A Study of Bilateral Trade Between India And ASEAN Countries

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Abstract: The bilateral relationship between India and ASEAN are increasing, hence, this study makes an attempt to analyse the trade between India and ASEAN countries. The trade is analysed by using the gravity model approach which was first introduced by Tinbergen in 1962. The main objective is to capture the effect of exports of India after the Act East Policy was introduced in 2014. This is captured by introducing a dummy variable, and all the essential variables of the gravity model like GDP per capita of both India and ASEAN countries, distance and the dummy of Act East Policy was introduced. A fixed effect model was run for the analysing the trade and GDP per capita and Act East policy's dummy showed significant results, which clearly indicates that India's exports have decreased after the Policy was introduced. The distance between both the countries is shown by a radar diagram, and it was concluded that distance between India and ASEAN is not a significant factor in determining trade

Key words- Bilateral trade, India and ASEAN, Gravity model, Act East Policy

I. INTRODUCTION

The Association of South East Asian Nations(ASEAN) was formed in 1967 to promote political, economic cooperation and regional stability within the region of Asia. Initially, when it was formed it contained five nations which were Indonesia, Malaysia, Philippines, Singapore and Thailand. Brunei joined in 1984 and shortly thereafter Vietnam joined in 1995. Laos and Burma joined in 1997 and Cambodia in 1999. ASEAN community comprises three main pillars, which are, Political Security Community, Economic Community and Socio Cultural Community. It commands great influence of trade in Asia-Pacific region, which the individual members of ASEAN could not achieve. India is not a part of the ASEAN community but has bilateral relations with the ASEAN block.

The relationship between India and ASEAN countries have not historically been close because of the cold war that prevailed in the region. It placed ASEAN and India in opposing ideological blocks, due to which before 1991 there were no significant trade relations between them. In order to bolster trade and develop commerce between India and ASEAN, the then Prime Minister Narasimha Rao in 1992 launched the Look East Policy. It primarily focused on strengthening economic ties between India and ASEAN countries. This mainly happened because of the disintegration of the Soviet Union in 1991 which finally gave way to India to reach out and connect with the South East region.

The initiative of Look East Policy in 1991 yielded impressive gains, and later in 1996 India became a partner and member of ASEAN Regional Forum and later became a summit partner in 2002, which further increased trade relations between India and ASEAN. During this period of the bilateral agreement, trade increased between the two nations from 2 billion dollars in 1992 to 12 billion dollars in 2002. Later on, in 2009 India and ASEAN signed a Free Trade Agreement (FTA). After an increase in bilateral trade between India and ASEAN, it was evident that there was a period of stagnation because of which Look East Policy was re-christened into Act East Policy. India has been experiencing a negative trade balance with the region and trade deficit of India with ASEAN has increased from USD 6.7 billion in 2010 to USD 15.1 billion in 2015 and this is mainly because India faces competition from Southeast Asian countries in manufacturing and plantation sectors. Later, Act East Policy was formally introduced in Myanmar in 2014 in the East Asia Summit.

Act East Policy was mainly introduced to increase trade specifically between ASEAN and north-eastern region of India. The objective of the "Act East Policy" is to foster cultural ties, economic cooperation and improve bilateral, regional and multilateral agreements with the East of Asia especially ASEAN countries. The main priority for the implementation of the policy is to

engage and develop the north east region including Arunachal Pradesh and enhancing ties with ASEAN region specifically. Many bilateral and regional agreements have helped to strengthen the North East region with ASEAN through trade, people-to-people connect, physical infrastructure and maritime connectivity. Also in the commemorative summit Prime Minister Narendra Modi asserted that India shares the ASEAN vision and pitched for freedom of navigation in the region. He also emphasized on the ever evolving ASEAN-India partnership and calling the summit as a grand finale for the joint year-long activities organized by the nations. He also focused on the aspect that ASEAN is at the centre of India's Act East Policy. The Policy is also not free from challenges that come in its way, one of the biggest barriers is the cost of investment and development as South East countries mainly depend on external funds for their projects. Another challenge is the geo-political tension between India and China.

One of the greatest initiative taken by the government was to gather all the 10 leaders from ASEAN nations at the 68th Republic Day parade, and despite increasing bilateral ties between India and ASEAN, the trade remains stagnant. India and ASEAN also signed a trade pact in services and investment in 2014, but Indonesia and Cambodia are yet to ratify the agreement where Indonesia fears the market to be flooded with Indian goods and Cambodia has internal legislative issues if the treaty is ratified. India is also instigating other ASEAN nations to ratify the services pact as it impacts the FTA which was signed in 2009. The free trade agreement signed in 2009 did not yield efficient results and there is a requirement to upgrade the agreement which should include more products. India has the capacity to increase the demand for textile inputs in Vietnam as stated by Toh Sinh Thanh. (India-ASEAN FTA needs to be expanded: Vietnam envoy , 2018)

The Act East Policy in the 12th India-ASEAN Summit in 2014 held in Nay Pyi Taw aimed at implementing the plan of action, the second Plan of Action of 2010-2015 promoted peace, progress and shared prosperity. The third Plan of Action of 2016-2020 seeks to build upon the goals of previous plan of action of peace, progress and shared prosperity. In the India-ASEAN Summit in Laos in 2016 Narender Modi said that " the ASEAN-India plan of action for period 2016-2020 has served us well in fulfilling our objectives. We have already implemented 54 out of 130 activities identified in the plan of action" - these figures have increased to 70. (Singh, 2018) Therefore, with the plan of action and various India-ASEAN summits, the Act East Policy is one of the greatest move to bolster stagnant trade. The bilateral trade between India-ASEAN cannot be independently analysed by sticking to norms of free trade agreements, it is also essential to analyse the impact of policies in trade. Therefore, the study focuses on analysing bilateral trade between India and each of the ASEAN countries econometrically by using the Gravity Model approach.

The study is based on the analysis of Act East Policy which was originally the Look East Policy. It is one of the most significant aspect in ascertaining bilateral trade between India and ASEAN. The main objective is to analyse trade between India and ASEAN after the implementation of the Act East Policy in 2014. This is to examine whether the trade has significantly increased or decreased after the Policy has been implemented and what effect the Policy has on trade.

In the current time period the "Act East Policy" is one of the most essential foreign policies of India and it is also portraying geo-political aspirations amidst growing China's influence over the region. Therefore, it is important to examine the implications of such Policy as it hugely affects bilateral trade and also the objective of the Policy is to improve links of North-Eastern region by connectivity. Therefore timely accounting and analysis of trade with respect to the Policy is essential as the data will depict direct results showing a negative or positive outcome as the reaction to the implementation of Policy.

Previous studies analysed trade between India and ASEAN specifically after the signing of the free trade agreement between India and ASEAN in 2009 and mainly concluded that the FTA majorly helped to increase ASEAN's exports to India, however, India's exports to ASEAN declined after the agreement was signed and practically came into effect in 2010. Therefore, the papers have only econometrically analysed the effect of India-ASEAN trade, but not analysed how effective a policy helps in navigating trade. The papers have not econometrically analysed the effect of Policy implementation. This is one of the research gaps detected while analysing the literature. Therefore, this paper makes an attempt to analyse the effect of trade after the implementation of

Act East Policy in the year 2014 by using the traditional Gravity Model approach by Tinbergen in 1962, and by also introducing a dummy variable to capture the effect of Act East Policy.

II. LITERATURE REVIEW

The NDA government is focusing more on trade with south east Asian counties by promoting the "Act East Policy". The Act East Policy specifically emphasizes on the development of north eastern region and their primary concern is to enhance further bilateral trade relations. It originates from the Look East Policy which came into picture in 1991 by the then Narasimha Rao government, which came into effect since 1996 where the bilateral trade increased from $2 billion in 1992 to $12 billion in 2012 (Sajjanhar, 2016). India and ASEAN continues to form a strong relationship since then and it is evident from previous political connections as Narendra Modi visited Myanmar to participate in the East Asia summit and the Indian-ASEAN summit in November 2014. He also went to Malaysia for a bilateral visit and attended East Asia and the Indian ASEAN summits. India-Myanmar-Thailand trilateral highway is also proposed to be as the gateway to ASEAN because it connects and brings the three nations closer to one another. India and Myanmar also have opened two land crossings to travellers with visas and passports, this is an essential step to the "free movement of people and goods" between India and South East Asia. Also there is a robust regional comprehensive economic partnership which was formally launched in November 2012 at the ASEAN summit in Cambodia. It proposes international free trade agreement amongst 16 Asian specific nations and is similar to the trans-pacific partnership agreement which failed because of the withdrawal of the US in 2017.

The bilateral trade between India and ASEAN has been rising and has marked the growth from $21 billion in the year 2005-06 to $65 billion dollars in the year 2015-2016. This increase in growth is encouraging but there are also some setbacks to trade like the rise in authority of China over South China sea and India is majorly concerned with it as its 40 per cent of trade is through south China sea (Sajjanhar,2016). The integration between India and ASEAN countries have some hurdles as there is delay in completing infrastructure projects because of various political and financial constraints(Bhogal, 2018). The South China sea conflict is one of the major political constraints. This is one of the biggest political sea dispute in Asia involving several neighbouring states and the United States. The 3.5 million sq feet of water is one of the busiest shipping routes and also it contains vast oil and gas reserves. Over the decades there have been competing claims of who controls the ownership of islands, shores and their surrounding waters. The Nine-Dash Line specifically indicates the control of China over South China sea and the reason this conflict is taking place is because before 1930's no one claimed the sovereignty of these lands.

There are also many instances of claiming authority over South China sea. In 2012 Philippines navy harassed Chinese fishing bolts and arrested the crew of one vessel which escalated to a tensed standoff between Chinese and Philippines navies. Over the past six decades China, Philippines, Malaysia and Vietnam have occupied islands in the South China Sea by reclaiming land and building military bases, but China is more assertive as it has claimed more than 3,000 acres in Ananza or Spratly islands. China has also completely transformed places like Fiery cross reef which was a sandbank in August 2014 and by June 2016 it had been transformed into a sea port because with an airstrip and China claims to have done so to meet its civil and defence needs. In 2013 Philippines bought arbitral proceedings against China to the international tribunal in the Hague and because of this China refused to take part in the proceedings despite this the tribunal ruled in 2016 and claimed that China has no legal basis to claim historic rights over south China sea. China rejected the tribunals and since then the other nations have done very little to challenge the China's continued development of the islands it controls and yet the dispute remains unresolved.

The bilateral relations have been analysed by using various methods. They were calculated by using various models like general equilibrium model, trade theory and the gravity model. The researchers have got consistent results with the usage of the gravity model but not necessarily significant results. (Sarin, January 2018)Analysed India's and ASEAN's trade relations using the gravity model approach between 1991-2013. Using panel data and got results that were consistent with their hypothesis which

stated that India's trade is directly related to their economic size and inversely related to their to the distance between them. GDP and distance which were the main variables were consistent with the theory and had the expected positive sign. Whereas the inclusion of per capita GDP depicted contrasting opinions on the issue of trade theory which adopted the Helpman-Krugman theory. It predicts that the volume of trade should increase with increasingly equal distribution of national income (Batra, 2006) .The theory supports Helpman-Krugman's hypothesis but the negative sign will support Linder hypothesis. It states that countries with similar per capita income will have similar preferences but differentiated products and will trade more. Also, to measure the robustness and the sensitivity of the model, the model included trade openness and real exchange rate and concluded that the results were significant for trade openness but insignificant for real exchange rate, which meant that removing trade barriers will increase imports and lead to deterioration of trade balance.

 (Leit~ao, 25 March 2013) have analysed India's bilateral trade between 1998-2012 by applying Tobit, Random effects and GMM estimator and got consistent results. The GDPi and GDPj country were positive and statistically significant on India's bilateral trade flows but the variables of geographical proximity does not comply with the literature. The distance variable is positive and is statistically significant which means that India's bilateral trade increases with geographical proximity only for major countries. The variables of political globalization and cultural proximity which were specifically included to remove ambiguity in the model were statistically significant and positively affected the direction of trade flows. Whereas, (Chandaran, 2018) applied the gravity model approach to assess the impact of India-ASEAN free trade agreement and used two augmented gravity model approaches where the fixed effect vector decomposition method of the augmented gravity model-1 showed that all variables are significant in explaining bilateral trade. The positive sign of the GDP of various countries showed that as the GDP increased the bilateral trade would increase but on the other hand per capita income and per capita income differential showed negative sign because of the multicollinearity that exists within the model. Among the augmented model only language and colony were positively influencing trade whereas border had a negative sign and ASEAN dummy is significantly higher in FEVD model (3.0643). The augmented model-1 showed multicollinearity so GDP was replaced with population and the model estimate depicted highly significant variables with high coefficient for ASEAN dummy. Similarly, (TRADE CREATION AND TRADE POTENTIAL BETWEEN ASEAN AND INDIA: A GRAVITY MODEL APPROACH , 2012) used the gravity model approach to analyse the trade potential benefits and used two augmented gravity model approaches where the model 2 was more efficient when GDP was replaced with population because the important parameters showed possibility of correlation with a positive ASEAN dummy. India's trade potential was also calculated by using the trade openness index. The results were shown that India's trade potential with Indonesia is exploited because the actual trade is more than the potential trade. The trade potential between Malaysia and Thailand is yet to be enhanced with high trade potential Malaysia, Philippines and Thailand. The total trade creation of India-ASEAN FTA is 4.075 US dollars. Therefore, it clearly indicates that more potential lies in the trade of India and ASEAN countries.

FDI also proved to be an effective and an efficient measure in calculating trade flows. Variables like GDP, multilateral and bilateral trade agreements have a positive impact. The skill development variable is negative but has a statistically significant coefficient which indicates that if there is more internal reliance of human capital then FDI flow is not very significant and other findings were that FDI flow from non-ASEAN countries are declining and has a negative coefficient which indicates that there is increasing competition from emerging countries and also competitiveness of inter-ASEAN countries. The distance variable was negative which means that the flow of FDI is not horizontal. (Shandre M. Thangavelu a, 2014). Whereas, after the signing of India-ASEAN free trade agreement in 2009 the tariff rates of India were higher than ASEAN it was more likely for ASEAN to benefit from the agreement than India. Ex-post analysis of the agreement was made by using the gravity model where, augmented gravity model was used and, due to the problem of endogeneity GDP was replaced with population and the model was run, the results of GDP, GDP per capita and distance variable turned out to be significant which indicates that these are the main variables that effect trade with the formation of free trade agreement. (Chandran, 2018) . Another ex-post analysis of India-

ASEAN free trade agreement shows that trade between non-member countries were more than the member countries which indicates that there is more of trade diversion than trade creation, also all the essential variables like GDP, distance, per capita GDP were significant but the model could not be a perfect fit for OLS as it could not pass the test for heteroskedasticity (Nauriyal, 15 Jun 2017).

While tapping the trade potential of India and ASEAN it was concluded that trade in the agricultural sector is the most and ASEAN is the major supplier of agricultural products to India but India's potential is untapped where there is a possibility for expanding trade with Brunei and Laos and also strengthening bilateral trade with Philippines. (V.R. Renjinia, 2017) In other sectors of Tea and Coffee it was concluded that tariff rise after the FTA came into effect did not affect the imports of India from Indonesia and Vietnam and India is also yet to gain access to preferential market access to Indonesia, Myanmar and Philippines where the untapped potential of trade lies. (Rajan Sudesh Ratna, 2013) Therefore, it is important for the Indian exporters to be efficient and effective in their functioning as they have a vast potential to capture in ASEAN markets especially textile, Tea and Coffee industries. The tariffs also play an important role in trade flows a significant reduction in tariff of 10 percent will significantly increase imports by harming the domestic production. (Saini, 2010) Therefore, tariffs play an important role in trade flows with GDP per capita, GDP and the nature of quality of products.

Data and Sources of Data

The data chosen for this analysis is a panel data as it captures the estimation better than OLS (ordinary least square) and the cross section with the time series and eventually gives a better estimate of the model. The time frame chosen is from 2002-2017. The year 2002 was chosen because India and ASEAN joined the summit level partnership in this year and the trade was showing an upward trend because of the implementation of the Look East Policy, and also was the 10th anniversary of the Look East Policy. The data of GDP per capita of both the countries from 2002 to 2017 was acquired from the World Bank. The exports data was acquired from trade map and the data for distance was taken from CEPII.

Theoretical framework

 The theoretical framework used by the paper to analyse the trade between India and ASEAN countries is the gravity model approach which was proposed by Tinbergen in 1962.

The gravity model is a very popular model which is fairly used to analyse trade between two or more nations. It is analogous to the Newton's law of gravity which states that the gravity between the two objects is directly related to their masses and inversely related to the distance between them.

$Fij = G (Yi Yj/ Dij)$

Where, Fij denotes the trade flows between the two or more countries between which goods or services are being traded, essentially the trade occurs between country i and country j.

Yi and Yj are the economic masses of the two countries between which the goods or services are being traded. They are specifically cross sectional units. The economic masses measures the size of the two countries which is measured as GDP or GDP per capita.

Dij is the distance between the two countries between which the trade occurs.

To estimate econometric we apply log to the above gravity equation and obtain a linear relationship which is as follows-

$Ln Fij = ln G + a ln Yi + b ln Yj - c ln distance$

Where ln G captures the effect of the intercept and a,b,c are the elasticities of the respective chosen variables.

The initial gravity model considered geographical distance to be an important variable in the estimation of the model but recently the literature stated that transportation cost is one of the most essential factors in determining trade between two countries.

Theoretically, there should be a negative relationship between distance and trade, because of which there is a negative sign in the above stated econometric gravity model. Therefore, an increase in the bilateral trade is explained when the transportation cost decreases.

Gravity model can also be estimated and be a good fit when empirical studies include dummy variables like cultural proximity, historical ties, common colonies, border, language, FTAs, etc. These dummy variables help the model to estimate proper factors that significantly affect trade. The model is also essential in analysing the effects of policies and similarities between the trading nations. It can also capture the effect of regional trade agreements by considering the similarity of the countries agreements and policies. It has been working successfully for the researches as the model contains considerable robustness and provides a tool for logically predicting the trade performance between countries.

Explanatory Variables And Testing For Hypothesis In The Gravity Model Approach
According to the literature the hypothesis of the gravity model is as follows-

- Hypothesis 1- The larger the economic dimension, larger the trade between countries i and j. Economic dimension is measured by GDP or GDP per capita.
- Hypothesis 2- Trade increases when partners are geographically close. There is negative relationship between distance and the amount of trade that occurs between the nations.

Equations

To analyse trade between India and ASEAN countries, the paper attempts to use the gravity model approach. The data was arranged and analysed in the format of panel data. The model formulated is as below-

$LnT_{ij}=Ln(\text{GDP per capita } i)+Ln(\text{GDP per capita } j)+(\text{Dummy variable of Act East Policy of 2014})$

Where,

T_{ij}= The exported products of India.

GDP per capita i= GDP per capita of country I (India)

GDP per capita j= GDP per capita of country j (all ASEAN members)

The dummy variable has been introduced which captures the effect of Act East Policy which was implemented in 2014.

0=before the act east policy of 2014

1=after the act east policy which was implemented after 2014.

Research Methodology and econometric models.

The methodology includes Panel data regression model before that, the test for stationarity is being run. Since the study deals with cross section and time series we take the natural log and also, the literature and methodology of the gravity model states that the model should be lin-log where we take the log of both dependent variable as well as the independent variable before the estimation of the model. Before running a panel regression model the test for stationarity is reported as below-

Table 3.1: Panel data unit root test- Levin, Lin & Chu

Variables	Level T-Stats	Probability Value	Stationarity
Log(exports)	-3.89119	0.0000	Stationary
Log(GDP per capita of India)	-6.52956	0.0000	Stationary

Log(GDP per capita of ASEAN countries)	-4.19875	0.0000	Stationary

The Panel data unit root test follows the following Hypothesis-

- H0: There is unit root(assumes a common unit root process, non-stationary)
- H1: No unit root (Stationarity)

The stationarity of the variables are checked at 95 percentage of confidence interval thus all variables with a probability value more than 0.05 are non-stationary which means that they have a unit root problem. If the variables probability value is less than 0.05 then there is no unit root problem in the variables of the data and the data is Stationary.

In the above reported values we can see that none of the variables have a unit root problem and all the variables are stationary. We rejected the null hypothesis of a unit root problem and accepted the alternative hypothesis of the data having no unit root.

To check the OLS assumption of multicollinearity we draw a correlation matrix

Table 3.2 Correlation between the explanatory variables

Correlation	Log(exports)	Log(GDP per capita of ASEAN countries)	Log(GDP per capita of India)
Log(exports)	1.0	0.274387	0.322025
Log(GDP per capita of ASEAN countries)	0.274387	1.0	0.227007
Log(GDP per capita of India)	0.322025	0.227007	1.0

It can be inferred from the above table that the correlation value is not more than 0.6, which means that none of the explanatory variables are correlated to one another. The correlation between exports and GDP per capita of ASEAN countries is 0.274387. The correlation between exports and GDP per capita of India is 0.322025 and the correlation between GDP per capita of India and ASEAN countries is 0.227007. Therefore, none of the variables are correlated and satisfy the assumption of multicollinearity, which is the OLS assumption in the Panel data analysis.

Data Analysis

The study uses e-views econometric software for the analysis of data. The method of Ordinary Least Square (OLS) is used for estimation of autoregressive lag model of gravity. As stated above, the model uses only stationary variables to avoid the problem of co-integration between variables and no multicollinearity issue in the data adheres to the assumption of OLS estimation. The fixed effect model is used to capture the effect of cross-sectional units of all ASEAN member countries for the balanced panel data analysis.

The reason why a panel data analysis was the most apt for analysing trade was because a Panel data can capture the effect of heterogeneity of the data, it can better detect and measure effects that cannot be simply captured by the time series data or cross-sectional units.

Model Specification

LnTij=Ln(GDP per capita i)+Ln(GDP per capita j)+(Dummy variable of Act East Policy of 2014)

Where,

Tij= The exports India.

GDP per capita i= GDP per capita of country i(India)

GDP per capita j= GDP per capita of country j(all ASEAN members)

The dummy variable has been introduced which captures the effect of Act East Policy which was implemented in 2014.

0=before the act east policy of 2014

1=after the act east policy which was implemented after 2014.

Therefore, a fixed effect Panel regression model is run and the results of the model is in the following table.

Table3.3 Fixed Effect model- Results of Panel data regression

Variables	Coefficient	Standard Error	T-statistics	Probability Value
Ln(GDP per capita for ASEAN countries)	0.927956	0.387079	2.397330	0.0179
Ln(GDP per capita for India)	1.297666	0.365489	3.550493	0.0005
Act East Policy dummy variable	-0.507308	0.133044	-3.813093	0.0002
Lag(Exports)	0.259463	0.079006	3.284081	0.0031
Constant	-9.472137	1.986105	-4.769203	0.0000

R-Square	0.962297
Adjusted R-square	0.958693
S.E of regression	0.473943
Durbin-Watson	2.2163

Table 3.4: Random effect model- Results of Panel data regression

Variables	Coefficient	Standard Error	T-stats	Probability Value
Ln(GDP per capita for ASEAN countries)	0.014928	0.033928	0.439983	0.6606
Ln(GDP per capita for India)	0.200943	0.179006	1.122552	0.2635
Act East Policy dummy variable	-0.297229	0.130879	-2.271031	0.0246
Lag(Exports)	0.950190	0.017872	53.66096	0.000
Constant	-1.060302	1.428151	-0.742430	0.4590

R-Squared	0.939069
Adjusted R-squared	0.937388

S.E of regression	0.583506
Durbin-Watson	2.951531

In the above Panel data regression model the fixed effect and the random effect model was run to check which showed better results. It was concluded that the Fixed effect model was suited the best as it showed good results and then the Hausman test was run to check which model was chosen. The probability of cross-section random effect was 0.000.

Hausman test

- H0 : Random effect model is preferred
- H1 : Fixed Effect model is preferred

As the results of the Hausman test was highly significant which indicates that we reject the null hypothesis of the Random effect model and accept the alternative hypothesis of Fixed effect model.

With more significant results even the Hausman test proved that Fixed effect model is preferred over random effect model.

According to the results in Table 3.3 and 3.4, it can be inferred that-

- GDP per capita of ASEAN countries is significant at 5 percentage level of significance in the Fixed effect model than the Random effect model. Where the probability value is 0.0179. It also tells us that there is a positive relationship between GDP per capita of ASEAN countries and the exports of India. It hold true with the theory of literature of gravity model which states that GDP per capita effects the exports positively. It also means that if there is 1 percentage increase in the dependent variable of exports then it is due to the increase in the GDP per capita of ASEAN countries by 0.92.

- GDP per capita of India is significant at 5 percentage level of significance with the probability value of 0.0005 in the fixed effect model whereas this variable turns out to be insignificant in the random effect model. The t-stats which shows the significance in the fixed effect model is 3.55 which indicates that this variable is significant. It also means that 1 percentage increase in the dependent variable of exports of India is due to increase in the GDP per capita of India by 1.29, which indicates that this is an important variable in determining the exports of India and the sign is positive with respect to the theory of gravity model.

- The dummy variable of the Act East Policy used to analyse the effect of the policy. The Policy is significant at 5 percentage level of significance in both the fixed effect and the random effect model. The effect of the Hausman test would be considered as the fixed effect model is chosen. The negative sign of the coefficient and the T-stats value signifies that there is a negative relationship between the exports of India and the implementation of the Policy. The probability value is 0.0002 and T-stats is 3.81. This indicates that the exports of India have decreased after the policy has been implemented by 0.50. Therefore, the implementation of the Policy did not significantly increase India's exports per say.

- The constant tells us about the intercept and it is significant with the probability value of 0.000 and T-stats 4.76.

- The lag(exports) variable is taken to solve the problem of autocorrelation. The lag of the dependent variable which is the exports is taken as the independent variable and the fixed effect model is run. After doing this procedure the problem of autocorrelation gets solved as the Durbin-Watson value changes from 1.5 to 2.2, and comes in the range of no autocorrelation. Therefore, by taking the lagged value of the dependent variable solves the autocorrelation problem and under-specification of the model.

    Therefore, the following depicts the cross-section effect of the Panel Data analysis of the Fixed Effect Model-

Table 3.5- Cross-section effects

Cross-section	Effect
Singapore	0.198531
Vietnam	1.901923
Malaysia	0.561886
Indonesia	1.452686
Thailand	0.783153
Philippines	0.892676
Myanmar	0.682837
Cambodia	-0.262766
Brunei	-4.127220
Lao People's Republic	-2.083707

The cross-section effect gives us the change in the intercept value in each cross-section. Therefore, the above table tells us about the individual intercept values of the countries, which are the cross-section of the fixed effect model. According to the individual intercept values of the countries the highest intercept value is Vietnam's with the effect of 1.90 and then Indonesia 1.45. The individual intercept of Cambodia, Lao People's republic and Brunei are negative.
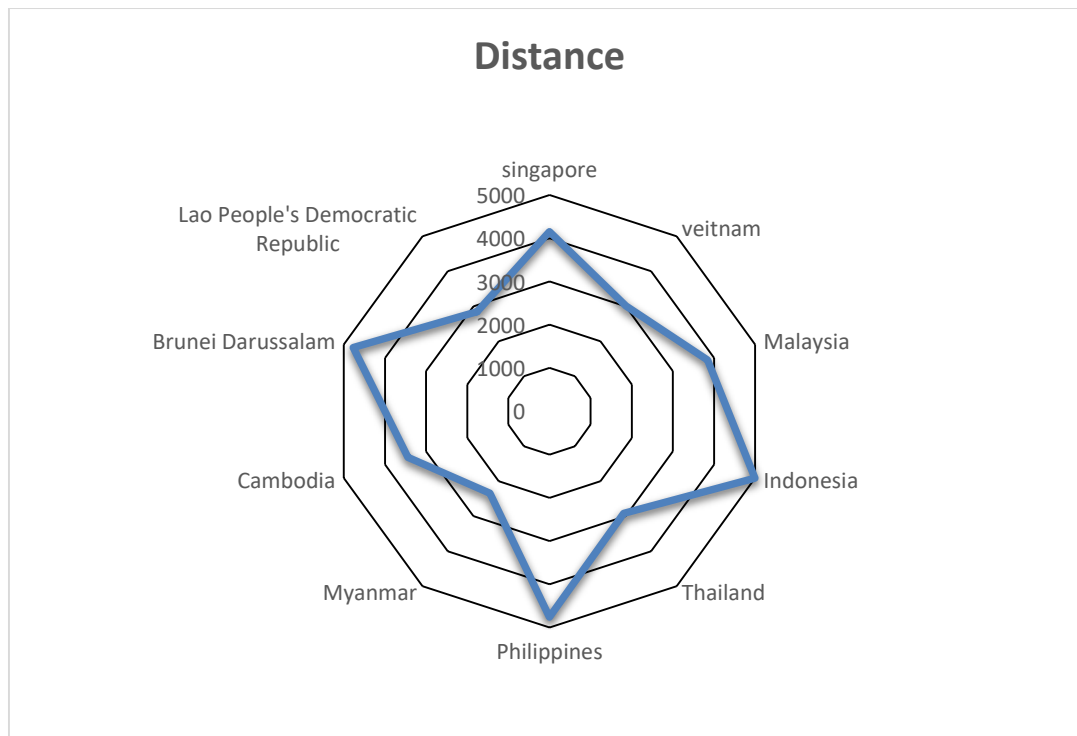
The following Radar Chart shows the average of exports for every cross-sectional unit countries-

Fig 3.1 Radar chart of exports of India

The following Radar Chart shows the distance between India and ASEAN countries-

Fig 3.2 Radar chart of the distance between India and ASEAN countries

Distance

According to the above chart it can be concluded that the distance between Singapore and India is 4154 and yet most of the India's exports go to Singapore as it is the highest with the amount of 80,60,636. Similarly, in the case of Vietnam, Malaysia and Indonesia the distances are, 3006, 3842 and 4998 but the exports of India are around 30,72,000 and 30,85,000, 31,59,000.

The exports of Brunei and Philippines are 77,406 and 9.03,000 whereas the distance between them is 4756 and 4773. The exports are less whereas the distance between India and these two countries are more compared to the exports of India.

Thailand and Myanmar's exports are 22,37,000 and 4,39,000 whereas the distance of India and between those countries are 2919 and 2344. This tells us that distance does not signify the trade between these countries. If we take Lao people's republic then it depicts that the distance between India Lao people's republic is 2864 and the exports are 20,003. The distance is less, and the exports of India are also lesser in comparison to other ASEAN countries. There is no inverse relationship between the distance and exports of India. Hence, distance is an insignificant factor in determining trade between India and ASEAN.

RESULTS AND DISCUSSION

According to the results of the Gravity model it was concluded that-

- Per capita GDP of both the trading countries, in this case India and all ASEAN member countries is an essential factor in determining trade or exports.

- The Act East Policy's dummy was negative and significant which indicates that after the policy has been implemented the exports of India have decreased.

- Distance variable is an essential factor in determining trade in the literature of the Gravity model, but then, in the case of India and ASEAN, distance is insignificant.

After the change of Policy from the Look East to Act East the exports of India to ASEAN have significantly decreased and the possible reasons are-

- India and ASEAN member countries in the year of 2014 signed a trade pact in services and investment and out of the 10 countries Indonesia and Cambodia are yet to ratify the treaty. If the agreement is signed between Indonesia and India, then Indonesia believes that Indian goods will flood their markets and take away their jobs and Cambodia is stuck with internal legislative issues. If the treaty is ratified and implemented effectively then there is a possibility that India's exports would start to increase. One possible explanation for the decrease in exports is because India still does not have complete access

to these markets and the ratification of the treaties is still pending, and this process could prolong and also, India needs to agree to become flexible in RCEP(regional comprehensive economic partnership) norms. (Basu, 2018)

- ASEAN countries- Singapore, Thailand, Malaysia, Cambodia, Myanmar, Brunei, Laos, Philippines, Indonesia and Vietnam are yet to ratify and implement the services pact because it keeps hindering the free trade agreement between India and ASEAN which was signed in 2009 and implemented in 2010.

- India holds a comparative advantage in the product categories of naturals pearls and stones, cotton, pharmaceutical products, iron and steel, vehicles etc but ASEAN imports these products from Indonesia, Japan, Switzerland, Hong Kong. Despite having a comparative advantage India's exports haven't been growing significantly and in order to increase the exports India need to capture the market effectively. (Dr. Veeramani.S, 2018)

- Tariff and non-tariff barriers imposed by ASEAN countries is one of the major factors affecting India's exports. In markets like Indonesia tariffs still exists on free trade agreement on 50 percentage of the items, which is the highest amongst nations. Products like sanitary, phytosanitary measures, product standards and textiles are facing high non-tariff barriers in ASEAN market. Issues like market access have to be addressed by the government of India.

- India's import of essential items like edible oils, Petroleum and petroleum oils and vegetables is one of the reasons why there is a high trade deficit. India is importing these products, as this raises the question of the effectiveness of the free trade agreement as imports of these items can be continued without FTA.

- Indian products are mainly facing high tariff barriers even after the strengthening of bilateral ties, especially in the Indonesian markets, on the other side there is almost no restriction on the imports of cheap food and oil products from ASEAN. Proper quality norms are required to be addressed to decrease the imports of cheap quality products.

- Also there should be diversification and increase in trade to other countries because the trade of India and ASEAN is concentrated to countries like Singapore, Indonesia, Malaysia.

RCEP is also an important contributor to the Act East Policy of India and India needs to be cautious to not loose heavily when the trade in goods is liberalized completely. Negotiations of the three tier systems must be done or consultation with local RCEP members should be made with local bodies and trade bodies. In terms of services India should focus on liberalizing service trade as it can help in compensating merchandize trade's loss.

Regional comprehensive economic partnership is a trade agreement which includes ASEAN members and six major economies like China, Japan, New-Zealand, Australia, South Korea and was initiated by China in 2011. The idea is to create the largest free trade block and it is based on single tier system approach where all member countries will get same reduction on the basis of tariff lines. ASEAN is the major reason for driving negotiations in this region. The reason why this agreement (RCEP) is being discussed is to avoid individual free trade agreements for specific countries like India, China and Japan. ASEAN is looking for negotiations at the earliest and is persistently pushing India for approval of the agreement but India is not in favour of the proposed single tier system for tariff elimination. India is not agreeing for single tier tariff lines for all members as India already facing a high trade deficit for ASEAN and single tariff lines will result in Indian market flooding of ASEAN goods and inclusion of Australia and New Zealand will increase the trade deficit.

Another reason for not accepting the norms of single line tariff approach is because of India-ASEAN free trade agreement was not significantly improving trade and imports have been increasing after the FTA from ASEAN nations and the initiation of the Act East Policy still did not increase the exports of India, as found by the study and trade liberalization made the agricultural sector of India vulnerable as India is fighting and trying to seek a permanent solution on subsidies by developing countries via non-agricultural market access.

Therefore, India has put forth a three tier system for Tariff reduction and it depends on the country with which they sign FTA.

- Tier 1- There will be tariff reduction by India on 80 percentage products to ASEAN member countries and 65 percentage on RCEP finalization and 15 percentage over the period of 10 years.

- Tier 2- For South Korea and Japan there would be tariff reduction of 65 percentage on goods.
- Tier 3- countries with which India does not have an FTA there would be tariff reductions.

This offer was not accepted by RCEP and the negotiations still continue. It is not like India will not completely benefit from the single tariff system, it will improve exports of products in which India has a comparative advantage but also, the overall impact will be negative as there would be cheap imports from Indonesia and other markets of ASEAN countries.

Therefore, to deal with this gap of trade deficit with ASEAN, the government needs to have a proper policy and actions. There should be some essential changes made by the government like putting barriers on cheap ASEAN products, encourage exports of comparative advantage and more free market access. There should be more liberal and appropriate trade policies with ASEAN nations so that India can gain more access.

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