cocoa and cocoa preparations registered a zero percent growth in the time frame of 2000 to 2007 whereas from 2007 onwards till 2015 the growth rate in this commodity jumped to 1618 percent. Likewise when we compare it with ASEAN we find that the five year growth rate in the commodity was 1206 percent from 2005 to 2010 but registered a negative five year growth rate of minus 96 percent. The transportation and logistics costs might discourage imports from the EU region. ASEAN long with having a geographical proximity to India has tariff reduction commitments, this may be a significant cause of high imports from the bloc by India.

Under the textile and garments industry it is found that major textile products from India are exported to EU as the mean value is 6040. Hence the trade volume in this sector is largely influenced by exports to EU. Compared with ASEAN the average exports are very small (673.97). But post the AIFTA we find a marked jump in five year growth rate of manmade fibers and special woven fabrics. Also we find that India's imports are lesser both from EU and ASEAN under this industry. India's imports from ASEAN were expected to increase after trade negotiations and trade agreements but the average remains very low at 249.03. However looking at the five year growth rate in individual commodities under the sector we find a marked jump in most of them except for a few like silk, cotton, man-made filaments and footwear.

This might be due to the items listed under the HS code two which are studied under the current research work. However, under the AIFTA there is a detailed description on textile and textile related products (HS code 2002) which both India and ASEAN need to look at to further strengthen the trade ties in this sector.

Table 4.4: Mean of Exports, Imports and Trade Volume between ASEAN- India from 1996 to 2015: SECTOR WISE

S. No.	Industry wise groups for ASEAN	Mean of Exports	Mean of Imports	Mean of Trade Volume
1	Food processing	3660.81	2184.44	5845.26
2	Textiles and garments	249.03	673.97	923
3	Minerals	4995.68	3873.14	8868.82
4	Chemicals	1784.12	1537.66	3321.78
5	Gems and Jewellery	256.06	751.05	1007.11
6	Metals and metallic	1125.7	1295.37	2421.07
7	Machinery and Engineering goods	4403.67	2618.05	7021.72

Fig 4.6: Sector wise Mean of Exports between ASEAN - India
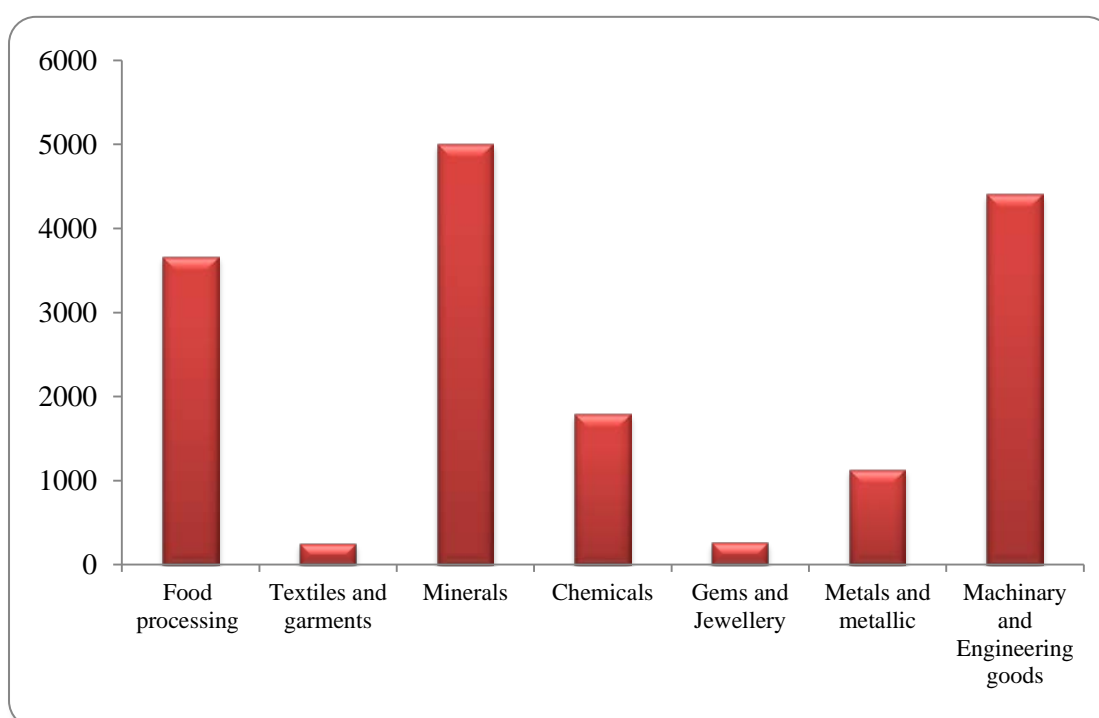
Fig 4.7: Sector wise Mean of Imports between ASEAN - India
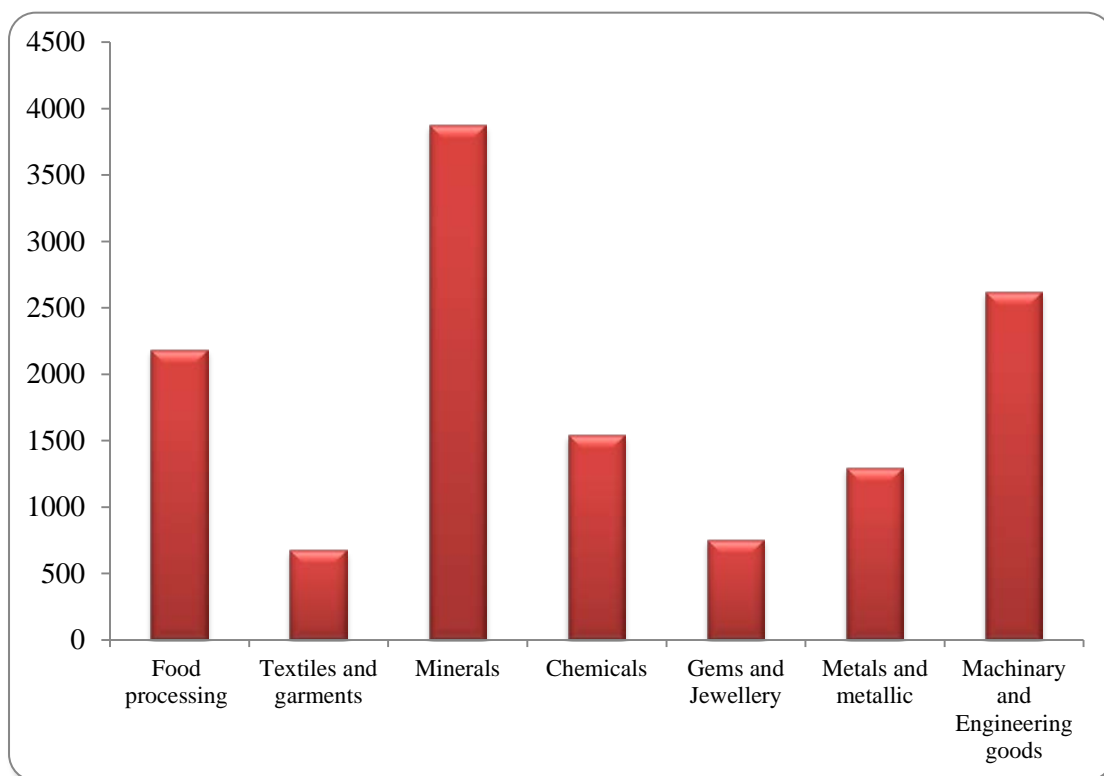
Fig 4.8: Sector wise Mean of Trade Volume between ASEAN - India
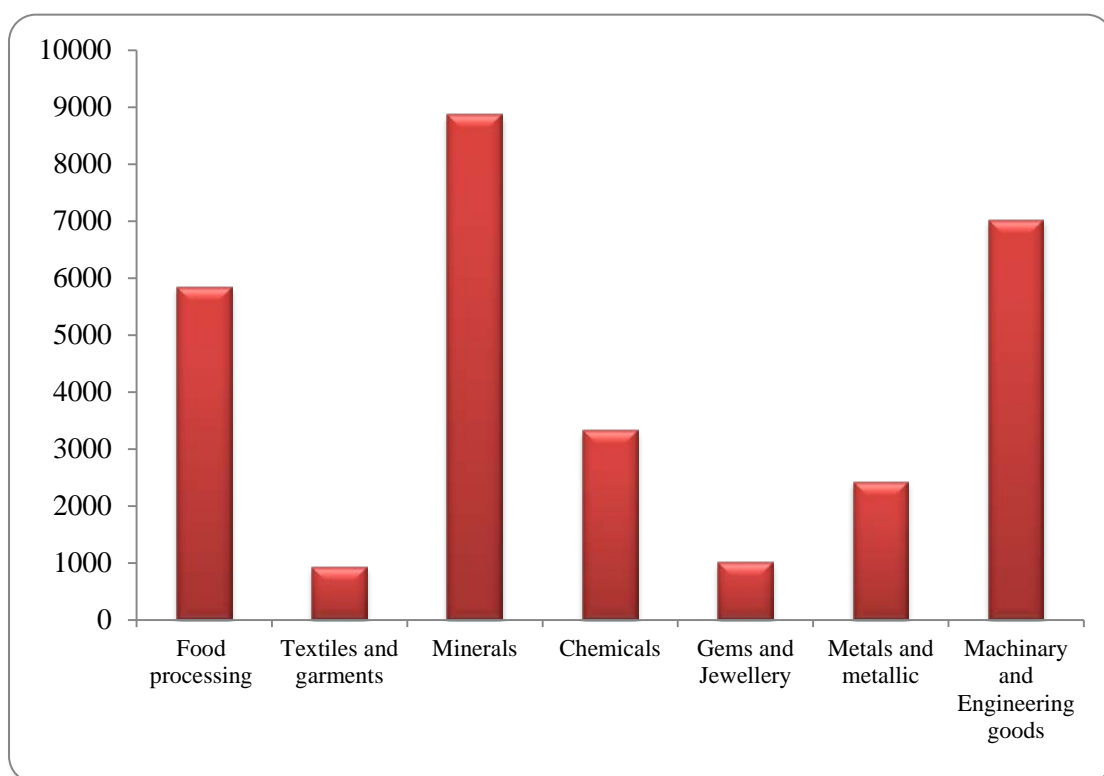
In table 4.3 and 4.4, India's average exports of minerals to both the trading blocs is analyzed and it is found that it is very high i.e. 3677 for EU and 8868 ASEAN. Minerals largely consists of salt, sulphur, lime and cement, ores, ash, minerals fuels and oils, bituminous substances and mineral waxes. India has ample of these which is also reflected in its average exports to both the trading blocs. Looking at the imports in the mineral sector for EU in table 4.3, it is found that it is too low at 463.54 whereas same is not the case with ASEAN where the mean imports are 3873.14 and the overall trade volume is high at a mean value of 8868.82.

Chemicals broadly include inorganic and organic chemicals, pharma products, fertilizers, tanning, soap, explosives, photographic goods, glues, modified starches and enzymes. Indian average exports (2978) and imports (2790) are high to EU compared to ASEAN which is on a very lower side comparatively i.e. 1784 for exports and 1537.66 for imports. The trade volume from EU is at $5769.1 million whereas it is $3321.78 million from ASEAN.

The gems and the jewellery sector includes natural pearls, semiprecious stones, metals, imitation jewellery and coins. India's average imports from the EU are high from this industry (2239). But compared with ASEAN both the imports (721) as well as the exports (256.06) mean values are low. Metals and metallic goods industry include iron and steel, copper, nickel, aluminum, lead, zinc, tin. India has plenty of all these metals and metallic goods. Both its exports (2887) and imports (2277.9) to EU are much higher than ASEAN which has average exports (1125) and imports (1295) lower as compared to EU. These metals have a high demand in EU as it manufactures capital goods and heavy machinery and most of the metals are needed for the same. Compared to the other sectors, India's 50 per cent exports to ASEAN consist of mineral products and gems and jewellery. Around 20 percent export comes from organic chemicals and iron and steel in the respective sector[47].

Machinery and engineering goods comprises of nuclear reactors, boilers, machinery and mechanical appliances, television image, aircraft, spacecraft, vehicles other than railway, ships, boats and floating structures. As the Indian economy is a developing economy it is heavily dependent on Germany, France, Italy and UK for the import of all the commodities under the machinery and engineering goods sector. The average imports from EU are 1091.3 the exports are 4083. As analyzed earlier,

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[47]   Economic Survey 2015-2016.

Germany also has the highest mean of imports with India which is followed by the above said countries in EU. Comparing the same with ASEAN it is found that the imports are on a much lower side. This shows that India is much dependent on EU for its import of capital goods. Looking at the trade volume as a whole from this sector it is at extremely high levels from EU i.e. 14996.76 million USD whereas from ASEAN it is nearly half of EU i.e. 7021.72 billion USD.

Table 4.5: Mean of Exports, Imports and Trade Volume between ASEAN- India from 2010 to 2015: SECTOR WISE

S. No.	Industry wise groups for ASEAN for the last 6 years	Mean of Exports	Mean of Imports	Mean of Trade Volume
1	Food processing	5318.94	7638.59	12957.53
2	Textiles and garments	1243.31	411.07	1654.38
3	Minerals	8737.2	10486.04	19223.24
4	Chemicals	3004.13	3581.92	6586.05
5	Gems and Jewellery	1174.65	640.59	1815.24
6	Metals and metallic	2123.1	2061.49	4184.59
7	Machinary and Engineering goods	5774.18	8654.99	14429.17

Fig 4.9: Sector wise Mean of Imports post the AIFTA
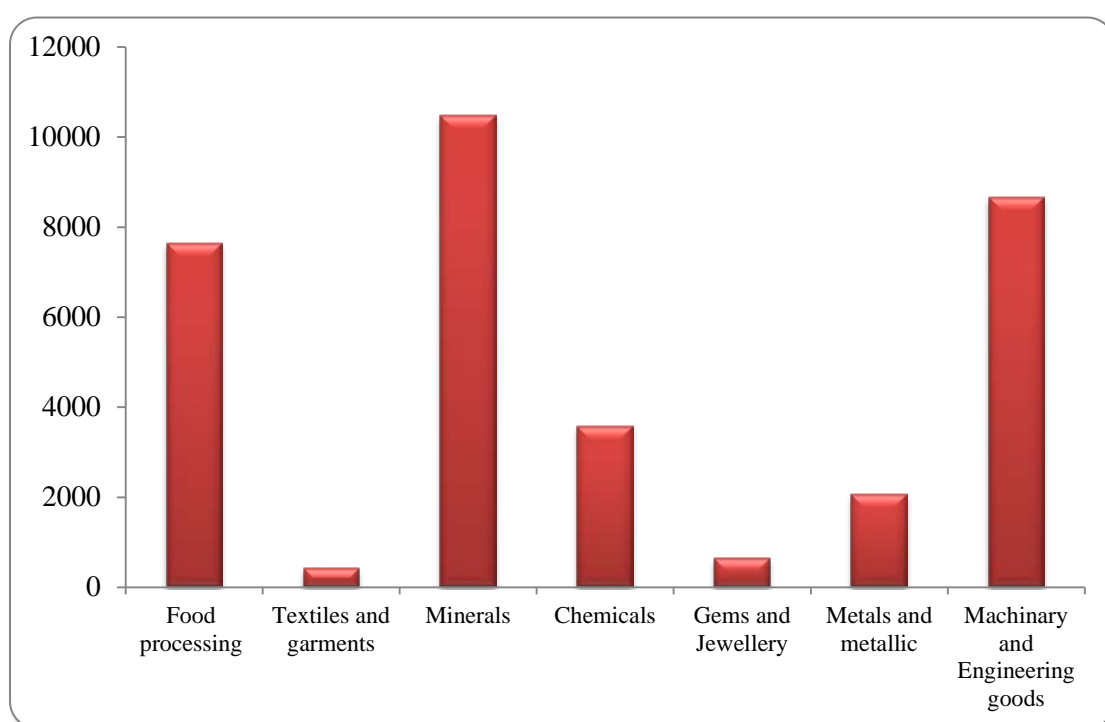
Fig 4.10: Sector wise Mean of Exports post the AIFTA
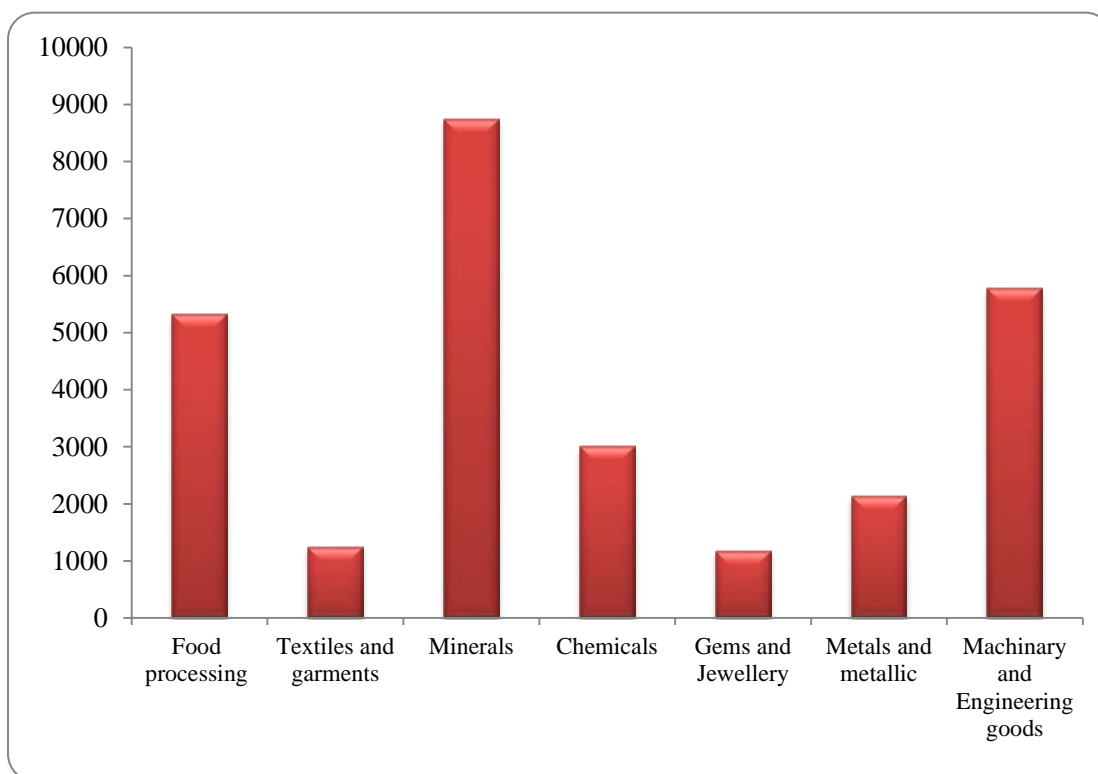
Fig 4.11: Sector wise Mean of Trade Volume post the AIFTA
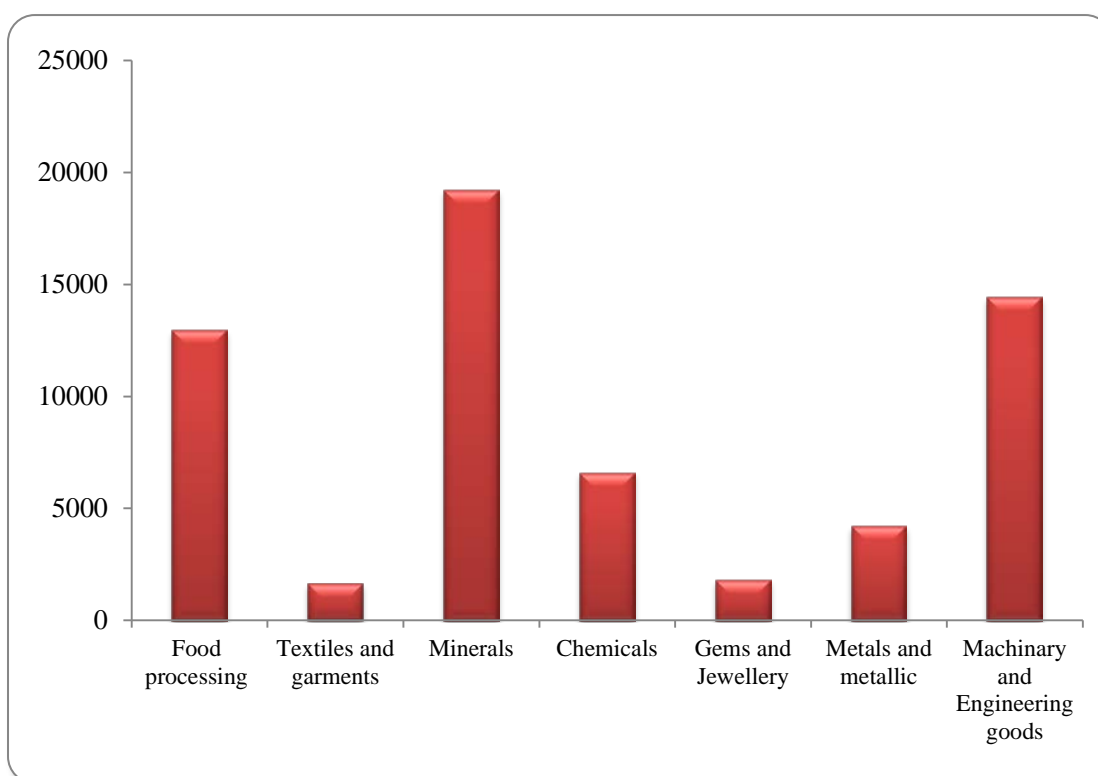
The results for mean of exports, imports and trade volume between ASEAN and India post the AIFTA are shown in table 4.5 and figure 4.9, 4.10, 4.11 respectively. Looking at the data it is found that for the food processing sector there has been a significant rise post the AIFTA in the average exports (5318.94), average imports (7638.59) and the trade volume (12957.53). For the textiles and garment sector there has been a significant rise in average exports (1243.31) which is also reflected in a very high trade volume in the respective sector. The imports though have not shown much of an improvement and have reduced slightly (411.07). For the minerals industry there is a very high increase in imports (10486.04) and the exports have doubled (8737.2) in the past six years. The trade volume for the sector has more than doubled in a short span of time and has reached to 19223.24. Looking at the chemical industry we find that there is a tremendous amount of increase in the trade volume (6586.05) which is contributed by a significant rise in both exports and imports in the respective sector. The gems and jewellery sector also shows a significant rise in the overall trade volume at 1815.24. The metals and metallic industry as well as machinery and engineering goods industry has doubled in trade volume in the last six years at 4184.59 and 14429.17 respectively. The exports and imports in both the sectors have registered a high average.

4.1.3 Correlation between Exports, Imports and Trade Volume

There is an attempt to find out sector wise correlation of India with EU and ASEAN. The results are shown in table 4.6 A and 4.6 B.

Table 4.6 A. Correlation between Exports, Imports and Trade Volume of EU and India from 1996 to 2015: SECTOR WISE

S. No	Industry wise groups for EU-India			Exports	Imports	Trade volume
1	Food processing	Correlation	Exports	1.00	.921**	.998**
			Imports	.921**	1.00	.944**
			Trade volume	.998**	.944**	1.00
		Covariance	Exports	1005494.72	185554.55	1191049.27
			Imports	185554.55	40409.48	225964.03
			Trade volume	1191049.27	225964.03	1417013.29
2	**Textiles and garments**	**Correlation**	**Exports**	**1.00**	**.958****	**1.000****
			Imports	**.958****	**1.00**	**.962****

S. No	Industry wise groups for EU-India			Exports	Imports	Trade volume
			Trade volume	**1.000****	**.962****	**1.00**
		Covariance	**Exports**	**6007175.04**	**329731.14**	**6336906.18**
			Imports	**329731.14**	**19732.94**	**349464.08**
			Trade volume	**6336906.18**	**349464.08**	**6686370.26**
3	**Minerals**	**Correlation**	**Exports**	**1.00**	**.738****	**.997****
			Imports	**.738****	**1.00**	**.791****
			Trade volume	**.997****	**.791****	**1.00**
		Covariance	**Exports**	**11190984.54**	**1109483.77**	**12300468.31**
			Imports	**1109483.77**	**201938.00**	**1311421.77**
			Trade volume	**12300468.31**	**1311421.77**	**13611890.08**
4	**Chemicals**	**Correlation**	**Exports**	**1.00**	**.995****	**.999****
			Imports	**.995****	**1.00**	**.999****
			Trade volume	**.999****	**.999****	**1.00**
		Covariance	Exports	4310711.09	3595464.15	7906175.24
			Imports	3595464.15	3028415.00	6623879.15
			Trade volume	7906175.24	6623879.15	14530054.39
5	Gems and Jewellery	Correlation	Exports	1.00	.904**	.949**
			Imports	.904**	1.00	.993**
			Trade volume	.949**	.993**	1.00
		Covariance	Exports	1215090.58	2841001.46	4056092.04
			Imports	2841001.46	8122177.25	10963178.71
			Trade volume	4056092.04	10963178.71	15019270.76
6	Metals and metallic goods	Correlation	Exports	1.00	.927**	.979**
			Imports	.927**	1.00	.985**
			Trade volume	.979**	.985**	1.00
		Covariance	Exports	2857455.38	3119068.35	5976523.72
			Imports	3119068.35	3958524.88	7077593.23
			Trade volume	5976523.72	7077593.23	13054116.95
7	**Machinary and Engineering goods**	**Correlation**	Exports	1	.931**	.966**
			Imports	**.931****	**1**	**.994****
			Trade volume	.966**	.994**	1
		Covariance	Exports	10399087.288	22235126.797	32634214.085
			Imports	22235126.797	54903721.657	77138848.454
			Trade volume	32634214.085	77138848.454	109773062.538

**. Correlation is significant at the 0.01 level (2-tailed).

Analyzing table 4.6A for India and EU, it is found that for the textile and the garment sector exports and trade volume is significant at 1. It means that exports and trade volume have a perfect relationship with each other. India is a net exporter in this sector to EU. The same relationship was established in average exports of India to EU in this sector which were significantly high (as shown in table 4.3). A relative comparison with the ASEAN countries shows positive correlation but not like EU. Bangladesh and China are competing with India in the same sector across Asia. However it is found that there has been a significant increase in exports, imports and trade volume in this sector post the AIFTA (as shown in table 4.5). Further for the minerals sector the correlation between exports and trade volume of India and EU is relatively higher than trade volume and imports. The correlation between exports, trade volume and imports for India and ASEAN is almost equal in the above said sector. India has benefitted on both sides of the trade flows due to the AIFTA. India exports more minerals to EU since it is a mineral rich country. The results in table 4.5 indicate that in the last six years the average trade has more than doubled and both exports and imports have increased significantly.

For the chemicals sector the correlation between exports and trade volume as well as imports and trade volume is significant on a higher side with both EU and ASEAN countries. India is a net exporter as well as importer for products from EU in this sector which largely comprise of pharma products, organic chemicals etc. With ASEAN correlation is significantly high which can be implied as coming from the organic chemicals in this sector.

Table 4.6 B: Correlation between Exports, Imports and Trade Volume of ASEAN and India from 1996 to 2015: SECTOR WISE

S. No.	Industry wise groups for ASEAN			Exports	Imports	Tradevolume
1	Food processing	Correlation	Exports	1.00	0.94	0.99
			Imports	0.94	1.00	0.98
			Tradevolume	0.99	0.98	1.00
		Covariance	Exports	8875560.83	6433774.63	15309335.46
			Imports	6433774.63	5273620.21	11707394.84
			Tradevolume	15309335.46	11707394.84	27016730.29

S. No.	Industry wise groups for ASEAN			Exports	Imports	Tradevolume
2	Textiles and garments	Correlation	Exports	1.00	.925**	.955**
			Imports	.925**	1.00	.996**
			Tradevolume	.955**	.996**	1.00
		Covariance	Exports	15398.62	49021.97	64420.60
			Imports	49021.97	182366.54	231388.51
			Tradevolume	64420.60	231388.51	295809.11
3	**Minerals**	**Correlation**	Exports	1.00	.920**	.983**
			Imports	.920**	1.00	.976**
			Tradevolume	.983**	.976**	1.00
		Covariance	Exports	23163464.35	17839857.82	41003322.17
			Imports	17839857.82	16216374.33	34056232.15
			Tradevolume	41003322.17	34056232.15	75059554.32
4	**Chemicals**	**Correlation**	Exports	1.00	.988**	.998**
			Imports	.988**	1.00	.997**
			Tradevolume	.998**	.997**	1.00
		Covariance	Exports	1848320.77	1542178.52	3390499.29
			Imports	1542178.52	1317073.04	2859251.56
			Tradevolume	3390499.29	2859251.56	6249750.85
5	Gems and Jewellery	Correlation	Exports	1.00	.680**	.873**
			Imports	.680**	1.00	.951**
			Tradevolume	.873**	.951**	1.00
		Covariance	Exports	86001.02	92333.89	178334.91
			Imports	92333.89	214594.03	306927.92
			Tradevolume	178334.91	306927.92	485262.83
6	Metals and metallic goods	Correlation	Exports	1.00	.716**	.922**
			Imports	.716**	1.00	.930**
			Tradevolume	.922**	.930**	1.00
		Covariance	Exports	621145.10	467064.29	1088209.39
			Imports	467064.29	685038.41	1152102.70
			Tradevolume	1088209.39	1152102.70	2240312.09
7	Machinary and Engineering goods	Correlation	Exports	1	.919**	.985**
			Imports	.919**	1	.973**
			Tradevolume	.985**	.973**	1
		Covariance	Exports	12293433.382	8318173.975	20611607.357
			Imports	8318173.975	6663649.427	14981823.402
			Tradevolume	20611607.357	14981823.402	35593430.759

**. Correlation is significant at the 0.01 level (2-tailed).

Looking at the gems and jewellery sector trade with ASEAN in table 4.6B, it is found that the correlation is positive with imports and exports. But is more significant with imports and trade volume. More than a dozen of importers from India have been importing gold from ASEAN taking advantage of the AIFTA. Imports are largely from Indonesia and Malaysia which have gold mines.

In the machinery and engineering goods sector it is found that the correlation is high between imports and trade volume with EU. India being a developing country is dependent upon imports from highly industrialized countries in the EU like Germany, Spain, France, Italy and UK. Among the ASEAN countries, Malaysia is a very important market for India's engineering products. It has a strong distribution network and developed infrastructure which provides an easy access to the engineering goods from India.

In the research study long term trend and compounded annual growth rate (CAGR) in exports, imports and trade volumes of India with countries in EU is calculated and shown in table 4.7 A, 4.7 B and 4.7 C. In the selected period of 19 years (1996-2014) the exports of India with countries in EU changes over a period of one year. The change in bilateral trade relationship with countries over a period of time may take place due to any changes in government policy or the comparative advantage for the country. In the long run it is expected that the trade should increase with all the countries in EU.

4.1.4   Long term trend analysis and CAGR

In order to find out the presence of a significant trend and growth in exports, imports and trade volume of India with EU and ASEAN trend analysis was carried out. There was also an attempt to find out the CAGR from EU and ASEAN in specific sectors.

Table 4.7 A: Long term trend analysis and CAGR for Exports of India with EU countries (1996-2014)

S. No	Country name	Trend Co-efficient for exports	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for exports
1	Austria	20.948	4.83(0.000)	58%	23.38(0.000)	10.9%
2	Belgium	320.659	9.62(0.000)	84%	92.60(0.000)	10.9%
3	Bulgaria	9.855	7.35(0.000)	76%	54.14(0.000)	20.3%
4	Cyprus	2.899	1.41(0.175)	11%	2.00(0.175)	5.8%
5	Czech Republic	18.412	11.19(0.000)	88%	125.43(0.000)	15.4%
6	Denmark	38.640	11.94(0.000)	89%	142.78(0.000)	10.5%
7	Estonia	5.162	6.01(0.000)	68%	36.12(0.000)	21.8%
8	Finland	18.617	11.46(0.000)	89%	131.54(0.000)	12.0%
9	France	276.023	10.84(0.000)	87%	117.58(0.000)	12.6%
10	Germany	381.879	10.88(0.000)	87%	118.56(0.000)	9.9%
11	Greece	26.270	3.08(0.007)	36%	9.54(0.007)	10.3%
12	Hungary	20.555	7.22(0.000)	75%	52.18(0.000)	16.0%
13	Ireland	26.686	8.63(0.000)	81%	74.53(0.000)	12.6%
14	Italy	259.171	13.01(0.000)	91%	169.33(0.000)	10.6%
15	Latvia	6.081	9.09(0.000)	83%	82.63(0.000)	18.3%
16	Lithuania	7.366	8.71(0.000)	82%	75.88(0.000)	22.7%
17	Luxemburg	.414	2.44(0.026)	26%	5.97(0.026)	5.9%
18	Malta	32.018	3.55(0.002)	43%	12.64(0.002)	25.1%
19	Netherlands	521.466	7.73(0.000)	78%	59.86(0.000)	16.6%
20	Poland	52.270	10.67(0.000)	87%	114.01(0.000)	16.3%
21	Portugal	31.696	13.49(0.000)	91%	182.22(0.000)	11.6%
22	Romania	24.616	6.66(0.000)	72%	44.40(0.000)	23.3%
23	Slovak republic	6.209	9.17(0.000)	83%	84.12(0.000)	19.9%
24	Slovenia	14.992	11.49(0.000)	89%	132.24(0.000)	22.0%
25	Spain	164.275	14.85(0.000)	93%	220.62(0.000)	12.3%
26	Sweden	38.686	10.27(0.000)	86%	105.50(0.000)	10.9%
27	United Kingdom	461.266	461.26(13.566)	92%	184.02(0.000)	10.3%

Long term trend analysis of exports between India and EU in table 4.7 A indicate that the trend coefficient of Spain (164.27) is significant with respect to R square of 93 percent and p value of 0.000 and has a CAGR of 12.3 percent. Comparing the results of trend analysis with Malta which has a CAGR of 25 percent, the R square is 43 percent only and the p value is 0.002 indicating the model is unfit, hinting at higher irregularity in trend of exports from Malta. Other countries within EU having higher R square and significant p value of 0.000 indicating a significant long term trend coefficient for exports are UK (461.22), Italy (259.71), Germany (381.87) and France (276.03). All these countries have a growth rate in trade ranging from 10.5 per cent to 12.3 percent hinting at strong and decent growth in exports. Countries with very low trend coefficients but significant p value are Bulgaria (9.855), Czech Republic (18.4), Estonia (5.1), Hungary (20.55), Ireland (26.68), Latvia (6.081), Lithuania (7.36), Slovak Republic (6.2) and Slovenia (14.99). However amongst those countries where the R square is high indicating a regularity in exports are Ireland, Latvia, Lithuania, Portugal and Slovak Republic. Countries like Cyprus, Greece, Luxemburg and Malta are insignificant from exports perspective as indicated by their p values.

Table 4.7 B: Long term trend analysis and CAGR for Imports of India with EU countries (1996-2014)

S. No	Country name	Trend Co-efficient for imports	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for imports
1	Austria	56.832	9.74(0.000)	84.81%	94.92(0.000)	17.14%
2	Belgium	466.394	9.16(0.000)	83.16%	83.94(0.000)	8.57%
3	Bulgaria	5.245	5.09(0.000)	60.39%	25.91(0.000)	14.69%
4	Cyprus	2.771	1.37(0.186)	10.05%	1.89(0.186)	22.35%
5	Czech Republic	40.065	8.56(0.000)	81.19%	73.39(0.000)	19.06%
6	Denmark	27.517	6.54(0.000)	71.58%	42.82(0.000)	10.15%
7	Estonia	9.053	4.07(0.001)	49.41%	16.60(0.001)	44.49%
8	Finland	80.157	5.41(0.000)	63.30%	29.32(0.000)	14.33%
9	France	261.356	5.47(0.000)	63.84%	30.01(0.000)	13.05%
10	Germany	795.963	9.18(0.000)	83.22%	84.28(0.000)	13.20%
11	Greece	7.126	4.21(0.001)	51.11%	17.77(0.001)	13.21%

S. No	Country name	Trend Co-efficient for imports	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for imports
12	Hungary	18.937	6.02(0.000)	68.13%	36.34(0.000)	23.23%
13	Ireland	27.741	11.91(0.000)	89.31%	142.08(0.000)	16.66%
14	Italy	263.299	8.19(0.000)	79.79%	67.11(0.000)	12.38%
15	Latvia	7.455	3.77(0.002	45.56%	14.22(0.002)	23.77%
16	Lithuania	9.626	1.82(0.085)	16.42%	3.34(0.085)	35.33%
17	Luxemburg	2.641	6.32(0.000)	70.19%	40.03(0.000)	16.95%
18	Malta	2.064	1.09(0.288)	6.61%	1.20(0.288)	36.14%
19	Netherlands	148.891	9.82(0.000)	85.02%	96.48(0.000)	12.84%
20	Poland	39.976	7.26(0.000)	75.62%	52.73(0.000)	20.91%
21	Portugal	15.415	4.35(0.000)	52.75%	18.98(0.000)	20.89%
22	Romania	21.236	5.94(0.000)	67.54%	35.37(0.000)	15.03%
23	Slovak republic	5.020	5.74(0.000)	66.03%	33.037(0.000)	14.78%
24	Slovenia	6.663	6.13(0.000)	68.90%	37.65(0.000)	15.01%
25	Spain	109.183	10.83(0.000)	87.34%	117.29(0.000)	16.83%
26	Sweden	108.237	6.92(0.000)	73.85%	48.00(0.000)	13.42%
27	United Kingdom	231.430	7.29(0.000)	75.77%	53.15(0.000)	5.87%

Long term trend analysis of imports between India and EU is shown in table 4.7 B. The results indicate that the trend coefficient of countries within EU having a higher R square and significant p value of 0.000 are with UK (231.43), Italy (263.29), Germany (795.96) and France (261.35), Belgium (466.39), Spain (109.18), Sweden (108.23) and Netherlands (148.89). All these countries have a growth rate in imports ranging from 8 percent to 15 percent hinting at strong and decent growth in imports. Countries with very low trend coefficients but significant p value are Bulgaria (15.10), Austria (77.78), Czech Republic (44.75), Estonia (14.2), Hungary (39.49), Ireland (54.43), Latvia (13.54), Slovak Republic (11.23) and Slovenia (21.66), Denmark (66.16), Finland (98.77) and Portugal (47.11). However amongst these countries R square is high for Ireland and Denmark indicating a regularity in imports from them. Countries like Cyprus, Greece, Lithuania and Malta are insignificant from imports perspective as indicated by their p values.

Table 4.7 C: Long term trend analysis and CAGR for trade volume of India with EU countries (1996-2014)

S. No.	Countries	Trend Co-efficient for Trade volume	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for trade volume
1.	Austria	77.78	8.75 (0.000)	81.8%	76.58 (0.000)	14.72%
2.	Belgium	787.05	10.37(0.000)	86.4%	107.57(0.000)	9.40%
3.	Bulgaria	15.10	7.82(0.000)	78.3%	61.21(0.000)	16.81%
4.	Cyprus	5.67	1.54(0.140)	12.4%	2.39(0.140)	8.60%
5.	Czech Republic	44.75	6.11(0.000)	68.7%	37.35(0.000)	15.68%
6.	Denmark	66.16	9.86(0.000)	85.1%	97.30(0.000)	10.27%
7.	Estonia	14.21	4.87(0.000)	58.3%	23.76(0.000)	27.56%
8.	Finland	98.77	6.39(0.000)	70.6%	40.86(0.000)	13.84%
9.	France	537.38	9.96(0.000)	85.4%	99.31(0.000)	12.87%
10.	Germany	1177.84	9.75(0.000)	84.8%	95.10(0.000)	11.84%
11.	Greece	33.40	3.59(0.002)	43.2%	12.92(0.002)	10.87%
12.	Hungary	39.49	8.15(0.000)	79.7%	66.56(0.000)	18.55%
13.	Ireland	54.43	14.21(0.000)	92.2%	202.20 (0.000)	14.35%
14.	Italy	522.47	10.65(0.000)	87.0%	113.56(0.000)	11.40%
15.	Latvia	13.54	5.73(0.000)	65.9%	32.85(0.000)	19.50%
16.	Lithuania	16.99	3.18(0.005)	37.3%	10.13(0.005)	26.66%
17.	Luxemburg	3.05	6.18(0.000)	69.2%	38.25(0.000)	12.93%
18.	Malta	34.08	3.78(0.001)	45.7%	14.32(0.001)	24.10%
19.	Netherlands	670.36	8.49(0.000)	80.9%	72.20(0.000)	15.57%
20.	Poland	92.25	9.59(0.000)	84.4%	92.13(0.000)	17.91%
21.	Portugal	47.11	10.03(0.000)	85.6%	100.79(0.000)	13.28%
22.	Romania	45.85	8.01(0.000)	79.1%	64.19(0.000)	18.17%
23.	Slovak republic	11.23	8.46(0.000)	80.8%	71.65(0.000)	16.80%
24.	Slovenia	21.66	10.29(0.000)	86.2%	106.01(0.000)	17.93%
25.	Spain	273.46	14.54(0.000)	92.6%	211.56(0.000)	13.65%
26.	Sweden	146.92	8.32(0.000)	80.3%	69.35(0.000)	12.58%
27.	United Kingdom	692.70	11.39 (0.000)	88.4%	129.81(0.000)	8.20%

The results of long term trend analysis and CAGR for trade volume (in table 4.7 C) indicate that out of 27 countries in EU, eight countries have a high trend co-efficient (β) of trade volume with India. The country with the highest trend coefficient and a significant P value are Germany (1177.84) followed by Belgium (787.05), UK (692.70), France (537.38), Italy (522.47), Netherland (670.36), Spain (273.46) and Sweden (146.92). These values indicate the long term trend behavior in trade volume between India and the EU countries. Germany has the highest b in trend indicating that the trade volume of India with Germany changes 1177.84 million US $ in a year. The t statistic of 9.75 indicate that there exists a long term significant trade value between Germany and India. This is supported by a significant p value of 0.000. Further a CAGR of 11.84 percent shows a statistically significant growth rate between the two countries.

Likewise the same results can be interpreted for Belgium, UK, France, Italy, Netherland, Spain and Sweden. The CAGR for these countries ranges from 8.2 to 15.5 percent.

It has to be noted that countries with larger trend coefficient (β) have a lower CAGR compared to countries with lower trend coefficient (β) in trade volume having a high CAGR. This is because their base i.e. trade volume is very small so the CAGR w.r.t trade volume with India is coming on a higher side. Therefore, the country with the highest CAGR from EU is Estonia (27.56%) with a very low trend coefficient 14.21.This is followed by Lithuania (26.66%) with a trend coefficient of 16.99 but an insignificant p value of 0.005. The countries with the lower CAGR are Germany (11.84%), France (12.87%), UK (8.2%), Greece (10.87%), and Belgium (9.4%). The overall trend in trade volume is significantly high from countries like Spain, U.K, Italy, Germany and France.

Table 4.8 A: Long term trend analysis and CAGR for Exports of India with ASEAN countries (1996-2014)

S. No	Country Name	Trend Co-efficient for Exports	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for exports
1	Brunei	11.184	1.34(0.195)	9.66%	1.81(0.195)	20.84%
2	Cambodia	7.086	9.66(0.000)	84.61%	93.44(0.000)	22.40%
3	Indonesia	316.540	7.27(0.000)	75.69%	52.92(0.000)	17.96%
4	Laos	2.251	5.11(0.000)	60.65%	26.19(0.000)	24.90%
5	Malayasia	273.116	11.59(0.000)	88.78%	134.48(0.000)	15.80%
6	Myanmar	35.935	7.32(0.000)	75.96%	53.71(0.000)	17.85%
7	Philliphines	66.449	12.71(0.000)	90.49%	161.73(0.000)	12.88%
8	Singapore	803.543	8.59(0.000)	81.31%	73.93(0.000)	19.79%
9	Thailand	186.875	10.62(0.000)	86.91%	112.84(0.000)	14.12%
10	Vietnam	288.874	8.49(0.000)	80.92%	72.08(0.000)	24.03%

The results of long term trend analysis of exports between India and ASEAN in table 4.8A indicate that the trend coefficients of countries like Singapore (803.54), Vietnam (288.87), Thailand (186.87), Indonesia (316.54) and Malaysia (273.11) are the highest and significant as indicated by their p values. The trend coefficient for Singapore is highest thus adding robustness to exports. The growth rate of exports between India and Singapore is around 20 percent. Thus half of the countries in ASEAN have a high regularity in exports with India. The growth rate in exports ranges from 15 to 20 percent for all those countries with a significant R square and a high trend coefficient (as mentioned above).

The trend coefficient of exports is lowest for Laos (2.251) followed by Cambodia (7.08). For Brunei the R square of 9.66 percent indicates irregularity of data. The insignificant p value of 0.195 indicates that there is so far no long term trend in exports between India and Brunei. The CAGR with the country is 20.84 percent.

Table 4.8 B: Long term trend analysis and CAGR for Imports of India with
ASEAN countries (1996-2014)

S. No	Country name	Trend Co-efficient	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for imports
1	Brunei	47.26	7.81(0.000)	78.22%	61.06(0.000)	70.31%
2	Cambodia	0.70	6.03(0.000)	68.18%	36.42(0.000)	19.18%
3	Indonesia	877.65	9.80(0.000)	84.96%	96.05(0.000)	20.25%
4	Laos	4.34	3.39(0.003)	40.38%	11.51(0.003)	58.04%
5	Malayasia	553.16	10.4(0.000)	86.52%	109.11(0.000)	14.13%
6	Myanmar	77.46	11.29(0.000)	88.24%	127.55(0.000)	13.45%
7	Philippines	25.89	11.42(0.000)	88.47%	130.44(0.000)	17.23%
8	Singapore	455.92	7.97(0.000)	78.92%	63.63(0.000)	13.90%
9	Thailand	332.21	10.87(0.000)	87.44%	118.34(0.000)	21.30%
10	Vietnam	137.04	6.14(0.000)	68.96%	37.76(0.000)	39.83%

The results of long term trend analysis of imports between India and ASEAN in table 4.8 B indicate that the trend coefficients of countries like Singapore (455.92), Vietnam (137.04), Thailand (332.21), Indonesia (877.65) and Malaysia (553.16) are the highest and significant as indicated by their p values. The trend coefficient for Indonesia is highest thus indicating India's high import dependence on the country. The growth rate of imports between India and Indonesia is around 20.25 per cent. Once again half of the countries in ASEAN have a high regularity of imports to India. The growth rate in imports ranges from 13 percent to 40 percent for all those countries with a significant R square and a high trend coefficient (as mentioned above).

The trend coefficient of imports is lowest for Cambodia (0.70) followed by Laos (4.34). The insignificant p value of 0.003 from Laos indicates that there is so far no long term trend in imports between India and Laos. The CAGR with the country is however at 58 percent.

Table 4.8 C: Long term trend analysis and CAGR for trade volume of India with ASEAN countries (1996-2014)

S. No	Country Name	Trend Co-efficient	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for trade volume
1	Brunei	58.448	5.30(0.000)	62.38%	28.18(0.000)	41.70%
2	Cambodia	7.787	9.46(0.000)	84.06%	89.66(0.000)	21.87%
3	Indonesia	1194.192	9.46(0.000)	84.06%	89.65(0.000)	19.41%
4	Laos	6.596	4.49(0.000)	54.27%	20.17(0.000)	31.56%
5	Malaysia	826.279	11.47(0.000)	88.57%	131.74(0.000)	14.53%
6	Myanmar	113.395	12.08(0.000)	89.57%	146.06(0.000)	14.55%
7	Philippines	92.338	14.75(0.000)	92.76%	217.68(0.000)	13.64%
8	Singapore	1259.468	9.33(0.000)	83.67%	87.11(0.000)	16.84%
9	Thailand	519.089	11.19(0.000)	88.06%	125.38(0.000)	17.69%
10	Vietnam	425.911	7.66(0.000)	77.55%	58.73(0.000)	26.29%

Results for long term trend in trade volume and CAGR between India and ASEAN is shown in table 4.8 C. The results indicate that more than half of the countries in ASEAN have a very high trend coefficient and a significant p value w.r.t to trade volume with India. The country with highest β is Singapore (1259.46) followed by Indonesia (1194.19), Malaysia (826.27), Thailand (519.089), Vietnam (425.91), Philippines (92.3) and Myanmar (113.39).Thus from the ASEAN region almost more than fifty per cent of the countries have a high beta in trade volume compared to EU where out of twenty seven countries only eight countries show a high trend coefficient with India. Countries in ASEAN like Laos (6.5), Brunei (58.4), and Cambodia (7.7) have a low trend coefficient in trade volume with India.

The highest CAGR from ASEAN is of Brunei (41.70%). But a low R square indicates irregularity in trade volume from the country. This is followed by Laos (31.56%), Cambodia (21.87%).The countries with low CAGR are Philippines (13.64%), Malaysia (14.53 %), Myanmar (14.55), Singapore (16.84%), Thailand (17.69%) and Indonesia (19.41%).

The overall trend co-efficient in trade volume is highest from Singapore followed by Myanmar, Philippines, Thailand, Malaysia and Indonesia.

Table 4.9 A: Long term trend analysis and CAGR for sector wise exports of India with EU countries from 1996 to 2015.

S. No.	Industry wise groups for EU	Trend Co-efficient for Exports	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for Exports: EU
1	Food processing	152.513	8.75 (0.000)	81.00%	76.568 (0.000)	7.50%
2	**Textiles and garments**	**380.145**	**9.793 (0.000)**	**84.20%**	**95.901 (0.000)**	**6.80%**
3	**Minerals**	**440.205**	**5.262 (0.000)**	**60.60%**	**27.691 (0.000)**	**26.30%**
4	**Chemicals**	**329.707**	**11.634 (0.000)**	**88.30%**	**135.353 (0.000)**	**13.00%**
5	Gems and Jewellery	160.043	7.117 (0.000)	73.80%	50.648 (0.000)	7.80%
6	Metals and metallic goods	251.257	7.835 (0.000)	77.30%	61.385 (0.000)	15.70%
7	**Machinary and Engineering goods**	**498.868**	**9.636 (0.000)**	**83.80%**	**92.848 (0.000)**	**16.60%**

The results of long term trend analysis for exports of India with EU (in table 4.9 A) indicate that the trend coefficient (β) is the highest for the machinery and engineering goods sector (498.868) followed by minerals (440.205) and textiles and garment (380.145). These values indicate the long term trend behavior in exports of machinery and engineering goods, minerals, textiles and garments sector of India with EU. (See appendix I for a detailed classification of each industry). India has ample minerals which is also reflected in its average exports to both the trading blocs. The industry also has the highest CAGR in exports to EU i.e. 26.30 percent.

The machinery and engineering goods sector having the highest β in exports indicates that exports with EU changes 498.868 billion US$ in a year. The T statistic of 9.636 indicate that there exists a long term significant relationship between India and EU in the machinery and engineering goods sector, this is supported by p value of 0.000. Further a CAGR of 16.60 percent in exports shows a statistically significant growth rate between EU and India in the sector.

For the chemical sector the trend coefficient is significant at 329.707, the highest R square of 88.3 percent. This is supported by a significant P value of 0.000. The trend coefficient of 329.707 indicates that the exports of India to EU in this sector changes by 329.707 billion US $ in a year. The CAGR for the chemical sector is 13

per cent. However in the current scenario chemical sector in EU appears to be relocating to the Middle East and Asia. But still EU can play an important role because of its commitments to green technologies. India and EU can work together in this sector bringing low cost Indian production with green technologies.

Further analyzing the trend coefficient for the textile and garments sector (380.145) it is found to be significant as indicated by the p value. The sector seems to be low in the growth rate of exports i.e. 6.8 percent only.

Table 4.9 B: Long term trend analysis and CAGR for sector wise imports of India with EU countries from 1996 to 2015.

S. No.	Industry Wise groups for EU	Trend Co-efficient for imports	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for Imports: EU
1	Food processing	29.641	7.57 (0.000)	76.10%	57.301 (0.000)	12.20%
2	Textiles and garments	22.526	12.726 (0.000)	90.00%	161.96 (0.000)	9.20%
3	Minerals	57.889	4.994 (0.000)	58.10%	24.941 (0.000)	15.90%
4	**Chemicals**	**275.04**	**11.187 (0.000)**	**87.40%**	**125.16 (0.000)**	**11.10%**
5	**Gems and Jewellery**	**394.921**	**6.074 (0.000)**	**67.20%**	**36.89 (0.000)**	**6.20%**
6	Metals and metallic goods	286.173	6.873 (0.000)	72.40%	47.238 (0.000)	12.30%
7	**Machinary and Engineering goods**	**1053.83**	**6.606 (0.000)**	**70.80%**	**43.634 (0.000)**	**13.00%**

The results in Table 4.9 B indicates that the trend coefficient is the highest for the machinery and engineering goods sector (1053.83). This shows a long term trend and high dependency of imports from EU especially from United Kingdom, Germany, France and Italy as indicated by the mean of trade volume from these countries (as analyzed earlier). The rate of change in imports is much higher than that of exports in the same sector as the Indian economy is a developing economy it is bound to be heavily dependent on most of the developed countries in EU for the import of all the commodities under the machinery and engineering goods sector. The T-statistics of 6.606 shows long term significant relationship between EU and India in the above

said sector. It is supported by a P value of 0.000 and the CAGR is 13 percent for the sector.

The trend coefficient for the food processing sector (29.641) is low but significant. The CAGR for the sector is nearly 12 percent. This is extremely low when compared to other sectors.

For textiles and garments sector 22.52 trend coefficient is the lowest indicating a very low long term trend relationship between India and EU in this sector. But the R square for this sector is high indicating a regularity of trend in imports. The CAGR for the mineral industry is the highest at 15.90 percent. However the long term trend relationship is better than the textile and the garments sector. Both the metals & metallic sector as well as the food processing sector has a growth rate of around 12 percent and has a significant trend coefficient as indicated by the p value. For the gems and jewellery sector the trend coefficient 394.21 is significant w.r.t to P value of 0.000. The import growth is around 6 percent. But the lower R square indicates an irregularity in imports.

Table 4.9 C: Long term trend analysis and CAGR for sector wise Trade Volume of India with EU countries from 1996 to 2015.

S. No.	Industry wise groups for EU	Trend Co-efficient for EU	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for TV: EU
1	Food processing	182.154	9.041 (0.000)	82.00%	81.746	7.90%
2	Textiles and garments	402.67	10.05 (0.000)	84.90%	101.004	6.90%
3	Minerals	498.094	5.632 (0.000)	63.80%	31.714	23.20%
4	**Chemicals**	**604.747**	**11.541 (0.000)**	**88.10%**	**133.189**	**12.00%**
5	Gems and Jewellery	554.964	6.765 (0.000)	71.80%	45.764	6.60%
6	Metals and metallic goods	537.43	7.86 (0.000)	77.40%	61.786	13.50%
7	**Machinary and Engineering goods**	**1552.694**	**7.734 (0.000)**	**76.90%**	**59.814**	**13.90%**

Fig. 4.12: Long term trend analysis and CAGR of India with EU countries from 1996 to 2015: Industry wise
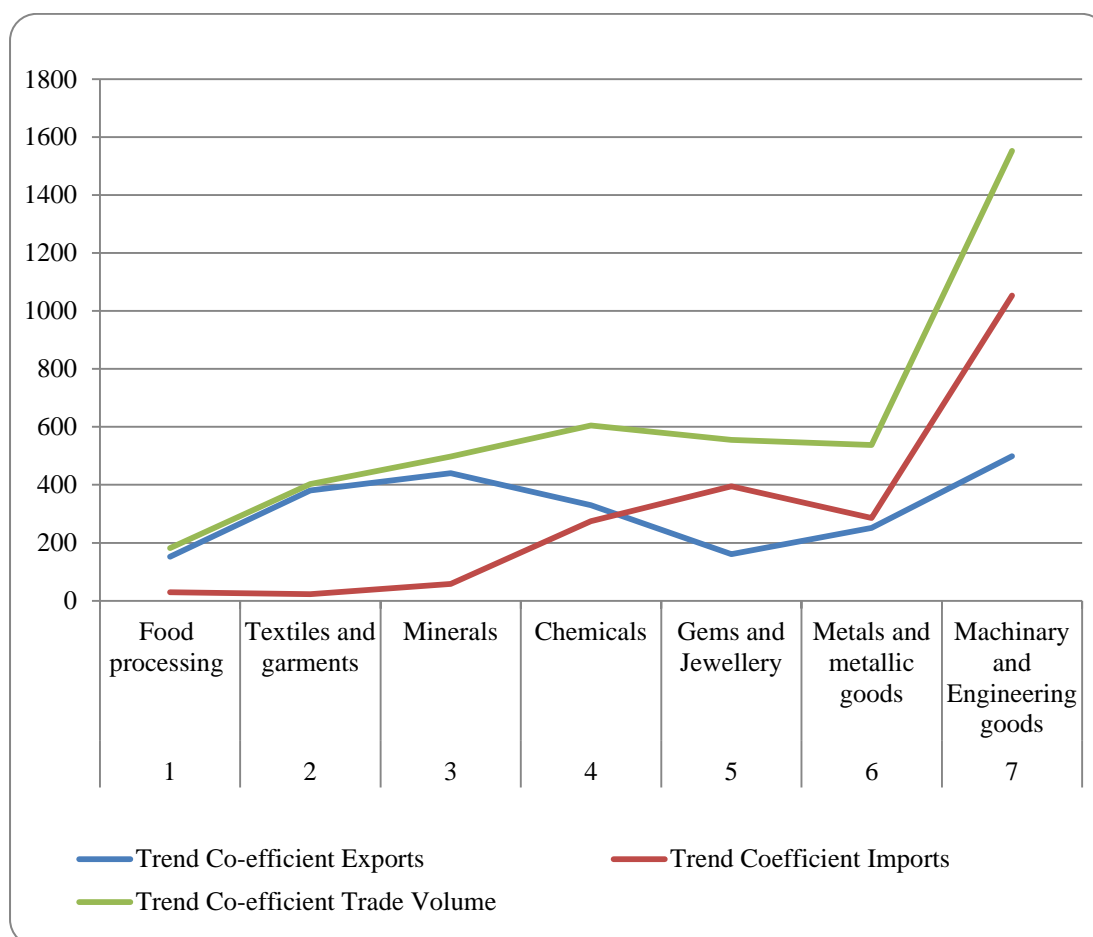
The results in Table 4.9 C once again indicate a long term trend and high dependency on EU for the machinery and goods industry. The trend coefficient for the industry is 1552.694 indicating that the trade volume of India in the respective sector changes by 1552.694 million USD in a year. This is supported by the T statistic of 7.734 and a P value 0.000. The CAGR for the industry is 13.90 percent.

This is followed by chemicals sector (604.74), gems and jewellery (554.96) and metals and metallic goods (537.43) where the long term trade relationship is significant. The minerals sector has the highest growth in CAGR at 23.2 percent.

Table 4.10 A: Long term trend analysis and CAGR for sector wise Exports of India with ASEAN countries from 1996 to 2015.

S. No.	Industry wise groups for ASEAN	Trend Co-efficient for Exports	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for Exports
1	Food processing	445.06	8.014 (0.000)	78.10%	64.227 (0.000b)	13.84%
2	**Textiles and garments**	**20.00**	**13.931 (0.000)**	**90.90%**	**179.319 (0.000b)**	**8.41%**
3	**Minerals**	**717.32**	**7.93 (0.000)**	**77.70%**	**62.893 (0.000b)**	**23.17%**
4	Chemicals	214.87	11.186 (0.000)	87.40%	125.137 (0.000b)	14.21%
5	Gems and Jewellery	41.71	6.606 (0.000)	70.80%	43.643 (0.000b)	22.00%
6	**Metals and metallic goods**	**102.34**	**5.091 (0.000)**	**59.00%**	**25.916 (0.000b)**	**9.96%**
7	Machinery and Engineering goods	567.98	14.239 (0.000)	91.80%	202.758 (0.000b)	22.40%

Sector wise long term trend analysis for exports between ASEAN and India is shown in table 4.10 A. The results indicate that the trend coefficient is the highest w.r.t to mineral industry (717.32). This indicates that the exports of India in the mineral sector changes by 717.32 million US dollars in a year. This is supported by a significant p value of 0.000. The mineral industry tops the list in ASEAN with the highest trend coefficient indicating that India has tremendous amount of minerals which is also reflected in its average exports to both the trading blocs. The CAGR for mineral industry is at 27.17 percent.

For the textile and the garments sector the R square of 90 percent indicates that the model is fit. But looking at the trend coefficient it is found that the value is only 20 million US dollars. This indicates that the annual change in exports in the above mentioned sector is very low. Comparing the trend coefficient for exports to EU and ASEAN in the textiles and garments sector (table 4.9A and 4.10 A) it is found that it is much higher in EU (380.145) compared to the lowest in ASEAN (20.00). These value indicate that the textiles and garments of India are in much demand in EU rather than in ASEAN countries. Some similar consumer preferences and styling can be reasons for a low export to the ASEAN countries in the above said sector. Also these values again hint at strong competitors for India in Asia like China and Bangladesh. CAGR of exports is the lowest in the textiles and the garment sector (8.41percent) in ASEAN.

The machinery and engineering goods industry has a trend coefficient of 567.98 and a CAGR of 22.40 percent. Again the trend coefficient for the food processing industry (445.06) is also very high with ASEAN as compared to EU the trend coefficient where it is very low (152.513). This is on account of the AIFTA under which preferential tariff have to be sufficiently lowered to enhance trade in the above said industry. Under the preferential tariff list where coffee, black tea and pepper (HS code 09) and palm oil (HS code 15 & 12) fall under the special product list. The tariff commitment from them are till 2019 where the tariff has to be sufficiently lowered. Once the tariff commitments are met the sector can see a further rise in trade.

The R square for the metals and metallic goods is only 59 percent indicating high irregularity in trend for exports in the sector.

Table 4.10 B: Long term trend analysis and CAGR for sector wise Imports of India with ASEAN countries from 1996 to 2015.

S. No.	Industry wise groups for ASEAN	Trend Co-efficient	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for Imports
1	Food processing	332.55	7.047 (0.000)	73.40%	49.655 (0.000)	17.30%
2	**Textiles and garments**	**65.03**	**8.808 (0.000)**	**81.20%**	**77.58 (0.000)**	**10.40%**
3	Minerals	556.52	6.024 (0.000)	66.80%	36.293 (0.000)	36.10%
4	**Chemicals**	**181.06**	**11.03 (0.000)**	**87.00%**	**121.669 (0.000)**	**15.00%**
5	Gems and Jewellery	61.38	5.356 (0.000)	61.40%	28.692 (0.000)	11.40%
6	**Metals and metallic goods**	**128.43**	**9.823 (0.000)**	**84.30%**	**96.482 (0.000)**	**13.20%**
7	Machinery and Engineering goods	368.12	6.667 (0.000)	71.20%	44.448 (0.000)	20.10%

The results in Table 4.10 B shows the long term analysis and CAGR for imports of India with ASEAN countries. The results indicate that the trend coefficient is the highest for mineral industry (556.52) followed by machinery and engineering (368.12) & food processing industry (332.55). These values indicates long term significant trend relationship between India and ASEAN in the above said sectors. All are supported by their T-statics and P value. The CAGR is the highest for the mineral industry (36.10 percent) and is the lowest for textiles and garment industry (10.40 per cent).

The trend analysis on the import side for the chemical industry is found to be significant w.r.t R square. The CAGR is 15 percent. The trend coefficient for the textile sector is 65.03 billion US dollars. But the R square is 81.20 percent. This indicates that model is fit but the change in imports during a year from ASEAN in this sector is very low. For the metals and metallic goods industry the trend coefficient is high and significant with respect to R square and a significant p value. There are larger imports in this sector mainly on account of tariff reductions under the AIFTA.

Table 4.10 C: Long term trend analysis and CAGR for sector wise Trade Volume of India with ASEAN countries from 1996 to 2015.

S. No.	Industry wise groups for ASEAN	Trend Co-efficient for Trade volume	T Statistic (p value)	R Square	F Statistic (p value)	CAGR for Trade volume
1	Food processing	777.60	8.067 (0.000)	78.30%	65.08 (0.000)	15.00%
2	Textiles and garments	85.03	10.32 (0.000)	85.50%	106.502 (0.000)	9.80%
3	Minerals	1273.84	7.481 (0.000)	75.70%	55.966 (0.000)	25.10%
4	Chemicals	395.92	11.374 (0.000)	87.80%	129.375 (0.000)	14.50%
5	Gems and Jewellery	103.09	7.687 (0.000)	76.70%	59.096 (0.000)	13.20%
6	Metals and metallic goods	230.77	9.442 (0.000)	83.20%	89.142 (0.000)	10.90%
7	Machinery and Engineering goods	936.10	10.589 (0.000)	86.20%	112.128 (0.000)	20.60%

Fig. 4.13: Long term trend analysis and CAGR of India with ASEAN countries from 1996 to 2015: Industry wise
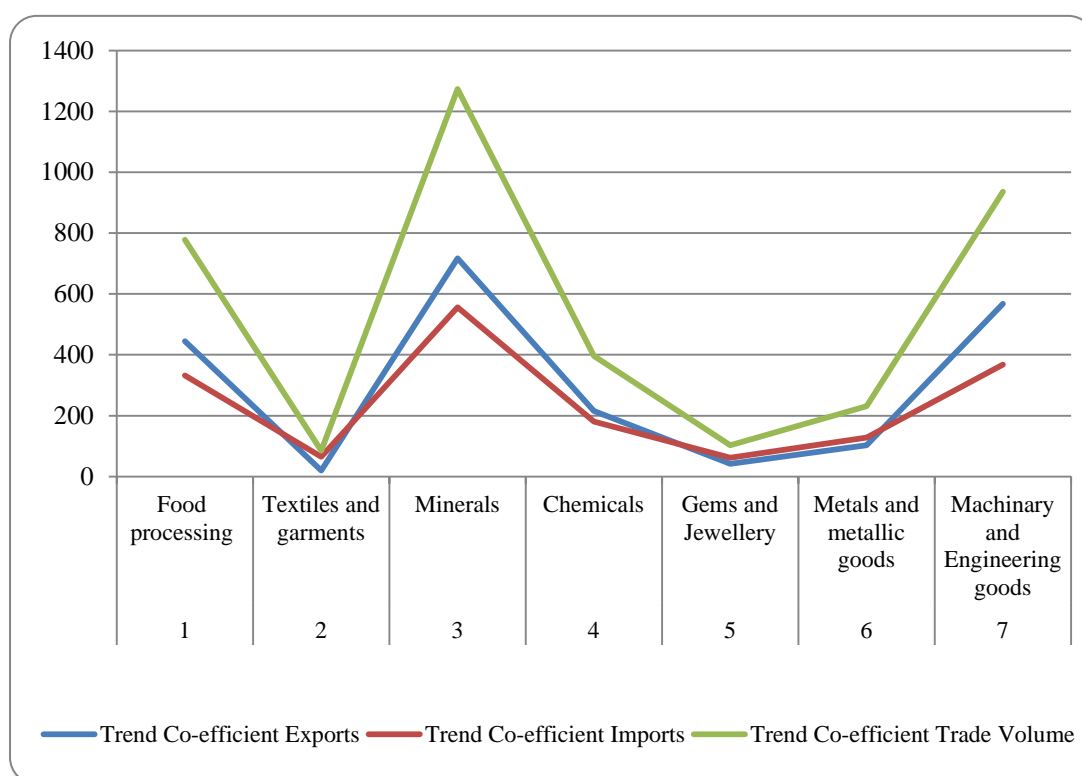
The results in Table 4.10 C shows the long term trend analysis and CAGR for trade volume of India with ASEAN countries. The trend coefficient of trade volume in the minerals industry is 1273.84 and is significant w.r.t to p value. The sector also has the highest growth rate of 25 percent. Thus the export earnings from this sector is adding to better to the revenues of the country. The trend coefficient of trade volume in the food processing sector is 777.50 and is significant w.r.t to p value. This is majorly due to tariff reductions under the AIFTA on majorly food related items. The CAGR for the sector is 15 percent. The trend coefficient for the machinery and engineering goods sector is very high at 936.10. The sector has a growth of around 21 percent. Post the AIFTA there has been a major increase in trade volume in this sector.

Thus from the above tables it is found that India's trade with EU countries has surely improved over a period of time. But the direction of trade has remain confined to selected countries like Belgium, Germany and United Kingdom. Whereas countries like Estonia, Luxemburg and Slovak republic remains at the least position. Similar

situation can be seen in terms of India's trade with ASEAN countries. Among ASEAN countries trade has confined mostly to countries like Indonesia, Malaysia and Singapore. Trade pattern of India and EU indicates more volume in the case of gems and jewellery and machinery and engineering goods. Among ASEAN countries minerals, machinery and engineering goods and food processing industries are the major drivers of trade. Similar trend can be seen for the period post AIFTA.

4.2   ECONOMETRIC ESTIMATIONS

This section looks at the regression analysis/experiments with the help of panel data models in order to observe the ASEAN and EU's trade relations with India. The chapter starts with a brief description of the econometric tools and techniques that are mentioned in the literature and applied to identify a significant behaviour in ASEAN and EU trade relationship with India.Some parts of the econometric techniques of the research methodology chapter are mentioned here so that the reader is acquainted with the logical structure of the chapter, and is kept aware of the author's perspective.

This chapter structure starts with the introduction as well as importance of ordinary least square method of estimating regression coefficients and states the significance of the regression analysis. The statistical/econometric tools and techniques used in the model are then discussed breifly. This is followed by discussing cross section Individual Within Effects, followed by First Difference model. We then run the experiment with random effects and also mention the test used in the model for random effects. Further, results of the of Pooled Regression Model are shown where *Geographical Distance* is the dependent variable and conclude about ASEAN and EU trade significance on the Distance variable. After this, *Between Effects model* is explained and later followed by Poisson and Quasi-Poisson model as mentioned in the research methodology chapter.

4.2.1   Panel OLS Regression

In the research study annual data of India's exports, imports and trade volume with the countries in EU and ASEAN is taken to study the Gravity Model. Other variables (as mentioned in the research methodology chapter) taken for the study of the model are distance, population and GDP of the countries in EU and ASEAN for a

period of ninteen years from 1996 to 2014. The panel OLS regression is applied in order to analyse the relationship between different variables. The basic linear panel model used in econometrics is described through suitable restrictions of the following general model:

$$y_{it} = \alpha_{it} + \beta_{it}^{\acute{u}} x_{it} + u_{it} \tag{4.1}$$

where $i = 1, \cdots n$ is the individual (group, country) index, $t = 1, \cdots T$ is the index and u_{it} a random disturbance term is supposed to be normally distributed with mean 0 and homogenious variance.

The most common one is parameter homogeneity, which means that $\aleph_{it} = \alpha$ for all i, t and $\beta_{it} = \beta$ for all i, t. $\therefore$ the resulting model is

$$y_{it} = \alpha_{it} + \beta_{it}^{\acute{u}} x_{it} + \mu_{it} + \varepsilon_{it} \tag{4.2}^{48}$$

The idiosyncratic error ε_{it} is usually assumed well-behaved and independent of both the regressors x_{it} and individual error component μ_i. The individual component may be in turn either independent of the regressors or correlated. Therefore an experiment with panel OLS is done for individual country effects with respect to distance and trade volumes including export import variables. The understanding here is that there is inherent embedded collinearity between trade volume and exports. However this collinearity is ignored so that we do see the coefficients affecting distance and population in the broader perspective.[49]

Table 4.11 A: OLS: Exports, Imports, Distance, Trade Volume

Dependent variable → Independent Variables ↓	Model 1 Exports	Model 2 Imports	Model 3 Distance	Model 4 Trade Volume
Imports	-1.000 (0.000)		-0.000(0.000)	**1.000** (0.000)
Trade volume	1.000 (0.000)	1.000 (0.000)	0.000 (0.000)	
GDP	0.000 (0.000)	.000 (0.000)	-.000 (0.000)	-.000 (0.000)
Distance.km.	-0.001 (0.001)	-0.001 (0.001)		-0.001 (0.001)

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[48] The equation 4.1 is just OLS but when we do panel regression the idiosyncratic error is also considered therefore in equation 4.2 we move from simple OLS to panel models, hence error of the panel cross-sectional data.

Dependent variable → Independent Variables ↓	Model 1 Exports	Model 2 Imports	Model 3 Distance	Model 4 Trade Volume
Population	0.000(0.000)	0.000(0.000)	0.000(0.000)	- 0.000(0.000)
FTA	-6.491 (4.282)	-6.510 (4.282)	**-4223.000** (0.000)	6.490 (4.282)
Belgium	-2.167 (1.433)	-2.174 (1.433)	-2248.000 (0.000)	2.167 (1.433)
Brunei	.821 (1.184)	.823 (1.184)	-1503.000 (0.000)	-8.21 (1.184)
Bulgaria	-1.259 (.787)	-1.262 (.786)	**-1202.000** (0.000)	-1259 (.787)
Cambodia	1.498 (1.295)	1.502 (1.295)	**-620.000** (0.000)	-1.498 (1.295)
Cyprus	-4.208 (2.654)	-4.221 (2.653)	**-4424.000** (0.000)	4.208 (2.654)
Czech Republic	-.189 (.283)	-.189 (.283)	-139.000 (0.000)	.189 (.283)
Denmark	.268 (.298)	.269 (.298)	**205.000** (0.000)	-.268 (.298)
Estonia	-.783 (.565)	-.786 (.565)	**-1023.000** (0.000)	.783 (.565)
Finland	-.761 (.569)	-7.763 (.569)	**-903.000** (0.000)	.761 (.569)
France	-.795 (.703)	-.797 (.703)	**1057.000** (0.000)	.794 (.703)
Germany	-1.547 (1.293)	-1.550 (1.293)	**670.000** (0.000)	1.545 (1.293)
Greece	-1.060 (.597)	-1.062 (.597)	**-734.000** (0.000)	1.060 (.597)
Hungary	-.490 (.356)	-.491 (.355)	**-333.000** (0.000)	.490 (.356)
Indonesia	-4.558 (3.696)	-4.596 (3.696)	**-682.000** (0.000)	4.556 (3.693)
Ireland	1.907 (1.465)	1.914 (1.464)	**2185.000** (0.000)	-1.906 (1.464)
Italy	-1.671 (1.145)	-676 (1.145)	**114.000** (0.000)	1.670 (1.145)
Latvia	**-1.354** (.640)	**-1.357** (.639)	**-1126.000** (0.000)	**1.354** (.639)
Lithuania	-2.846 (1.784)	-2.855 (1.784)	**-2962.000** (0.000)	2.846 (1.784)
Luxembourg	1.235 (.776)	1.239 (.776)	**908.000** (0.000)	-1.235 (.776)
Malaysia	2.410 (1.600)	2.418 (1.600)	**350.000** (0.000)	-2.410 (1.600)
Malta	.716 (.478)	.718 (.478)	**373.000** (0.000)	-.716 (.478)
Myanmar	-1.159 (.921)	-1.163 (.921)	**-2490.000** (0.000)	1.159 (.921)
Netherlands	-.156 (.278)	-.158 (.278)	**175.000** (0.000)	.157 (.278)
Philippines	-.870 (.555)	-.872 (.555)	**-639.000** (0.000)	-870 (.555)
Poland	-2.182 (1.213)	-2.187 (1.213)	**-828.000** (0.000)	2.181 (1.213)
Portugal	2.093 (1.438)	2.100 (1.438)	**2350.000** (0.000)	-2.092 (1.438)
Singapore	3.152 (2.327)	3.159 (2.326)	**705.000** (0.000)	-3.150 (2.327)
Slovak Rep	-.109 (.253)	-.109 (.253)	**-87.000** (0.000)	.109 (.253)
Slovenia	-.078 (.260)	-.078 (.260)	**-163.000** (0.000)	.078 (.260)
Spain	.759 (.431)	.760 (.431)	**1935.000** (0.000)	-.758 (.431)
Sweden	-.543 (.397)	-5.44 (.397)	**-448.000** (0.000)	.542 (.397)
Thailand	-.493 (.520)	-.495 (.520)	**-1222.000** (0.000)	.493 (.520)
Exports		-1.000 (0.000)	-.000 (0.000)	1.000 (0.000)
United Kingdom			**2014.000** (0.000)	
R^2	82%	92%	91%	88.7%
Num. obs.	313	313	313	313
RMSE	.498	.537	.000	.743

*Coefficients with $p < 0.05$ in **bold***

In table 4. 11 A there are four models of the panel ols regression.[50] In the Model 1, exports were considered as a dependent variable and it was regressed with independent variables such as imports, GDP, distance, population, trade volume and FTA (dummy variable) and country coefficients. Similarly in Model 2, imports were considered as a dependent variable and it was regressed with independent variables such as exports, GDP, distance, trade volume, population and FTA (dummy variable) and country factors. Likewise in Model 3 Distance was the dependent variable and in Model 4 trade volume was the dependent variable. The results in bold are the significant factors according to *p-values*. Following equations explain the OLS Model 1, 2, 3 and 4. Similar equations can be interpreted for OLS Models 5,6 and 7.

Model 1: *Exports (Y_{it}) = $α_{it}$ + $β_{it}$(Imports)$_{it}$ + $β_{it}$(GDP)$_{it}$ + $β_{it}$(Distance)$_{it}$ + $β_{it}$(Population)$_{it}$ + $β_{it}$(Trade Volume)$_{it}$ + $β_{it}$(FTA)$_{it}$ + $β_{it}$(Country factors)$_{it}$ + $μ_{it}$ + $ε_{it}$*

Model 2: *Imports (Y_{it}) = $α_{it}$ + $β_{it}$(Exports)$_{it}$ + $β_{it}$(GDP)$_{it}$ + $β_{it}$(Distance)$_{it}$ + $β_{it}$(Population)$_{it}$ + $β_{it}$(Trade Volume)$_{it}$ + $β_{it}$(FTA)$_{it}$ + $β_{it}$(Country factors)$_{it}$ + $μ_{it}$ + $ε_{it}$*

Model 3: *Distance (Y_{it}) = $α_{it}$ + $β_{it}$(Imports)$_{it}$ + $β_{it}$(GDP)$_{it}$ + $β_{it}$(Exports)$_{it}$ + $β_{it}$(Population)$_{it}$ + $β_{it}$(Trade Volume)$_{it}$ + $β_{it}$(FTA)$_{it}$ + $β_{it}$(Country factors)$_{it}$ + $μ_{it}$ + $ε_{it}$*

Model 4: *Trade Volume (Y_{it}) = $α_{it}$ + $β_{it}$(Imports)$_{it}$ + $β_{it}$(GDP)$_{it}$ + $β_{it}$(Distance)$_{it}$ + $β_{it}$(Population)$_{it}$ + $β_{it}$(Exports)$_{it}$ + $β_{it}$(FTA)$_{it}$ + $β_{it}$(Country factors)$_{it}$ + $μ_{it}$ + $ε_{it}$*

The results for Model 1 where exports is a dependent variable indicates that the value for GDP is 0.000. This explains that if the exports increases by one unit than the GDP also increases but at a constant rate as there is a positive relationship between the variables. Further, the value for distance variable is -0.001. This indicates a negative relationship between exports and distance. This further states that if the country has economies of scale in producing commodities than exports can surely increase and distance really does not matter for trade. This take us closer to the

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[50] The blank columns in table 4.11 A are read as dependent variables and others as independent variables. The table can be read in the following manner. We assume a matrix: the determinant of the matrix is A transpose B, hence when we see a panel model we see a matrix. If not a square matrix then we need another variable to capture the window of the matrix.

Gravity Model. Likewise when we look at the population variable the value is 0.000. This indicates a positive relationship between population and exports thus indicating that the demand for Indian goods is determined by the trading country's population. The FTA value of -6.491 indicates a negative relationship between exports and FTA. Thus it can be inferenced that demand for a country's product is the only factor for a strong trade relationship however if a trade agreement happens in form of FTA between the countries than it smoothens the trade relationship between the bilateral trading partners. The same can be inferenced with India and ASEAN where the FTA is already working and is helping in having strong trade ties with the countries in ASEAN. Likewise if the India –EU FTA is materialised gains from trade are bound to flow. The R square of 82 percent indicates the model fit.

The results for Model 2 where imports is a dependent variable indicates that the value for GDP is 0.000. There is a positive relationship between the variables. The value for distance variable is -0.001. This indicates a negative relationship between imports and distance.Thus it is better for a country to import commodities where it does not hold a comparative advantage and has diseconomies of scale in producing the same. Distance really does not matter as far as comparative advantages stand in importing the commodity. This once again take us closer to the Gravity Model. Likewise when we look at the population variable the value is 0.000. This indicates a positive relationship between population and imports. The FTA value of -6.510 indicates a negative relationship between imports and FTA. The p value is insignificant at 4.282. Thus it can be inferenced that demand for a country's product is the only factor for a strong trade relationship however if a trade agreement happens in form of FTA between the countries than it smoothens the trade relationship between the bilateral trading partners. The same can be inferenced with India and ASEAN where the FTA is already working and is helping India in having higher imports with the countries in ASEAN. Likewise if the India –EU FTA is materialised gains from trade in form of cheaper imports from EU are bound to flow. The R square of 92 percent indicates the model fit.

The R square for Model 3 is 91 percent indicating the model is fit. The results for Model 3 where Distance is a dependent variable indicates that the value for GDP is -.000 (0.000) There is a negative relationship between the variables. This again

goes with the theory of Gravity Model where distance is inversely related to the trade volume between the two countries.The value for FTA variable is -4223.000 and the p value is significant at 0.000. This indicates a negative relationship between FTA and distance.Thus for India while forming an FTA, distance will be accorded a least importance. Economies of scale and comparative advantage, technological carrying capacity will matter more than the transportation costs in form of larger distance between the countries. Looking at some of the countries in EU and ASEAN which have a positive coefficient with the distance variable are UK (2014.000), Spain (1935.000), Ireland (2185.000), France (1057.000), Germany (670.000), Singapore (705.000) and Malayasia (350.000). These positive values indicate that these countries are already consistent trading partners irrespective of the distance between them and India. Some of the countries having inverse relationship with the distance variable are Cyprus (-4424.000), Estonia (-1023.000), Greece (-734.000), Latvia (-1126.000), Maynmar (-2490.000), Indonesia (-682.000), Thailand (-1222.000), Philliphines (-639.000) and Brunei (-1503.000). All these countries can be inferenced as potential trading partners of India where distance does not play a significant role. Post the AIFTA potentials of trade with Phillipines, Maynmar and Brunei have significantly increased. Likewise countries like Cyprus and Latvia in EU can be looked at as potential trading partners.

Looking at Model 4 in the table where trade volume is the dependent variable indicates that the value for GDP is -.000 (0.000). There is a negative relationship between the variables, however we need to keep in mind that trade volume is a sum of exports and imports. Distance is inversely related to the trade volume as indicated by the value of -0.001(0.001) taking us once again closer in proving the Gravity Model. The value for FTA variable is 6.490. This indicates a positive relationship between FTA and Trade volume. Thus partially we can say that higher trade volumes can be explained in terms of positive impact of free trade agreements. But this may not always be the case.

Thus, it is found that population and trade volumes (exports + imports) are mainly dependent on trade relations between countries. Understanding this behavior, we can now see in a broader perspective the variables affecting trade relations, in a giving data set with India. Higher trade volume coefficients are kept to see the

magnitude of trades as scaling will only give us the proportion of trading patterns therefore, here the scaling/normalization of trade volumes was used as in the dataset. Further, we also get to spatial relations, and their dependencies on population and distance. A significant observation here is the differentiation between developed and developing countries. Coefficients of developed countries, with respect to population is also showing negative relation. Further if look at distance as a variable we see that it is highly significant with trading partners in ASEAN (Singapore and Malaysia) showing a highly significant and direct relation. While in EU, Spain, UK, Portugal, Ireland, France and Germany are highly significant and their coefficients with respective to p-value is also showing negative results.

Further the OLS panel regression is extended in Models in 4,5 and 6. Here the factors are taken as countries.

Model 7: *Population (Y_{it}) = α_{it} + $\beta_{it}(Imports)_{it}$ + $\beta_{it}(GDP)_{it}$ + $\beta_{it}(Exports)_{it}$ + + $\beta_{it}(Trade\ Volume)_{it}$ + $\beta_{it}(FTA)_{it}$ + $\beta_{it}(Country\ factors)_{it}$ + μ_{it} + ε_{it}*

Table 4.11 B: OLS: Export, Import, Population

	Model 5	Model 6	Model 7
Dependent variable →	**Exports**	**Imports**	**Population**
Independent Variables ↓			
Trade volume	**.458** (0.12)	**.542** (0.12)	-5764200419.134 (11646526309.952)
Distance.km.	**.477** (.125)	$-$ **.477** (.125)	**756547348.658** (113304138.544)
FTA	**2634.745** (668.306)	$-$ **2635.202** (668.269)	**2653451737666.647** (813764247836.052)
Belgium	713.522 (477.831)	-713.757 (477.805)	**1445101931425.335** (263471096546.568)
Brunei	150.510 (285.134)	-150.862 (285.118)	**1397586979920.846** (212490532031.218)
Bulgaria	**679.574** (324.300)	$-$ **679.801** (324.282)	**640301543368.126** (147414599418.701)
Cambodia	-197.544 (231.027)	197.482 (231.015)	**692320509826.439** (246907115178.102)
Cyprus	**2221.271** (686.351)	$-$ **2221.756** (686.313)	**3082620394305.125** (479250663920.064)
Czech Republic	59.737 (235.185)	-59.763 (235.172)	-68289984854.981 (54430892814.113)
Denmark	74.559 (215.350)	-74.555 (215.338)	$-$ **196687799133.220** (56380494150.934)
Estonia	593.971 (307.048)	-594.072 (307.031)	**506454421183.778** (105002067363.085)
Finland	203.132 (298.090)	-203.215 (298.074)	**552271695954.673** (104975810139.854)
France	$-$ **570.002** (192.963)	**570.124** (192.953)	**825700446944.289** (126352576557.712)
Germany	$-$ **1621.199** (234.823)	**1621.351** (234.810)	**1436461221304.580** (234518663513.700)
Greece	**693.306** (281.647)	$-$ **693.602** (281.632)	**498575991885.534** (111756578735.684)

Dependent variable →	Model 5	Model 6	Model 7
Independent Variables ↓	Exports	Imports	Population
Hungary	297.206 (248.683)	− 297.361 (248.669)	47806817579.327 (68745850716.426)
Indonesia	**− 1515.935** (268.037)	**1516.169** (268.022)	3922397646.050 (714826911785.335)
Ireland	**− 899.278** (259.469)	**899.104** (259.455)	**− 1746916690666.667** (262942340506.011)
Italy	440.784 (229.780)	− 440.849 (229.768)	**1149246284174.250** (210543605634.333)
Latvia	**631.357** (316.954)	**− 631.912** (316.937)	**586302289155.686** (119194337714.705)
Lithuania	**1493.126** (515.035)	**− 1493.494** (515.006)	**1977942087914.253** (324309081867.633)
Luxembourg	− 338.811 (201.486)	338.975 (201.474)	**− 922824339177.510** (139562835710.971)
Malaysia	**− 1777.758** (230.190)	**1777.949** (230.178)	− 239180183351.165 (309510289962.931)
Malta	73.072 (208.898)	− 72.949 (208.887)	**− 562299380201.123** (86162765479.581)
Myanmar	402.490 (378.458)	− 402.582 (378.437)	**1949257560331.980** (133770908879.565)
Netherlands	**1886.654** (224.815)	**− 1886.606** (224.803)	80944296666.134 (53416293991.461)
Philippines	16.269 (232.751)	− 16.436 (232.738)	**550059998276.177** (102222984612.833)
Poland	**605.987** (290.095)	**− 606.513** (290.079)	**580335471025.653** (232651512544.504)
Portugal	**− 848.254** (273.534)	**848.314** (273.519)	**− 1889792937214.285** (254026404114.840)
Singapore	**605.773** (257.581)	**− 605.727** (257.567)	− 583552592012.071 (448859364606.168)
Slovak Rep	145.711 (231.841)	− 145.849 (231.828)	**− 157314539513.170** (47838944368.493)

Dependent variable →	Model 5	Model 6	Model 7
	Exports	Imports	Population
Independent Variables ↓			
Slovenia	216.707 (236.702)	− 216.850 (236.689)	**− 124066493498.448** (49552909429.324)
Spain	− 140.309 (228.890)	140.580 (228.877)	**− 697150264219.637** (72232599502.040)
Sweden	− 141.749 (259.793)	141.599 (259.779)	**357058018471.010** (73654222545.417)
Thailand	− 149.926 (277.01)	149.962 (277.186)	**1016236444880.368** (79574995016.335)
Population			3595.117 (4418.988)
Exports			5782883808.437 (11646298367.669)
Imports			5819842593.520 (11647142090.729)
R^2	95.9%	97%	98.7%
Num. obs.	313	313	313
RMSE	466.093	466.067	95990283393.564

*Coefficients with $p < 0.05$ in **bold***

In the table 4.11 B regression experiment with Exports and Imports with Population as the dependent variable is carried on.[51] There are three models of the panel OLS regression. In the Model 5, exports were considered as a dependent variable and it was regressed with independent variables such as trade volume, distance and FTA (dummy variable) and country factors. Similarly in Model 5 imports were considered as a dependent variable and it was regressed with independent variables such as trade volume, distance and FTA and country factors. Likewise in Model 6 Population was the dependent variable and it was regressed with independent variables such as trade volume, distance, exports, imports and FTA

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[51] The blank columns in table 4.11 B are read as dependent variables and others as independent variables. The table can be read in the following manner. We assume a matrix: the determinant of the matrix is A transpose B, hence when we see a panel model we see a matrix. If not a square matrix then we need another variable to capture the window of the matrix.

(dummy variable) and country factors. The results in bold are the significant factors according to *p-values*.

The results for Model 5 and Model 6 can be analysed together. But firstly looking at Model 5 we find that exports is a dependent variable and is having a positive relationship with distance (0.477) whereas distance is having a negative relationship with imports as a dependent variable in Model 6. For countries in EU like France, Germany, Portugal there is a positive relationship with imports a these are developed countries and India is dependent on them for imports. But with respect to exports there is a negative relationship indicating Indian exports are partially relevant to them. On the other side for countries like Bulgaria, Cyprus, Greece, Latvia, Netherlands and Lithunia there is a positive relationship with exports of India and negative relationship with Imports. These countries are amongst those countries in EU which are not very developed compared to France and Germany in the same region. Hence, Indian exports do find a place in their markets but India does not seek much of imports from these countries in EU. However when we look at Population as a dependent variable in Model 7 we find that it is mostly significant in the EU region. Countries like France, Germany and Portugal have a positive relationship with Imports as well as population. This helps us to inference that if India imports from these countries and the population growth is higher in these countries than it is benficial for India. With countries like Luxemburg, Bulgaria, Cyprus, Greece, Latvia and Lithunia there is positive relationship with exports and population. Indicating that it is advantageous for Indian exports if the population growth is high in these countries. Comparing with the countries in ASEAN we find that Malayasia, Indonesia, Thailand and Singapore are having a positive relationship with imports and negative relationship with exports.This means India can benefit by importing from these countries especially under the AIFTA. But Indian exports cannot find much market in these countries of ASEAN. Also when we look at Population as a dependent variable in Model 7 for ASEAN countries we find that it is not significant for India except in case of Thailand where the imports and population are significantly related. This may be on account of a larger Indian population base,esp

with Phuket which probably looks more Indian than Chinag mai which has more of Chinese influence. Further it can also be concluded that there is an embedded relationship in exports and imports, however population is supporting Malthusian theory of high economic growth leading to high population in most of the EU countries, where it is mostly significant and both imports and exports are showing an impact.

Fig. 4.14: Relationship between trade volume and distance
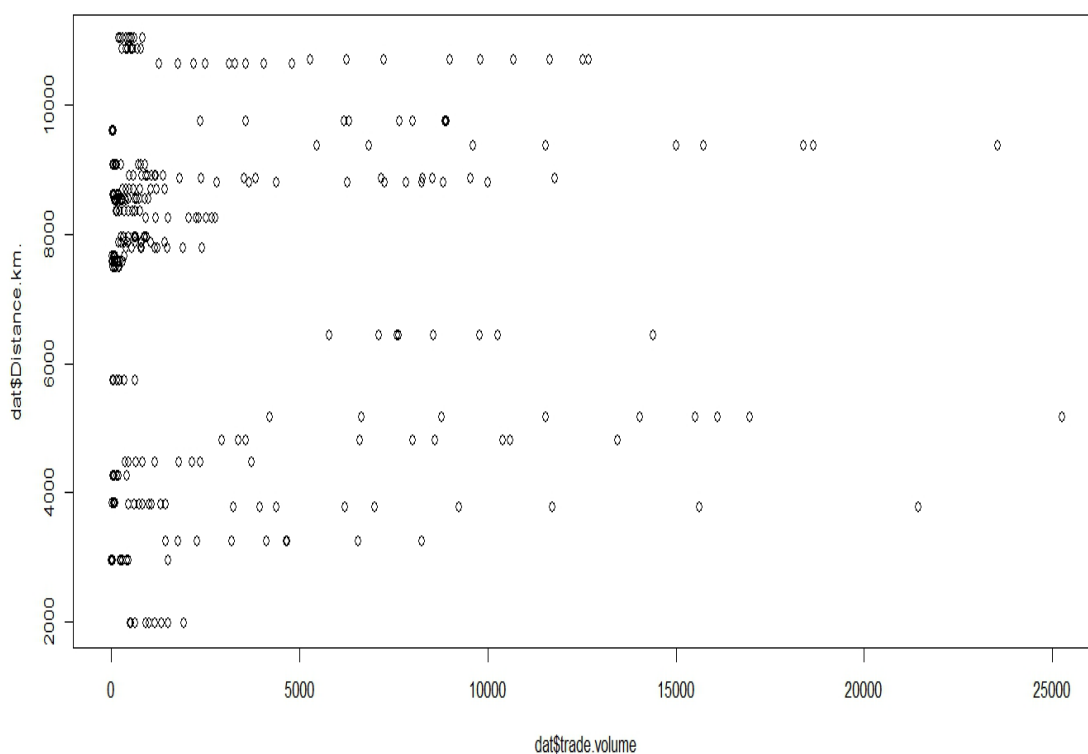
The figure 4.14, 4.15, 4.16 and 4.17 is a continuation of the above OLS panel regression and the aggregation of results. Figure 4.14 depicts the relationship between trade volume and distance between countries in EU and ASEAN with India. The aggregate results are shown here in form of trade volume and distance with relevance to gravity model. We can see from the graph that even if the distance is high (eg. At 8000 km to 10,000 km) the trade volume is unaffected. And with the advancement in technology along with economies of scale it becomes advantageous for India to trade with countries in EU and ASEAN. The black dots indicates the economies of scale can lead to a advantage in trade where distance will really not matter. Hence we see

that even for countries with a higher distance from India especially in the EU region the trade volume is significantly high.

Fig 4.15 :Relationship between distance and trade volume for countries in EU with India
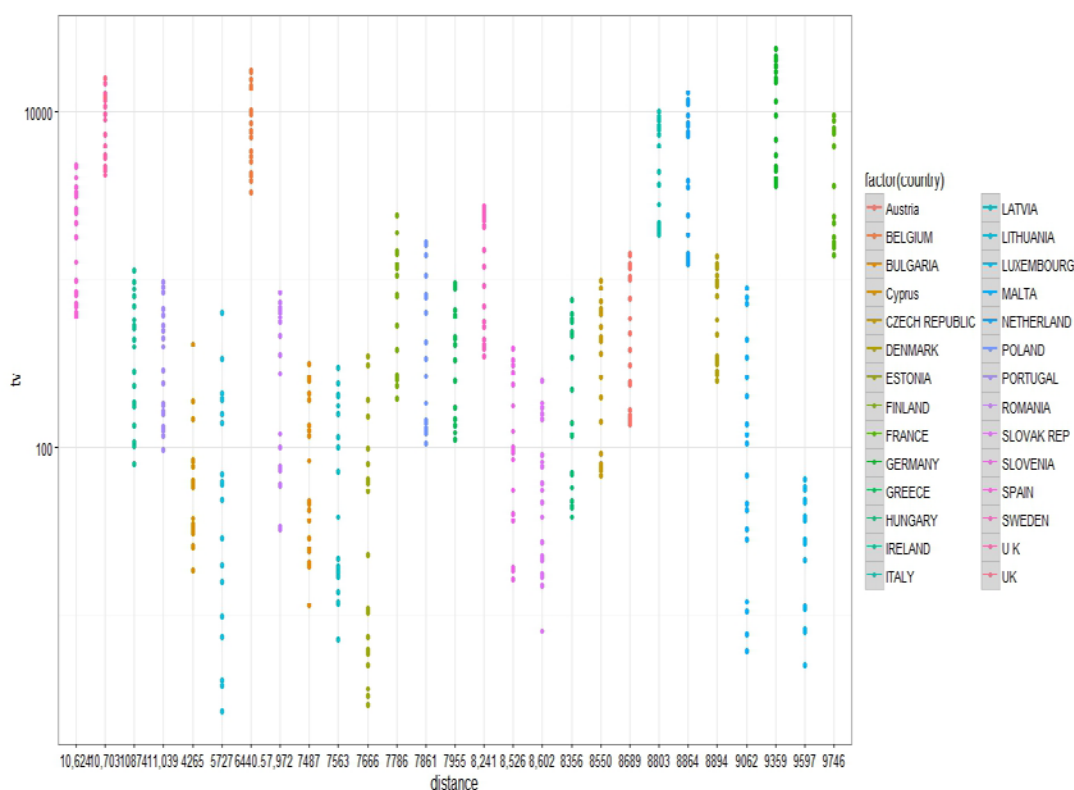
The figure 4.15 depicts the relationship between India and the countries in EU in terms of distance and trade volume. Larger the gap between the dots, higher is the consistency in trade between the EU and India. The gaps between the dots also indicates times when the trade volumes have jumped up. Closer the dots more consistent pattern of trade we can see from the country. Taking the case of country like Spain (first pink dots) the distance and the trade volumes have been high and consistent over the recent years with India. However there have been gaps in between. Spain has been instrumental in signing a lot of MOUs (memorandum of understanding) in the area of agriculture, renewable energy and infrastructure. Spain has been amongst the top ten trade partners of India amongst EU.The presence of more than two hundred Spanish compaines having subsidaries, joint ventures and

projects in India justifies the high trade volume inspite of a significant georaphical distance. Similar relationship can be established with countries like UK (next to Spain, similar pink colour dot), which already has a huge distance from the Indian continent but when it comes to trade volume it has been consistent and has been growing over the years. As per the latest data, the value of the stock of UK Foreign Direct Investment in India (outward FDI) more than doubled between 2004 and 2013, from £1.7 billion to £3.6 billion[52]. Post the recent Brexit (Britain's exit from the EU) phenomena it is expected that there can be more increased trade between India and UK and it could be a deal made in heaven which will benefit both India and UK.[53] Germany, Portugal and Bulgaria are the ones having the highest distance from India and yet contributing to higher trade volumes for the country. All the above said countries along with a few others as shown in the figure are having consistent trade volumes with India inspite of the geographical distance. Countries like Malta, Estonia and Greece though have trade with India we see irregularity in trade inspite of these countries being geographically closer to India compaerd to the other ones in EU. This also brings us closer to the theory of comparative advantage with the above mentioned countries where more than distance, technological carrying capacity is more significant to determine the trade volume especially in case of Spain, UK, Germany, Italy, France and Bulgaria.

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[52]   Office of the national Statistics, The national Archives http://webarchive.nationalarchives. gov.uk/20160105160709/http://www.ons.gov.uk/ons/rel/international-transactions/outward-foreign-affiliates-statistics/the-uk-s-trade-and-investment-relationship-with-india/sty-india.html.

[53]   The Financial Times, July 2016 http://www.ft.com/cms/s/0/2e0eb278-4372-11e6-b22f-79eb489 1c97d.html#axzz4JtPHubI5.

Fig 4.16 :Relationship between distance and trade volume for countries in ASEAN with India
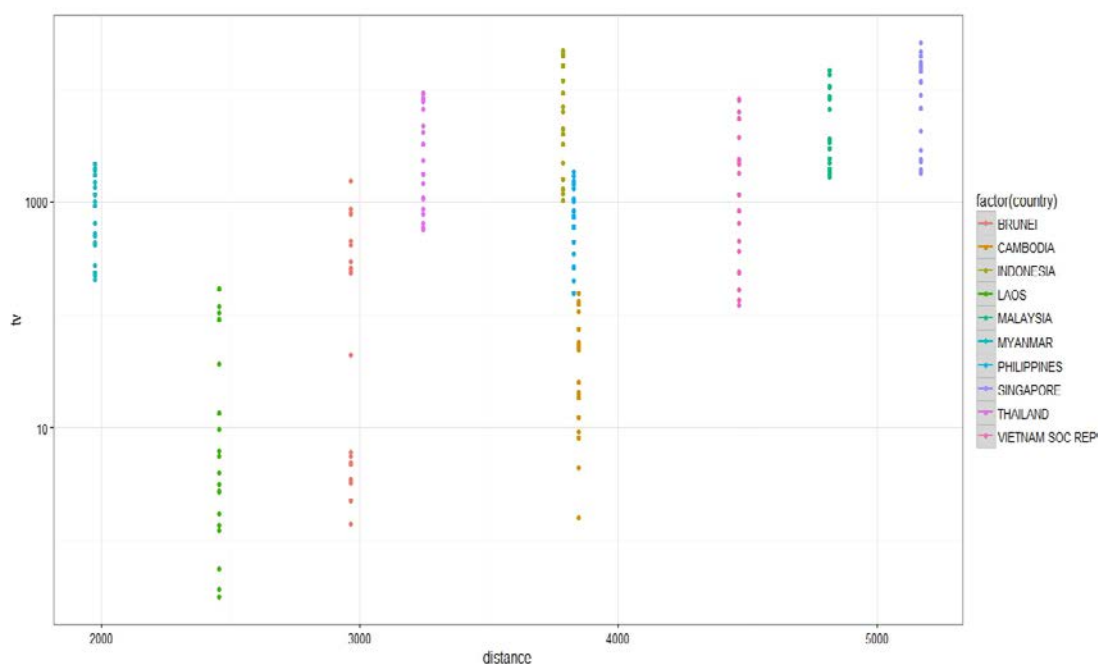
The figure 4.16 shows the relationship between distance and trade volume for countries in ASEAN with India.The figure shows the consistency and higher trade volume from Maynmar over the years even though we find it much closer to us geographically. Bilateral trade between India and Maynmar increased US$ 921.19 in 2006-07 and p to US$ 2.052 billion in 2015-16. "There is a huge potential for bilateral trade, investment and economic cooperation with Myanmar".[54]Another country with blue dots is Laos for which even though trade has been happening but there is no steadiness in trade. Even for Brueni the same trade pattern like Laos can be seen. Though both are catching up in trade with India post the AIFTA largely on account of Imports. The total imports from Brunei were only 31.13 in million Brunei $ in 2010 which increased to 1265.91 million Brunei $ in 2011. However for countries like Singapore, Thailand, Indonesia, Philliphines and Vietnam the trade volumes have been very consistent over the years as indicated by the closeness of the dots.

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[54] Bilateral Economic and Commercial relations http://www.indiaembassyyangon.net/index.php? option =com_content&view=article&id=60&Itemid=189&lang=en.

Fig 4.17 :Relationhip between distance and trade volume for countries in EU and ASEAN with India
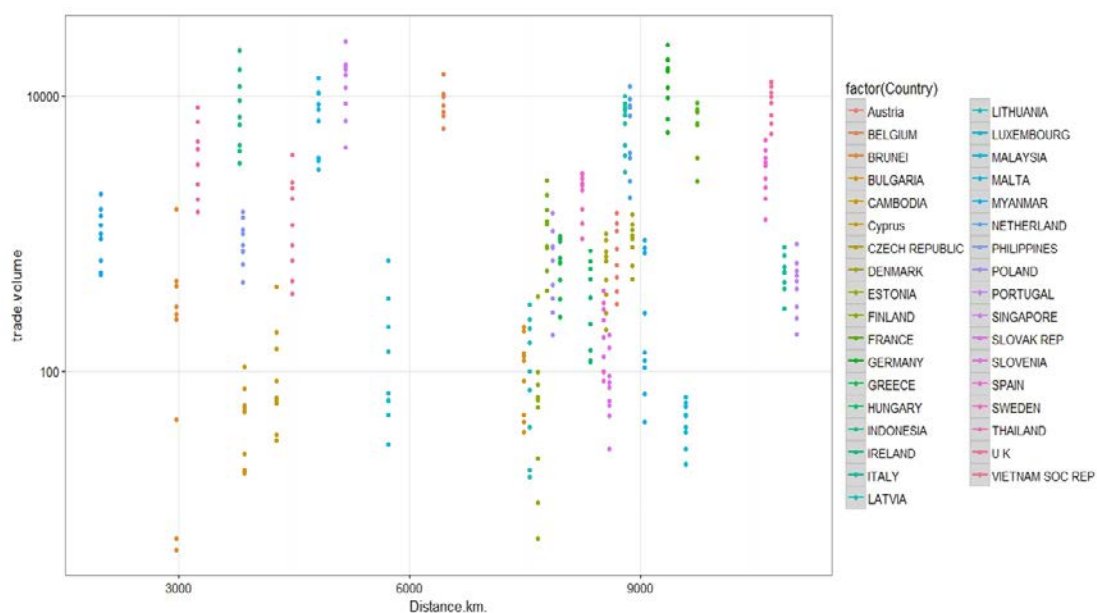
The figure 4.17 shows the trade and distance relationship between both the countries in EU and ASEAN. The places where the dots in the figure are closely placed indicates the consistency in trade volume even with a large geographical distance.The larger the gap between the dots it indicates the irregular pattern in trade volume with the respecitve country. The developed countries from EU like Spain, UK, Germany, Portgual and from ASEAN like Singapore have a consistent pattern in trade volumme where distance is really not making a difference. Even some of the developing countries in ASEAN like Vietnam and Maynmar are also showing consistent trade pattern irrespective of the geographical distance. With the available data set and our experiments signify the Gravity Model for India with EU and ASEAN. We found different factors w.r.t to both the blocs and the results are as per our synthesis in the theory.

After the experiment with the gravity model, attempts have been made to have deeper insight into the magnitude of trade volume with the help of Poisson function. The results of the Poisson functions are presented in the table below. It indicates the significance of individual countries in terms of India's trade with EU and ASEAN.

Table 4.12: Individual Country Coefficients

Dep. Variable	Independent variable	Coefficients	T-statistics	P-Value
TRADE VOLUME	(Intercept)	1.07	9.47E+00	0.000
	Exports	7.97E-05	1.23E+02	0.000
	Imports	0.0000614	7.27E+01	0.000
	GDP	3.50E-13	4.63E+01	0.000
	Distance.km.	0.0005827	4.60E+01	0.000
	Population	4.13E-08	6.16E+01	0.000
	ESTONIA	-1.187	-2.85E+01	0.000
	FINLAND	1.099	5.70E+01	0.000
	FRANCE	-1.926	-3.54E+01	0.000
	GERMANY	-2.533	-4.24E+01	0.000
	GREECE	0.1295	7.06E+00	7.00E-11
	HUNGARY	-0.5063	-2.40E+01	0.000
	INDONESIA	-4.805	-5.25E+01	0.000
	IRELAND	-1.43	-4.17E+01	0.000
	ITALY	-1.051	-2.66E+01	0.000
	LATVIA	-0.7393	-2.07E+01	0.000
	LITHUANIA	0.6041	1.28E+01	0.000
	LUXEMBOURG	-2.915	-5.51E+01	0.000
	MALAYSIA	3.315	8.87E+01	0.000
	MALTA	-0.5467	-2.40E+01	0.000
	MYANMAR	2.719	4.63E+01	0.000
	NETHERLAND	1.065	6.58E+01	0.000
	PHILIPPINES	-0.2923	-1.86E+01	0.000
	POLAND	-0.9288	-4.76E+01	0.000
	PORTUGAL	-1.944	-4.90E+01	0.000
	SINGAPORE	4.094	8.50E+01	0.000
	SLOVAK REP	-1.889	-4.93E+01	0.000
	SLOVENIA	-0.8564	-3.13E+01	0.000
	SPAIN	-1.803	-3.43E+01	0.000
	SWEDEN	1.077	7.38E+01	0.000
	THAILAND	2.174	7.30E+01	0.000
	U K	-2.213	-3.47E+01	0.000

Null deviance: 1622676 on 312 degrees of freedom
Residual deviance: 46198 on 274 degrees of freedom
AIC: 48916
Dispersion parameter for poisson family taken to be 1

In the above table 4.12 we find the intercept is positive showing an upward trend and trade volume can be explained by all the variables i.e. exports, imports, GDP, population, distance and FTA. The results indicate that for countries like Germany, France, Portugal, Ireland, Italy, Indonesia, Spain, UK the trade volumes have been sufficiently large over the years and hence the increase in trade is not reflected much. The negative coefficients for the above mentioned countries cannot be interpreted as inversely related to trade volume. Whereas for the countries like Greece, Lithuania the change in trade has only increased marginally over the years and hence does not show a significant improvement in trade volume.

Further, Quasi Poisson Function on trade volume is experimented to avoid biases in terms of impact of gravity model and to synthesize each countries coefficients.

Table 4.13: GLM with Quasi Poisson Function and on Trade Volume

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	TStatistics	P-value	Dispersion parameter
Trade Volume	Intercept	α	7.35E+00	41.269	0.000	1112.331
	Imports	β1	8.19E-05	5.236	3.05E-07	Residual Deviance
	Exports	**β2**	**1.85E-04**	**14.951**	**0.000***	371946 on 307 DF
	GDP	β3	3.11E-13	5.226	3.21E-07	Null Deviance
	Distance	β4	-6.41E-05	-2.591	0.01003	
	Population	β5	2.26E-09	3.095	0.00215	1622676 on 312 DF

***Significant at 10 % confidence interval

In Table 4.13 trade volume being dependent is regressed on imports, exports, GDP, distance and population. The results show that the Quassi poisson function does not signify to explain Trade Volume in terms of the variables above. Here only exports being significant is not fulfilling condition to find a significance value. Hence we devise more experiments in the below section.

4.2.2 A Fixed Effects

If it is correlated, the ordinary least squares (OLS) estimator of β would be inconsistent, so it is customary to treat μ_i as a further set of n parameters as if in the general model $\alpha_{it} = \alpha$ for all t, this is called the fixed effects (**within** or **least squares dummy variables**) model, usually estimated by OLS on transformed data, gives consistent estimator for coefficient β.

4.2.2 B Random Effects

If the individual-specific component μ_i is uncorrelated with the regressors, a situation which is usually termed as **random effect**, the overall error μ_{it} also is, so the OLS estimator is consistent. Nevertheless, the common error component over individuals induces correlation across the composite error terms, making OLS estimation inefficient, so one has to resort to some form of feasible generalized least squares (GLS) estimators.

If the individual component is missing altogether, pooled OLS is the most efficient estimator for β. This set of assumptions is usually labelled **pooling model**, although this actually refers to the errors' properties and the appropriation estimation method rather than the model itself.

Another way of estimating unobserved effect models through removing time-invariant individual components is by first-differencing the data: lagging the model and subtracting, the time-invariant components (the intercept and the individual error component) are eliminated, and the model.

$$\Delta y_{it} = \beta^{\acute{u}} \Delta x_{it} + \Delta u_{it} \tag{4.3}$$

4.2.3   The Pooling test

As pointed out by Hausman (1985) and Baltagi (1995) the hypotheses on parameters and error terms (and hence the choice of the most appropriate estimator) are usually tested by means of:

- Pooling tests to check poolability, i.e. the hypothes is that the same coefficients apply across all individuals,

- If the homogeneity assumption over the coefficients is established, the next step is to establish the presence of unobserved effects, comparing the null of spherical residuals with the alternative of group (time) specific effects in the error term,

- The choice between fixed and random effects specifications is based on Hausman-type tests, comparing the two estimators under the null of no significant difference: if this is not rejected, the more efficient random effects estimator is chosen,

- Even after this step, departures of the error structure from sphericity can further affect inference, so that either screening tests or robust diagnostics are needed.

4.2.3.1 Pooled Regression Analysis

In order to measure the magnitude we apply a quasi poisson function in form of pooled regression analysis. The pooled regression analysis is carried out on variables like exports, imports, distance and trade volume. The pooling model is done to understand the nature of poolability and to acertain whether the coefficients apply across all individuals countries. In the pooled analysis if the homogenity assumptions over the coefficients is established, the next step is to establish the presence of unobserved effects. For this there is a need to move to individual effects model.

Table 4.14 A: Pooled Regression Analysis: Exports

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
Exports	Intercept	α	1.2277	8.35	0.000***	107.4%
	Imports	β1	-9.216	-1.35	0.177	F-Statistics
	Trade volume	**β2**	**1.043**	**2.76**	**0.006****	6.158 (0.000)
	GDP	**β3**	**2.454**	**3.94**	**0.000*****	Honda Test
	Distance	β4	-5.461	-0.92	0.354	Significant Effects
	Population	**β5**	**-2.953**	**-2.12**	**0.034 ***	
	FTA	β6	6.522	0.642	0.981	

*** significant at 2.5 % confidence interval **significant at 5 % confidence interval *significant at 10% confidence interval

In the table 4.14 A considering exports as a dependent variable, it is regressed on independent variables like imports, trade volume, GDP, distance, population and FTA. The variables found significant w.r.t to exports are GDP and population. The coefficient for GDP is positive indicating that when the GDP of the country is high it has positive effects on its exports. The coefficient for population is negative indicating the inverse realtionship between exports and population of the country. This result can be expalined in a postive way where larger the specialised population in a country in form of a skill set will help the country in form of higher contribution to GDP thereby leading to more exports. This result can be further analysed with reference to regional advantage from the specialization of labour that may lead to comparative advantage. Therefore we can say that the trade relation between developed countries in the EU are, statistically well behaved as their GDP is higher and population is lower. While distance has a negative relation with respect to the pooled effect indicating that exports are not influenced with the distance in form of transportation costs among the countries.

However, on testing the hypothesis that exports are significantly explained by the independent variables it is found that the alternative is true and the independent variables are not efficient to prove the dependent variable. Here, the Honda Test suggest significance of alternative hypothesis.

Table 4.14 B: Pooled Regression Analysis: Imports

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
Imports	Intercept	α	-2.602	-1.922	0.055	92.2%
	Exports	β1	-6.438	-1.35	0.177	F-Statistics
	Trade volume	**β2**	**5.272**	**50.11**	**0.000****	609.19 (0.000)
	GDP	β3	3.411	0.64	0.522	Honda Test
	Distance	β4	8.572	1.75	0.081	Significant Effects
	Population	**β5**	**5.512**	**4.88**	**0.000****	
	FTA	β6	3.304	0.2816	0.778	

**Significant at 10 % confidence interval

The results can be seen in table 4.14 B where population and trade volume are significant. Thus it can be clearly concluded now that the structure of setting this experiments to see exports and imports effect on EU and ASEAN countries behaviour with India is statistically not significant. But it can be partially concluded that when exports are concerned GDP is the key factor and when Imports are considered population is the most significant factor. Therefore, looking at the developed countries in EU and the developing countries in ASEAN, for imports a direct relation between higher GDP countries and higher population countries can be established.

The pooled analysis on exports and imports is carried out on a log function.

Table 4.14 C: Pooled Regression Analysis: Trade Volume

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
	Intercept	α	352.46	1.45	0.14	91.8%
	Imports	**β1**	**1.690**	**50.11**	**0.000****	F-Statistics
	Exports	β2	2.337	2.76	0.006	574.788
Trade volume	GDP	β3	-1.243	1.30	0.192	Honda Test
	Distance	β4	-6.487	0.73	0.462	Significant Effects
	Population	**β5**	**-4.448**	**-2.13**	**0.033***	
	FTA	β6	-4.877	-0.02	0.982	

**Significant at 10 % confidence interval. *significant at 15 % confidence interval

The results in table 4.14 C indicate that the R square is 91.8 % i.e. the model fitted. Trade volume is significantly explained by imports. It is negatively correlated with all other variables i.e GDP, distance, population and FTA. Amongst all the variables, distance variable tops the list, this helps us to analyze that while importing products whether from EU or from ASEAN distance really does not matter for India. This analysis goes closer to the theory of Gravity model. While Population is also explained with 10 percent confidence interval as indicated by the p value. Honda Test the Langrange Muiltipler Test is to check the consistency of the model. It does show that the model is consistent and has significant effects. Thus we can conclude Imports Population and Exports are significant at 5 percent confidence level and further, distance continues to show a negative relation with trade volume.

Table 4.14 D: Pooled Regression Analysis: Distance

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
Distance	Intercept	α	1.2247	1.7763	0.08656	39.33%
	Imports	β1	2.1964e-03	0.8254	0.41610	F-Statistics
	Exports	β2	-2.3089e-04	-0.0058	0.99538	3.02613
	GDP	**β3**	**5.5519e-02**	**2.1904**	**0.03699***	Model P-value
	Trade Volume	β4	-6.3096e-04	-0.4245	0.67441	
	Population	β5	-3.7783e-08	-0.8428	0.40646	0.020797
	FTA	β6	-1.0192e+01	-2.6434	0.1329	

*Significant at 10 % confidence interval

The results in table 4.14 D indicate that GDP is significant at 5 per cent confidence interval with distance. Rest of the variables like population, trade volume, exports and FTA have a negative relationship with distance. The FTA being a significant factor can help in analyzing the positive effect of the regional trade agreements specifically in case of the AIFTA. The set of countries under the AIFTA in Asia have a geographical proximity to India and under the tariff reduction commitments the results have been favorable as indicated by the values in the table above. The pooled regression results for distance and trade volume are based on linear function.

4.2.4   Individual Within Effects

As mentioned we now check for errors by doing within effect, modeling stating the predictability of coefficients.

$$y_{it} = \beta x_{it} + \alpha + \mu_{it} + \varepsilon_{it} \qquad (4.4)$$

here ε_{it} is the within effect model, while μ_{it} is the between effect model.

Therefore now the coefficients are checked for within and between estimators. This step helps in checking out the variable behavior between ASEAN and EU and their effects.

Table 4.15 : Indiviual effects within model:on distance: poisson function

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
Distance	Exports	β1	-3.0664e-01	-0.892	0.372	496.87
	GDP	β2	1.1252e+00	2.295	0.022*	Model P-value
	Trade Volume	β3	-5.1391e-01	34.665	0.000***	
	Population	β4	7.1289e-05	3.4671	0.000***	0.000

***Significant at 5% confidence interval *Significant at 10% confidence interval

The results in table 4.15 indicate that F test is significant however, GDP is having a positive effect in the regression. It is found that poolability is quite significant when compared with within effect.

Therefore it can now be partially conclude that, GDP is the key factor and when Imports are considered Population is the most significant factor with respect to distance.Therefore, when we think about developed countries in EU and developing countries in ASEAN we can see that, for imports a direct relation between higher GDP countries and higher population countries is established.

4.2.5   Between Effects

Table 4.16 : Between effects: Distance

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
Distance	Intercept	α	1.2247	-1.776	0.086	39.3%
	Exports	β1	-2.308	-0.006	0.995	F-Statistics
	Trade volume	β2	-6.309	-0.424	0.674	3.026 (0.020)
	GDP	β3	5.551	2.190	0.036*	Model P value
	Imports	β4	2.196	0.825	0.416	
	Population	β5	-3.778	-0.842	0.406	0.020
	FTA	β6	-1.019	-2.643	0.013*	

*Significant at 10% confidence interval

After running the experiments with between effect model we can now synethesize the coefficients and interpret these as magnitudes. The countries with higher GDP have better trade relations with India. In the table 4.16 the implication of distance variable is stressed upon. FTA variable is induced for EU countries, so that we can differentiate between ASEAN and EU. Hence with respect to partially concluding, it is found that GDP is the driving force behind trade and ASEAN countries are lower when it comes to trade volumes as there is a negative relation however, there is a significance relation between EU and its trading members. This dummy gives out a negative coefficient when tested because there are countries in ASEAN that have higher trading volumes, therefore the effect of FTA as a dummy is partially damped, while GDP continues on a positive node.

4.2.6 First Difference Model

Here we check for model selection as what model should be applied, Fixed or random. This current methodology clearly suggest the model selection criteria for individual variables. If the P-value is less than 0.05% then Hausman test should be done to check for consistency,

Table 4.17 A: First difference model: on Distance

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
	Intercept	α	-2.8458e+01	-1.1630	0.245	75 %
Distance	Exports	β1	1.0038e-01	0.405	0.685	F Statistic 208.007
	GDP	β2	3.1826e-01	0.786	0.432	Model P-value
	Trade Volume	**β3**	**5.2984e-01**	**27.234**	**0.000***	
	Population	β4	9.3277e-05	2.235	0.026*	0.000

***Significant at 5% confidence interval *Significant at 10% confidence interval

Hausman Test: log linear

We see here that, trade volume is consistent with the model, as Hausman test shows the in consistency. We can here conclude this inconsistency with p-value being at 5% significant. Therefore, it suggest to use Fixed effect for an Unbalanced Panel data modeling.We then proceed to run between effect model to check for consistency.

Table 4.17 B : First difference model: on Distance

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
	Intercept	α	1.7243e+02	-1.776	0.086	94 %
	Exports	β1	-3.0150e+00	-0.006	0.995	F-Statistics
	Trade volume	β2	5.2674e-01	-0.424	0.674	73.522
Distance	**GDP**	**β3**	**-3.3694e-01**	**2.190**	**0.036***	Model P value
	Imports	β4	1.0816e+01	0.825	0.416	
	Population	β5	5.2378e-06	1.730	0.094	0.000
	FTA	β6	6.4308e+01	0.212	0.833	

*Hausman Test **link log linear***

In table 4.17 B since the trade volume is inconsistent with the model and we see that p-value is significant at 95 percent confidence level. We then check for random effect before moving with the theoretical understanding of panel regression. The objective here is to test the consistancy in trade volume after FTA . Results can be analyzed with respect to ASEAN.

4.2.7   Random Effects

We run the model with random effects. This test is done to conclude that difference between fixed random and idiosyncratic variables affect the model selection.

Table 4.18: Randomeffect (linklog)

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
	Intercept	α	-3.8969e+02	-1.442	0.150	88.6%
	Exports	β1	-2.5755e-01	-0.744	0.457	F-Statistics
	Trade volume	**β2**	**5.3452e-01**	**44.134**	**0.000*****	399.341
Distance	**GDP**	**β3**	**-3.3694e-01**	**1.968**	**0.049***	Model P value
	Imports	β4	6.4500e+00	0.574	0.565	
	Population	**β5**	**6.0364e-06**	**2.402**	**0.0169***	0.000
	FTA	β6	-2.0614e+01	-0.073	0.941	

Significant at***5 % and *10 % confidence interval.

In the above table 4.18 random effect on distance is studied. Trade volume, GDP and population are found to be signifcant with Distance. The R-square here is significant at 88.6% fit but helds out the partial conclusion, between GDP Trade volumes and Population i.e if the free trade agreement is formed than the trade can increase sufficiently. The developed countries in EU have a higher GDP and are technologically advanced than the countries within the ASEAN. Hence these developed countries in EU will be able to take the advantage of the higher and advanced technology. India will benefit if it is able to formulate FTA with ASEAN countries based specifically on advanced technological carrying capacity.

4.2.8 Pooling model on Distance as dependent with Quasi-Poisson

Table 4.19: Pooling model on Distance as dependent with Quasi-Poisson

Dep. Variable	Independent Variable	Regression Coefficients	Coefficients	T Statistics	P-value	R Square
Distance	Intercept	α	1.712	13.803	0.000***	32%
	Imports	$\beta 1$	1.1553e-03	1.7495	0.081	F-Statistics
	Exports	$\beta 2$	-5.1417e-03	-0.9283	0.354	25.0866
	GDP	**$\beta 3$**	**-2.9058e-02**	**4.8731**	**0.000*****	Model P-value 0.000
	Trade Volume	$\beta 4$	-2.7263e-04	-0.7363	0.462	
	Population	$\beta 5$	-2.3213e-08	-1.7144	0.0874	
	FTA	**$\beta 6$**	**-1.0844e-01**	**-8.9389**	**0.000*****	

***Significant at 5 % confidence interval

In the table 4.19 pooling model on Distance as dependent with Quasi-Poisson is shown. Going with the theory of Green.et.al (2012) we use GLM, panel data modeling with Quasi-Poisson distribution and the link function is log. The idiosyncratic variance[55] is the unsystematic behaviour of variable in our model, from this we understand the unexplained parameters of our model. If we look at the share of idiosyncratic variance it is 0.415, while the share of individual factors is 0.585, therefore we can now say that our experiments does explains the relationship between variables capturing the magnitude of those relationships of individual and total model effect.

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[55] Effects per the calculation:1. Idiosyncratic: var (208757.7) std.dev (456.9), share 0.415
2. individual : var (294596.3) Std dev (542.8), share 0.585.

Hence, when Distance is taken as a variable and dummy is used for FTA, differentiating it with EU and ASEAN, we get significant effect with respect to GDP and population. This clearly indicates that distance and FTA does really concern when we look at trade as a factor. It also explains that the intercept is significant and also there is a positive relation between distance and imports. However when we think of FTA it is seen that, there is a negative relation here, this is due to dampening effect as we have see OLS regression where countries like Singapore, Malaysia and Malta have a direct relationship with higher trade volumes. However, our hypothesis also leads to support regional advantages between ASEAN and EU trading partners, as these regions have their own natural advantages in terms of production and trade volumes of commodities, that is best explained, in the descriptive statistics in the former analysis.

The conclusion derived is that EU trading relations in member countries are best suited as there was a positive relation between GDP and FTA. However, when focussed on specific trade theory to choose from Ricardian trade theory and the Hecksher Ohlin (H-O), the analysis does support H-O trade theory. However, in modern times we can further see a dampening effect. This leads us to device more dynamical models for the synthesis of trade and the geo-political framework between trading nations.

In the research we have conducted several experiments in testing the existence of gravity model. We did conclude that in the present environment with economies of scale and technological carrying capacity, gravity model does work considering GDP and population significantly affecting trade volume. With GDP and Population a significant variable, we further derive the conclusion that countries with higher per capita income are having more comparative advantage then countries with less per capita income. However the research only focused on gravity model with respect to trade, the distribution problem was not considered here. But the research has made attempt to throw light on linking trade relations with distributional theories of economics.

Further, the results of unbalanced panel regression model, does conclude that gravity model, with respect to distance does exist in the ASEAN countries, but when compared with EU countries w.r.t GDP and trade relation it is found that, even if the

volumes are higher, trade relations comparatively with the EU nations are more efficient. The same thing can be observed with the OLS models, where there is significance with developed countries in the EU and significance with higher GDP in the ASEAN. Therefore to take the analysis further, according to Green et.al we run an experiment with unbalanced panel data model firstly using a linear relationship, then using a log linear relationship between the variables and then using Poisson and Quasi-Poisson function, in our panel regression functions

In the linear relationship we see that, the causation of higher trade volumes does hold true. In the log linear models, we smoothen out the dependent and independent variables to see the log effect on the models. Our prime focus here is the Poisson function, because Poisson function is linked to its distributional qualities, this states that the vector of ancillary parameter like exports and imports and Population gives out a better understanding to establish a profound relation. This function optimizes the coefficients so that we can get a better understanding of the relation with respect to the experiments. We then use Quasi-Poisson function to see that how are coefficients approaching the Poisson relation. Our experiments setting concludes that there is a existence of Gravity model, however comparative advantage of and from trade cannot be ignored with respect to developed and developing countries, as developed country have a higher technological carrying capacity and their gains from trade when trading with developing countries are more profitable in the dynamic environment of trade relations.

Chapter 5

SUMMARY CONCLUSIONS & POLICY SUGGESTIONS

CHAPTER 5
SUMMARY CONCLUSIONS & POLICY SUGGESTIONS

This is the concluding chapter aiming at summarizing the research work. Chapter also covers the major findings from the study and policy implications based on the same.

The major trade challenge ahead of India is the stagnation in multilateral trade agreements. On one hand, the Indian exports have become less buoyant and the trade environment is more challenging than before and on the other hand negotiations of mega regional trade arrangements are threatening to exclude India as mentioned earlier in the research work. A rapid growth in exports is the only key to rapid and sustained growth rate for India. Along with export growth there are some internal factors like weak infrastructure, challenging labour laws in case of manufacturing, rising wages and scarcity of skilled labour which requires attention of the policy makers. With a sluggish external environment for trade, India has to contend with a rapidly changing internal policy environment.[56]

Along with the internal policy changes the international trade environment is set to change and pose challenges for India in three ways. Firstly, the phenomena of creating global value added chains at low cost destinations, especially in Asia is gaining momentum, India though trying to integrate with these value chains has been quite slow in catching up comparative to other Asian economies. Secondly, the mega regional trade agreements like TPP (Trans Pacific Partnership) i.e. within Asia and between United States and Asia and TTIP (Trans-Atlantic Trade Investment Partnership) between North America and Europe, if and when concluded will cover almost half of the world trade. These mega regional agreements are a threat to India as there are chances of India being excluded. Thirdly, China may undertake major liberalization of its economy on account of fear of exclusion from TPP and TTIP. China is also at the center of RCEP (Regional Comprehensive Economic Partnership) which includes India, ASEAN, Japan, Korea, Australia and New Zealand. With these global shifts in trade realities one way for India is to integrate with the TPP.

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[56] www.indiastat.com.

Notwithstanding the research done, the conclusion touches some points of possibility for policy makers to look at trade reforms speedily, create few obligations, generous exemptions and exceptions and lenient timetable for implementation. This holds true for any ambitious integrations under the mega regional trading agreements, along with the ongoing AIFTA and the proposed India- EU FTA.

The thesis was divided in five chapters:

The first chapter aimed at giving a general idea to the global trade environment along with the overview of India's trade post liberalization. The recent trade strategy of India by forming various regional trade agreements in form of FTAs is discussed further and is elaborated in context of ASEAN and EU.

The second chapter looks at a detailed review of literature that strategically helped the country in achieving trade liberalization. Along with this, to understand the trade pattern and the possible impact of forming regional trade agreements for India and other countries there have been many researches using gravity model to analyze the effects of the same. Research papers in this context are mentioned and discussed in detail in literature review along with the literature on ASEAN and EU.

The third chapter gives an overview of the research methodology used in the research work. Chapter covers overview of various sources of data and analysis tools used for the purpose of analysis. Details about models is also given in the chapter.

The fourth chapter is a detailed chapter on data analysis and interpretation. The chapter is broadly divided into two parts. The first part carries out the descriptive analysis and the second part deals with econometric estimations applying the gravity model.

Finally chapter five i.e. this chapter discusses the major findings and conclusions of the results carried out in chapter four. There is also an attempt for policy considerations keeping in mind both ASEAN and EU trade relationship with India.

5.1   MAJOR FINDINGS AND CONCLUSION

▪ As per the descriptive analysis, the major trading partners from EU having a high mean of exports, imports and trade volume with India are Germany, UK, Belgium, Italy, France, Netherlands, Spain and Sweden.

▪ Similarly, the major trading partners from ASEAN having a high mean of exports, imports and trade volume with India are Singapore, Malaysia, Indonesia, Thailand, Vietnam, Philippines and Myanmar.

▪ The lowest trading partners' w.r.t nineteen years of average exports, imports and trade volume from both the blocs are Luxemburg and Laos countries. This is of not much concern to India as both are not amongst the developed countries.

▪ However we find here that amongst the EU countries major share of trading partners is from developed countries whereas from ASEAN the major share is of developing countries in India's trade except for Singapore.

▪ The overall trend in trade volume is found significantly high from countries like Spain, U.K, Italy, Germany and France.

▪ India has a high regularity of imports from majority of the countries in ASEAN. The growth rate in imports ranges from 13 percent to 40 percent for all those countries with a significant R square and a high trend coefficient.

▪ The overall trend co-efficient in trade volume is highest from Singapore followed by Myanmar, Philippines, Thailand, Malaysia and Indonesia. The highest CAGR from ASEAN is of Brunei but a low R square indicates irregularity in trade volume from the country which is followed by Laos and Cambodia.

▪ Sector wise analysis reveals that under the food processing sector the average trade volume is high from ASEAN largely on account of the AIFTA. Only commodities like cereals and cocoa & cocoa preparations have registered a slow growth rate in the last five years under the trade with ASEAN. For sugar and sugar confectionary there has been a marked jump in the five year growth rate with ASEAN.

▪ India imports in larger quantity from ASEAN compared to EU in the respective sector with the exception of cocoa and cocoa preparation products. It is cheaper to import food items under tariff reduction commitments from

ASEAN. The trend coefficient for the food processing industry is also very high with ASEAN as compared to EU where the trend coefficient is very low. One significant reason for the same could be the preferential tariff. Under the AIFTA preferential tariff has to be sufficiently lowered to enhance trade in the above said industry. The preferential tariff list comprises of coffee, black tea, pepper and palm oil. The tariff commitment from them are till 2019 where the tariff has to be sufficiently lowered. Once the tariff commitments are met the sector can see a further rise in trade.

▪ Under the textile and garments sector the average exports are high to EU and India is a net exporter in this sector. Comparing the trend coefficient for exports to EU and ASEAN in the sector it is found that it is much higher in EU compared to the lowest in ASEAN. Thus, indicating a possibility of improved access and expansion in the sector if the FTA is formulated with EU. The imports from ASEAN are also going up in this sector except for silk, cotton, man-made filaments and footwear. But there are serious challenges from strong competitors for India in Asia like China and Bangladesh.

▪ For the minerals sector India is a net exporter to both the trading blocs. However has benefitted more due to the AIFTA.

▪ Under the chemicals sector exports and imports are high from EU and comparatively lesser from ASEAN.

▪ For the gems and jewellery sector India is a net importer from EU as well as ASEAN (post the AIFTA) where major imports are coming from Malaysia and Indonesia due to the presence of gold mines in these countries.

▪ For the machinery and engineering sector: India is a net importer from EU. Some imports have started taking place from ASEAN too post the AIFTA.

▪ For the metals and metallic goods there seems to be a balancing position for India in terms of average exports and imports from EU as well as from ASEAN.

▪ The trend analysis showed that the trend coefficient is the highest for the machinery and engineering goods industry from EU. This shows a long term trend and high dependency of imports from EU especially from United Kingdom, Germany, France and Italy as also indicated by the mean of trade volume from these countries. The rate of change in imports is much higher

than that of exports in the same sector as the Indian economy is a developing economy it is bound to be heavily dependent on most of the developed countries in EU for the import of all the items under the machinery and engineering goods sector.

Thus from the descriptive analysis it is found that India's trade with EU countries has surely improved over a period of time. But the direction of trade has remain confined to selected countries like Belgium, Germany, France, Italy and United Kingdom to name a few. Whereas countries like Estonia, Luxemburg and Slovak republic remains at the least position. Similar situation can be seen in terms of India's trade with ASEAN countries where the trade has confined mostly to countries like Indonesia, Malaysia and Singapore. Though it has started going up for countries like Vietnam, Philippines and Myanmar; how far it will be regular can't be said. Other least developed countries in ASEAN are trying to catch up with the overall trade but they seem to be benefitting more from India's partnership rather than India itself. Trade pattern of India and EU indicates more volume in the case of gems and jewellery and machinery & engineering goods. Among ASEAN countries minerals, machinery & engineering goods and food processing industries are the major drivers of trade. Similar trend can be seen for the period post AIFTA.

Further the regression analysis and experiments with the help of panel data models was carried out in order to observe the ASEAN and EU's trade relations with India.

- The estimation results indicate that the bilateral trade between India and the individual countries having a consistency in trading volume shows a higher coefficient, however we see that the coefficients where there is a higher jump in trading volume are more significant than consistent trading partners of India.

- The OLS estimation results for model 1, 2, 3, and 4 indicate that population and trade volumes (exports + imports) are mainly dependent on trade relations between countries. A significant observation here is the differentiation between developed and developing countries. Coefficients of developed countries, with respect to population is also showing negative relation. Further if we take distance as a variable we see that it is highly significant with trading

partners in ASEAN like Singapore and Malaysia showing a direct relation. While in EU: Spain, UK, Portugal, Ireland, France and Germany are highly significant and their coefficients with respective to p-value is also showing negative results.

▪ The OLS results of model 5, 6 and 7 indicate an embedded relationship in Exports and Imports, however population is supporting malthusian theory of high economic growth leading to high population in most of the EU countries, where it is mostly significant and both imports and exports are showing an impact. Thus with the available data set of panel OLS regression, our experiments signify the Gravity Model for India with EU and ASEAN and we found different factors w.r.t to both the blocs and the results are as per our synthesis in the theory. After the experiment with the gravity model, attempts have been made to have deeper insight into the magnitude of trade volume with the help of Poisson and Quasi Poisson function.

▪ During the research we have conducted several experiments in testing the validity of the gravity model. We conclude that in the present environment with economies of scale and technological carrying capacity, gravity model does work considering GDP and population significantly affecting trade volume.

▪ With GDP and population as significant variables, we further derive the conclusion that countries with higher per capita income are having more comparative advantage then countries with less per capita income. However the research only focused on gravity model with respect to trade, the distribution problem was not considered here. But the research has made attempt to throw light on linking trade relations with distributional theories of economics.

▪ The results of unbalanced panel regression model, conclude that gravity model with respect to distance does exist in the ASEAN countries. But when compared with EU countries w.r.t GDP and trade relation it is found that, even if the volumes are higher, trade relations with the EU nations are comparatively more efficient. The same thing can be observed with the OLS models, where there is significance with developed countries in the EU and significance with higher GDP countries in the ASEAN.

- To take the analysis further, according to Green et.al we undertook an experiment with unbalanced panel data model firstly using a linear relationship, then using a log linear relationship between the variables and then using Poisson and Quasi-Poisson function, in our panel regression functions.

- In the linear relationship we found that, the causation of higher trade volumes does hold true. In the log linear models, we smoothen out the dependent and independent variables to see the log effect on the models. Our prime focus here is the Poisson function, because Poisson function is linked to its distributional qualities, this states that the vector of ancillary parameters like exports and imports and population gives out a better understanding to establish a profound relation. This function optimizes the coefficients so that we can get a better understanding of the relation with respect to the experiments.

- We then used Quasi-Poisson function to see how coefficients are approaching the Poisson relation. Our experiment setting concludes that Gravity model is validated, however comparative advantage of and from trade cannot be ignored with respect to developed and developing countries, as developed country have a higher technological carrying capacity and their gains from trade when trading with developing countries are more profitable in the dynamic environment of trade relations.

5.2 POLICY CONSIDERATIONS

The analysis shows that on the policy formulation three effective points are needed to be looked at firstly the cost benefit analysis of FTA, secondly the economies of scale in FTA and thirdly the economic efficiency which arises after doing a careful analysis of the FTA and being able to generate effective and high economies of scale. India's trade with developed countries in EU and ASEAN is efficient adhering to Heckscher-Ohlin theory of comparative advantage, however the countries with lower trade volume will gain from India's FTA as there will be a lower transaction cost to their goods involved. But this may pose a threat to and might hamper India's medium and small scale industries. Therefore, India needs to trade in those products that are in

abundance and need those products from ASEAN and EU countries that it cannot produce.

5.2.1   From India –EU perspective

Keeping in mind the interest of medium and small scale industries on one side and the benefit of lesser transaction cost involved for lower trade volume countries with India we propose that:

❖ Having an FTA with all EU countries is not so beneficial. But having a bilateral trade agreement with developed countries as trading partners will involve more efficiency as that will bring out economies of scale and minimize transaction costs for India. A similar example is like dealing with pure monopolies and dealing with monopolistic competition.

❖ There needs to be different policies while dealing with EU countries as the transaction cost mechanism needs to be considered to bring out productive and allocative efficiency to the Indian economy. On the policy front, "one shoe fits all" policy is not recommended.

❖ India will have to carefully choose the sectors in which it needs a collaboration with the countries in EU so that major benefits can be drawn out of it when the FTA is formulated. The results are just a beginning; more depth of research can enrich the analysis.

As stated by Economic Survey 2015- 2016, "India's FTAs have worked exactly as might be expected. They have increased trade with FTA countries more than would have happened otherwise." Seeing the amount of increased trade FTAs have generated for India, the FTA formulation with the EU seems important as stated earlier in the literature review. But there are major issues in the

➢ Chemical (for pharma patents),

➢ Machinery & engineering goods sector (esp. in case of automobiles which are imported from EU in completely built in units),

➢ Data security issues.

These issues need to be resolved at the earliest.

Going forward, the big question for India is whether to continue negotiating FTA with EU? A relative question is India and EU are looking at issues to be resolved

in a year's time specifically in the above mentioned sectors. Though most of it can be resolved, major issue revolves around the custom duties imposed on import of fully assembled vehicles, on which it seems difficult to reach a consensus. Perhaps even bigger question is how India should position itself relative to the proposed FTA with EU.

The present scenario of slowdown in Eurozone and its excess capacity in capital goods gives strong arguments for trade negotiations and liberalization with the trading bloc. On the other side India cannot ignore the proposed EU-United States partnership under the two mega regional trading agreements i.e. Trans Pacific Partnership (TPP) and Transatlantic Trade and Investment Partnership (T-TIP), both of which India is not a member. The likelihood of success for the 'Make in India' campaign by the recent government in power also cannot be ignored. Multilateral trade liberalization remain the best way forward and will India have an agreement from the EU side on it, is yet to be answered. The policy makers will have to take a deeper analytical look at it along with preparatory work.

5.2.2 From India- ASEAN perspective

Looking at the AIFTA, on the policy front there has been an increased trade majorly on the import side due to larger tariff reductions by India. But it seems that India could have achieved more even on the AIFTA. A survey titled as 'Business beyond barriers' by FICCI reveals that FTA in 'Goods' had a minimal impact for some exporters while for others it had an adverse impact. "This is attributed partly to the fact that the FTA is restricted to 'Goods' where India's manufacturing sector is not able to capitalize and partly due to lower duties offered by ASEAN to China, through the China-ASEAN FTA." However the only best thing with the ASEAN countries is that there is high 'ease of doing business' especially with countries like Singapore, Malaysia & Thailand. These countries comprise of nearly 60-65 per cent share of our trade with ASEAN.[57]

With lower than expected achievement for goods in trade with AIFTA it was proposed that India should have an FTA in services with the region and was achieved in 2015. But it's too early to comment on the same. The limitation of the current research was that it was not able to study the trade liberalization impact on services.

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[57] Federation of Indian Chamber of Commerce and Industry, 2013
http://ficci.in/spdocument/20327/FICCIs-Voice-SGs-Desk-Nov.pdf.

There are quite a few least developed countries in ASEAN which seem to have benefitted out of the AIFTA more than India. As the Indian market provided them scope to export their products in the country as well as the entry of good quality Indian products in their markets diversified consumer choices and overall benefit for the least developed countries like Laos, Brunei and Cambodia.

Even though there has been an increased trade for the Indian markets there seems to be some issues which India needs to look at in depth.

❖ To start with there needs to be more clarity on the rules of origin for the commodities. They need to be more flexible and relaxed.

❖ The double taxation should be avoided on goods. Along with this tariff reductions need to have a parity though keeping in mind the comparative advantage on both sides.

❖ There also needs to an equal time frame to be followed by both India and ASEAN on lowering the duties or bringing them to zero percent.

❖ Post tariff reductions, the import duties for Indian exports to the ASEAN markets, should be in line with similar reductions offered to China by ASEAN under the China-ASEAN FTA.

❖ India needs to create the right environment in speedy clearance of projects so it can attract high Inward investments from ASEAN.

❖ India also needs to create a platform where it can educate all the exporters whether big or small. There is lack of awareness on the part of Indian exporters (as they are being small in size and unaware of the policy changes) and hence the changes in policy cannot trickle down to existing set of exporters in India.

❖ Another most important point which India needs to work upon is making its weak bargaining power more strong. Currently, India has a low bargaining power and hence it has more imports form ASEAN rather than exports in the current scenario. Hence India needs to adopt a broader, balanced and wider coverage of goods as well as services. Than only the FTA will be beneficial for the country in true sense.

5.3 LIMITATIONS OF THE PRESENT STUDY

The present research could not be extended to services trade of India with EU and ASEAN due to absence of data. Hence is one of the limitations of the study. While using the gravity model more variables could have been studied to develop a more comprehensive outlook. But due to unavailability of data along with researcher's limited knowledge on the same, it could not be extended further.

5.4 SCOPE FOR FUTURE RESEARCH

The present research has immense scope for future studies. The India ASEAN FTA in services has been a recent phenomena and has a lot of scope for further research. The welfare impact on the country's population with respect to the regional trading agreements could be taken up for further studies.

5.5 SUMMARY

The kind of trade agreements India has with the two trading blocs are significant to explain the direction of India's trade volume. India still maintains substantial tariff and non-tariff barriers that hinder trade with the EU. The research indicate that India trades more with ASEAN countries due to AIFTA which is sufficient evidence for policy makers to speed up the negotiations with the EU and thus enhance the contribution of India's trade with the bloc toward the country's economic development. EU is a group of more advanced nations than ASEAN and India is sure to benefit from the high technological carrying capacity and higher specialization in the EU countries for most of the goods.

However we also need to look at the recent BREXIT (Britain's exit from EU) phenomena in EU. United Kingdom (U.K) is the third largest investor in the India and accounts for nearly 15 percent of the merchandise trade with India. In all our research analysis in the thesis U.K has emerged as a strong trading partner for India in the EU. With the exit of it from EU in June 2016, the overall trade volume is bound to be effected in EU. But this is also a great opportunity for India to strengthen the direct bilateral trade with U.K. As stated by Development Bank of Singapore (DBS) bank "Post exit EU, the U.K is likely to explore direct bilateral trade agreements with other

trading partners including India,"[58] The bank further stated that "this might provide an alternate route to India, in comparison to the tough and the drawn-out negotiations on the EU Free Trade Agreement, in turn providing a fillip to a slowing India-UK trade."[59] There can be challenges ahead for all those Indian firms that intend to utilize U.K as a base to gain access into European markets. They will have to re-strategize their plans. However, the Indian businesses that tap the UK domestic markets directly are not likely to face many challenges.

The recent policy of MAKE IN INDIA is also likely to get a boost if India reduces all sorts of trade barriers with EU as well as U.K . As the research indicates that a major composition of India's imports from EU is of capital goods. India has a strategic choice to make here. In the current context of "slowing demand and excess capacity with threats of circumvention of trade rules, progress on FTAs, if pursued, must be combined with strengthening India's ability to respond with WTO-consistent measures such as anti-dumping and conventional duties and safeguard measures"[60] as pointed by economic survey 2015-2016. To conclude the study points that the effort of the policy makers in improving the 'ease of doing business' in India in the current scenario will have far reaching effect on the volume, composition and direction of India's trade and trade agreements with the two studied blocs, viz EU and ASEAN.

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[58]   The Indian Express, June 28th, 2106.
       http://indianexpress.com/article/india/india-news-india/brexit-could-provide-fillip-to-india-uk-trade-ties-2881038/.
[59]   ibid.
[60]   Economic Survey 2015-2016.

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APPENDICES

APPENDICES

APPENDIX I

Trade policy measures adopted by India in 1991

Various trade policy measures taken by government as part of trade liberalization included the following:

- Shifting of several items from Special Import License (SIL) to Open General List (OGL).

- Permitting Exporters to maintain foreign currency account.

- Liberalised Exchange Rate Management System introduced (LERMS).

- Introduction of schemes like Export Promotion Capital Goods (EPCG) and Cash Compensatory Scheme (CCS).

- Introduction of Electronic Hardware Technology Park (EHTP) & Export Oriented Unit (EOU).

- Current Account Convertibility (CAC).

- Introduction of Electronic Data Interchange (EDI).

- Of the 542 items in the restricted list 150 items shifted to Special Import Licence (SIL) & 392 items shifted to Open General List (OGL) during EXIM policy 1997-2002.

- Initiation of Duty Entitlement Pass Book Scheme.

- Replacement of EPZs with SEZs.

- Introduction of Market Access Initiative (MAI) scheme to access new markets, Focus Africa, Focus CIS.

- Extended Scope of EPCG/Advance License/Duty Free Replenishment Certificate Schemes.

- Major thrust to agricultural exports by removing export restrictions on designated items.

- Identification of certain thrust areas including agriculture, handlooms, gems & jewellery and leather and footwear sectors and sector specific initiatives under FTP 2014.

- Duty free import of consumables for metals for up to 2% of fob value of exports for gems & jewellery sector& reduction in incidence of custom duties on t inputs and P&M for leather sector.

- Revamping of Duty Free Export Credit (DFEC) scheme for services into the SERVED FROM INDIA SCHEME to accelerate growth in export of services

- Introduction of Free Trade and Warehousing Zones (FTWZs) to create trade related infrastructure to facilitate the import and export of goods and services with freedom to carry out trade transactions inconvertible currencies.

- Enactment of SEZ Act 2005 and various fiscal incentives to boost up exports

- A new scheme to accelerate growth of exports called 'Target Plus' was introduced wherein exporters achieving a quantum growth In exports were entitled to duty free credit based on incremental exports substantially higher than the actual export target.

Source: http://phdcci.in/file/thematic_pdf/Foreign%20Trade.pdf

APPENDIX-II : LIST OF COMMODITIES UNDER HS CODE II

HS Code	Commodity
1	Live Animals.
2	Meat and Edible Meat Offal.
3	Fish and Crustaceans, Molluscs and Other Aquatic Invertabrates.
4	Dairy Produce; Birds' Eggs; Natural Honey; Edible Prod. of Animal Origin, Not Elsewhere Spec. or Included.
5	Products of Animal Origin, Not Elsewhere Specified or Included.
6	Live Trees and Other Plants; Bulbs; Roots and The Like; Cut Flowers and Ornamental Foliage.
7	Edible Vegetables and Certain Roots and Tubers.
8	Edible Fruit and Nuts; Peel or Citrus Fruit or Melons.
9	Coffee, Tea, Mate and Spices.
10	Cereals.
11	Products of The Milling Industry; Malt; Starches; Insulin; Wheat Gluten.
12	Oil Seeds and Olea. Fruits; Misc. Grains, Seeds and Fruit; Industrial or Medicinal Plants; Straw and Fodder.
13	Lac; Gums, Resins and Other Vegetable Saps and Extracts.
14	Vegetable Plaiting Materials; Vegetable Products not Elsewhere Specified or Included.
15	Animal or Vegetable Fats and Oils and Their Cleavage Products; Pre. Edible Fats; Animal or Vegetable Waxex.
16	Preparations of Meat, of Fish or of Crustaceans, Molluscs or Other Aquatic Invertebrates
17	Sugars and Sugar Confectionery.
18	Cocoa and Cocoa Preparations.
19	Preparations of Cereals, Flour, Starch or Milk; Pastrycooks Products.
20	Preparations of Vegetables, Fruit, Nuts or Other Parts of Plants.
21	Miscellaneous Edible Preparations.
22	Beverages, Spirits and Vinegar.
23	Residues and Waste from The Food Industries; Prepared Animal Fodder.

HS Code	Commodity
24	Tobacco and Manufactured Tobacco Substitutes.
25	Salt; Sulphur; Earths and Stone; Plastering Materials, Lime and Cement.
26	Ores, Slag and Ash.
27	Mineral Fuels, Mineral Oils and Products of Their Distillation; Bituminous Substances; Mineral Waxes.
28	Inorganic Chemicals; Organic or Inorganic Compounds of Precious Metals, of Rare-Earth Metals, or Radi. Elem. or of Isotopes.
29	Organic Chemicals
30	Pharmaceutical Products
31	Fertilisers.
32	Tanning or Dyeing Extracts; Tannins and Their Deri. Dyes, Pigments and Other Colouring Matter; Paints and Ver; Putty and Other Mastics; Inks.
33	Essential Oils and Resinoids; Perfumery, Cosmetic or Toilet Preparations.
34	Soap, Organic Surface-Active Agents, Washing Preparations, Lubricating Preparations, Artificial Waxes, Prepared Waxes, Polishing or Scouring Prep.
35	Albuminoidal Substances; Modified Starches; Glues; Enzymes.
36	Explosives; Pyrotechnic Products; Matches; Pyrophoric Alloys; Certain Combustible Preparations.
37	Photographic or Cinematographic Goods.
38	Miscellaneous Chemical Products.
39	Plastic and Articles Thereof.
40	Rubber and Articles Thereof.
41	Raw Hides and Skins (Other Than Furskins) and Leather
42	Articles of Leather, Saddlery and Harness; Travel Goods, Handbags and Similar Cont. Articles of Animal Gut (Othr Thn Silk-Wrm) Gut.
43	Furskins and Artificial Fur, Manufactures Thereof.
44	Wood and Articles of Wood; Wood Charcoal.
45	Cork and Articles of Cork.
46	Manufactures of Straw, of Esparto or of Other Plaiting Materials; Basketware and Wickerwork.
47	Pulp of Wood or of Other Fibrous Cellulosic Material; Waste and Scrap of Paper or Paperboard.

HS Code	Commodity
48	Paper and Paperboard; Articles of Paper Pulp, of Paper or of Paperboard.
49	Printed Books, Newspapers, Pictures and Other Products of The Printing Industry; Manuscripts, Typescripts And Plans.
50	Silk
51	Wool, Fine or Coarse Animal Hair, Horsehair Yarn and Woven Fabric.
52	Cotton.
53	Other Vegetable Textile Fibres; Paper Yarn and Woven Fabrics of Paper Yarn.
54	Man-Made Filaments.
55	Man-Made Staple Fibres.
56	Wadding, Felt and Nonwovens; Spacial Yarns; Twine, Cordage, Ropes and Cables and Articles Thereof.
57	Carpets and Other Textile Floor Coverings.
58	Special Woven Fabrics; Tufted Textile Fabrics; Lace; Tapestries; Trimmings; Embroidery.
59	Impregnated, Coated, Covered Or Laminated Textile Fabrics; Textile Articles of A Kind Suitable For Industrial Use.
60	Knitted or Crocheted Fabrics.
61	Articles of Apparel and Clothing Accessories, Knitted or Corcheted.
62	Articles of Apparel and Clothing Accessories, Not Knitted or Crocheted.
63	Other Made Up Textile Articles; Sets; Worn Clothing and Worn Textile Articles; Rags
64	Footwear, Gaiters and The Like; Parts of Such Articles.
65	Headgear and Parts Thereof.
66	Umbrellas, Sun Umbrellas, Walking-Sticks, Seat-Sticks, Whips, Riding-Crops and Parts Thereof.
67	Prepared Feathers and Down and Articles Made of Feathers or of Down; Artificial Flowers; Articles of Human Hair.
68	Articles of Stone, Plaster, Cement, Asbestos, Mica Or Similar Materials.
69	Ceramic Products.
70	Glass and Glassware.

HS Code	Commodity
71	Natural or Cultured Pearls, Precious or Semiprecious Stones, Pre. Metals, Clad with Pre. Metal and Articles Thereof; Imit. Jewelry; Coin.
72	Iron and Steel
73	Articles of Iron or Steel
74	Copper and Articles Thereof.
75	Nickel and Articles Thereof.
76	Aluminium and Articles Thereof.
78	Lead and Articles Thereof.
79	Zinc and Articles Thereof.
80	Tin and Articles Thereof.
81	Other Base Metals; Cermets; Articles Thereof.
82	Tools Implements, Cutlery, Spoons and Forks, of Base Metal; Parts Thereof of Base Metal.
83	Miscellaneous Articles of Base Metal.
84	Nuclear Reactors, Boilers, Machinery and Mechanical Appliances; Parts Thereof.
85	Electrical Machinery and Equipment and Parts Thereof; Sound Recorders and Reproducers, Television Image and Sound Recorders and Reproducers, and Parts.
86	Railway or Tramway Locomotives, Rolling-Stock and Parts Thereof; Railway or Tramway Track Fixtures and Fittings and Parts Thereof; Mechanical
87	Vehicles Other Than Railway or Tramway Rolling Stock, and Parts and Accessories Thereof.
88	Aircraft, Spacecraft, and Parts Thereof.
89	Ships, Boats and Floating Structures.
90	Optical, Photographic Cinematographic Measuring, Checking Precision, Medical or Surgical Inst. and Apparatus Parts and Accessories Thereof;
91	Clocks and Watches and Parts Thereof.
92	Musical Instruments; Parts and Accessories of Such Articles.
93	Arms and Ammunition; Parts and Accessories Thereof.

HS Code	Commodity
94	Furniture; Bedding, Mattresses, Mattress Supports, Cushions and Similar Stuffed Furnishing; Lamps and Lighting Fittings not Elsewhere Specified or Inc
95	Toys, Games and Sports Requisites; Parts and Accessories Thereof.
96	Miscellaneous Manufactured Articles.
97	Works of Art Collectors' Pieces and Antiques.
98	Project Goods; Some Special Uses.
99	Miscellaneous Goods.

APPENDIX III

R COMMANDS

A.   OLS

➤   ols <- lm(Exports~Imports+trade.volume+GDP+Distance.km.+Population+ FTA+Country,data = dat)

➤   >ols1<lm(Imports~Exports+trade.volume+GDP+Distance.km.+Population+F TA+Country,data = dat)

➤   ols2 <- lm(Distance.km.~Exports+trade.volume+GDP+Imports+Population+ FTA+Country,data = dat)

➤   ols3 <- lm(trade.volume~Distance.km.+Exports+GDP+Imports+Population+ FTA+Country,data = dat)

➤   ols4 <- lm(Exports~trade.volume+Distance.km.+FTA+Country, data = dat)

➤   ols5 <- lm(Imports~trade.volume+Distance.km.+FTA+Country, data = dat)

➤   ols6 <- lm(GDP~Population+Distance.km.+FTA+trade.volume+Exports+ Imports+Country,data = dat)

B.   Individual country effects

➤   g3<-glm(trade.volume~Exports+Imports+GDP+Distance.km. + +Population+Country, data=dat, family = poisson(link = "log"))> summary(g3)
    Call: glm(formula = trade.volume ~ Exports + Imports + GDP + Distance.km. + Population + Country, family = poisson(link = "log"), data = dat)

C.   GLM with Quasi Poisson on Trade volume

➤   g1<-glm(trade.volume~Exports+Imports+GDP+Distance.km. + +Population, data=dat, family = poisson(link = "log")) > summary(g1)
    Call:glm(formula = trade.volume ~ Exports + Imports + GDP + Distance.km. + Population, family = poisson(link = "log"), data = dat)

D.   Pooled regression analysis

➤   1. y <- cbind(Exports) > x <- cbind(Imports, trade.volume, GDP, Distance.km., Population, FTA) > mod <- plm(y x, data = da1, model = "pooling") > summary(mod)
    Oneway (individual) effect Pooling Model
    Call: plm(formula = y x, data = da1, model = "pooling")
    Unbalanced Panel: n=35, T=8-9, N=313

➤   2. y1 <-cbind(Imports) > x1 <- cbind(Exports, trade.volume, GDP, Distance.km., Population, FTA) > pool <- plm(y1 x1, data = da1, model = "pooling") > summary(pool) Oneway (individual) effect Pooling Model

    Call: plm(formula = y1   x1, data = da1, model = "pooling")

Unbalanced Panel: n=35, T=8-9, N=313

➢ > mod3 <- plm(y2~x2, data = da1, model = "between") > summary(mod3) Oneway (individual) effect Between Model

Call: plm (formula = y2 ~ x2, data = da1, model = "between")

E. Individual effects

➢ > f <- plm(y1 x1, data = da1, model = "within") > summary(f) Oneway (individual) effect Within Model

Call: plm(formula = y1 x1, data = da1, model = "within")

F. One way Individual effect(between model)

➢ > mod3 <- plm(y2 x2, data = da1, model = "between") > summary(mod3) Oneway (individual) effect Between Model

Call: plm(formula = y2 x2, data = da1, model = "between")

G. One way Individual effect (first difference model)

➢ 1. > fd <- plm(y1 x1, data = da1, model = "fd") > summary(fd) Oneway (individual) effect First-Difference Model

Call: plm(formula = y1 x1, data = da1, model = "fd")

➢ 2. > phtest(fd, pool) Hausman Test

data: y1 x1 chisq = 1.8357, df = 4, p-value = 0.7659 alternative hypothesis: one model is inconsistent

➢ 3. > bw <- plm(y1 x1, data = da1, model = "between") > summary(bw) Oneway (individual) effect Between Model

Call: plm(formula = y1 x1, data = da1, model = "between")

➢ 4. > phtest(fd, bw) Hausman Test

data: y1 x1 chisq = 2.2577, df = 4, p-value = 0.6885 alternative hypothesis: one model is inconsistent

➢ 5. >phtest(f,fd)Hausman Test

data: y1 x1 chisq = 7.315, df = 4, p-value = 0.1201 alternative hypothesis: one model is inconsistent

H. Random Effect Model

- 1.> ra <- plm(y1 x1, data = da1, model = "random") > summary(ra) Oneway (individual) effect Random Effect Model (Swamy-Arora's transformation)

  Call: plm(formula = y1   x1, data = da1, model = "random")

- 2. > y2 <- cbind(Distance.km.) > x2 <- cbind(Exports, trade.volume, GDP, Imports, Population, FTA) > mod2 <- plm(y2 x2, data = da1, model = "pooling", family = quasipoisson(link="log")) > summary(mod2) Oneway (individual) effect Pooling Model

  Call: plm(formula = y2   x2, data = da1, model = "pooling", family = quasipoisson(link = "log"))

PUBLICATIONS

A.   Papers presented in peer reviewed conferences

1.   Singh, S & Sharma, D. (2016). An overview of trade volume and its composition: comparative analysis of EU, ASEAN and India. Paper presented at the International Research Conference on *Revitalizing Economies, pioneering innovation* organized by Jamnalal Bajaj Institute of Management Studies (JBIMS), Department of Management Studies University of Mumbai, during 2nd and 3rd March. **The paper won "Best Research Paper -Runners Up" Award in the General Management Track.**

2.   Singh, S. & Sharma, D. (2016). Impact of trade liberalization on trade of selected industry groups: A comparative analysis of EU and ASEAN with India. Paper presented at the 18th International Conference on *Sustainable Growth and Development in the New Millennium-Frontier Global issues and Challenges* organised by Rajasthan Development Association and Rajasthan Development and Research Foundation, Jaipur in collaboration with Rajasthan Chamber of Commerce and Industry, Jaipur between 26th - 27th March 2016.*(Abstract published in conference proceedings ISBN 978-81-920965-6-8)*

3.   Singh, S. & Sharma, D. (2014). Impact of European Union and ASEAN on India's trade volume using gravity model: A panel data approach. Paper presented at *97th Annual Conference of Indian Economic Association* during 27th to 29th December, 2014 at Mohanlal Sukhadia Univeristy, Udaipur, India.

B.   Journal Publication

1.   Singh, S. & Sharma, D. (2016). Impact of European Union and ASEAN on India's trade volume using gravity model: A panel data approach The *Indian Economic Journal*, Dec. 2016.

2.   Singh, S. & Sharma, D. (2016). An overview of trade volume and its composition: comparative analysis of EU, ASEAN and India *Spectrum, JBIMS,* Vol. IV, No.1, Jan-June.

3. Singh, S. & Sharma, D. (2014). Impact of European Union and ASEAN on India's trade volume using gravity model: A panel data approach The *Indian Economic Journal*, special issue Dec. 2014.

C. Working Papers (WP) / Papers under review

1. Singh, S. & Sharma, D. (2016). (Communicated) Impact of trade liberalization on trade of selected industry groups: A comparative analysis of EU and ASEAN with India *South Asian Journal of Global Business Research, Emerald publishing*.

2. Singh, S. & Sharma, D. (2016). (Communicated) Does Distance Matter? A Policy Synthesis *International Journal of Economic Policy in Emerging Economies, Inderscience*.

3. Singh, S. & Sharma, D. (2016). An Overview of Dumping Behaviour: EU and India (WP).

4. Singh, S. & Sharma, D. (2016). India's Direction and Volume of Trade with EU and ASEAN: A Gravity Model Approach (WP).

BIOLOGICAL PROFILE OF THE AUTHOR

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