HAS INDIA-BIMSTEC ECONOMIC INTEGRATION HELPED IN INCREASING INDIA’S TRADE IN THE REGION? A PANEL DATA ANALYSIS

Debasis Neogi
Department of Humanities and Social Sciences
National Institute of Technology Agartala, India

Amit Bikram Chowdhury
Department of Humanities and Social Sciences
National Institute of Technology Agartala, India

Abstract— In recent years, economic integration has turned into an important driver of economic development both in Asia and throughout the world. The seven-nation Bay of Bengal Initiative for Multi sectoral Technical and Economic Cooperation (BIMSTEC), comprising Bangladesh, Bhutan, India, Myanmar, Nepal, Sri Lanka and Thailand is emerging as one of the major subregional groups in Asia. The main aim of this group is to fully utilise the existing potential of member countries for promoting economic cooperation in the areas of investment, industry, technology, human resource development, agriculture and infrastructure. This sub-regional group can be considered as an important step toward process of economic cooperation between different regions of Asia. This paper examines the effect of economic integration on India’s trade relations with the other nations of BIMSTEC using a panel data regression model for the period 1987-88 to 2012-13. For the analysis, the study has also made use of economic parameters such as GDP, distance between the countries, economic recession and average weighted tariff rate. This paper also studies the long-run relationship between economic integration and trade for a dynamic heterogeneous panel causality of seven BIMSTEC countries.

Keywords— Economic Integration, BIMSTEC, Causality, Panel data, India’s Trade Relations.

I. INTRODUCTION
The Asian financial crisis of 1997 was a wake-up call for policymakers that regional cooperation and integration can maximize the benefits of globalization while minimizing the costs. [1] Economic integration is based on complementarities that help to maximize the mutual benefits of all involved. By working together, countries enjoy social and economic benefits that otherwise may not be achieved solely through individual efforts. In the background of the trend of globalization in the world economy the external sector in each economy has been receiving a place of primacy in the policy-making process. In a related development, the world witnessed a regionalization of the global economy. The might of the European Union (EU), the emergence of the North American Free Trade Agreement (NAFTA), the common market of the South American Southern Cone (MERCOSUR), and a wave of existing and emerging agreements in the Asia-Pacific and Africa, such as ASEAN Free Trade (AFTA), the Asia-Pacific Economic Cooperation (APEC), among others, are pointers to this fact.[2]
Regionalism, besides its strategic, geopolitical and foreign policy dimensions, has been a major plank of development, cooperation and integration in many parts of the world. Development and developmental initiatives depend on a formidable regional economic exchange. The interplay of market forces has played a significant role in accelerating the process of economic integration in South Asia that triggered off in 1995 with the launching of SAPTA.[3] Economic integration is a sequential process whereby the discriminations which occur at borders are removed. Discrimination, in simpler terms, is the hindrance to the free flow of factors of production. The aim of the process is to integrate economies so that there is an allocative efficiency within a region. Increased economic integration leads to decreased trade barriers within markets. Article XXIV of WTO imposes two conditions for setting up a RTB- the first condition is that trade restrictions among countries forming the bloc must be eliminated over a period of normally not exceeding 10 years. They are not to be re-imposed later and the object of this condition is to ensure that a trading bloc is not used to merely circumvent the MFN (Most Favoured Nation) clause. The second requirement is that the common external tariff imposed after the formation of a bloc must not be greater than the average of the member countries existing before the formation of the bloc. It not only applies in the case of tariffs alone but also to non-tariff barriers. India views Regional Trading Arrangements (RTA's) as 'building blocks' towards the overall objective of trade liberalisation. Hence, it is participating in a number of RTA's which include Free Trade Agreements (FTA's); Preferential Trade Agreements (PTA's); Comprehensive Economic Cooperation Agreements (CECA's); etc.[4] BIMSTEC is in the stage of evaluating its performance in the intraregional cooperation in the area of trade, investment and others. BIMSTEC has an enormous trade potential because of its own intraregional trade at present. In this context the paper tries to study the impact of economic integration on India’s trade with other BIMSTEC countries. This paper also aims to study the causality relationship between India’s trade with other BIMSTEC countries and economic integration.

II. Literature Review

Mallick (1993) pointed out that regional economic integration is often seen as a zero sum game, creating positive benefits for the region as a whole if linked by regional integration projects. There are winners and losers. The probable losers will certainly not participate unless they receive other compensating benefits from the winners or outside parties. The offered benefits would have to be sufficient to coax their participation of the alliance. Cultural, including religion, aspect is the most difficult to solve as the case of India and Pakistan. Mallick stressed that the renewed interest in regionalism in the post-cold war can benefit from the lessons of many previous Third World failures.[5]

Bello & Cunningham (1994) discussed two approaches to regional hegemony in East Asia. The first is integration via an aggressive trade policy pushed by the United States and the second is integration via a strategic investment policy followed by Japan. The U.S. approach is to re-subordinate the Asia-Pacific economies by resorting to crude, unilateral actions as the case of Korea and Taiwan. Korea was subjected to harsher pressure from the
U.S, which resulted in positive external trade accounts.[6]
Bayoumi & Klein (1997) found that there is a closer connection between net income and trade balance for small provinces than for large provinces or for Canada as a whole is consistent with the view that integration is higher within Canada than between Canada and the rest of the world. Small provinces were able to use Canada markets to smooth consumption while the larger province lacks the use of capital markets to smooth consumption. The results indicated that integration is lower in many of larger and relatively rich provinces than in smaller ones. Further, the results from aggregate showed lower international integration than from that of individual provinces while there is high integration within Canada but more limited integration between Canada and the rest of the OECD.[7]
Sazanami (1997) examined the corporate strategies of Japanese multinational enterprises (MNEs) in light of the globalization and rationalization trends in the world economy, specifically the factors behind intra-firm trade between Japan and foreign affiliates of Japanese firms in the Asia-Pacific. In the experience of East Asian countries in attracting Japanese MNEs, FDI that is most successful in contributing to the development is not the tariff-jumping FDI aimed at supplying for the local market, but the export promoting FDI aimed at supplying the world market. Intra firm trade is becoming a very important avenue to increase exports to Japan and to other regions. Japanese MNEs are promoting interdependence within the Asia-Pacific region.[8]
Berger (1998) stated that Anglo-American liberalism continues to have significant force in Northeast and Southeast Asia. Particularly, East Asian narratives of progress are being accommodated to Anglo-American liberalism. The new East-West synthesis, manifested in Asia Pacific Economic Cooperation (APEC), is being used to facilitate elite integration and realignment in itself. Efforts at integration in the Asia-Pacific and the new visions of regional cooperation often continue to perceive the process of capitalist industrialization as a unifying and homogenizing force.[9]
Kaikati (1999) stated that due to European union, South America’s two leading trade blocs are exploring the possibility of emulating the EU by having their own monetary union. The Southern Cone Market (known as MERCORSUR) is exploring the idea of a common currency for its four founding members, Argentina, Brazil, Paraguay, and Uruguay, and its associate members, Chile and Bolivia. Another South America bloc is the Colombia’s Association of Banks and Financial Institutions (known as Asobancaria) has proposed that a single currency be created within the Andean community. If Mercosur and Andean adopt common currencies, only Guyana and Suriname are the only two countries in South America with currencies are not freely convertible on the world market. Further, Kaikati pointed out ASEAN common currency idea as to prevent the region from being hit by currency turmoil. These three trade blocs, along with the rest of the world, will closely watch the Euro’s progress for possible replicating the union.[10]
Alexandera & von Furstenbergt (2000) argued that regional currency consolidation is becoming popular as countries in Latin America, East Asia, Eastern Europe and Central Asian increasingly considering the introduction of stable foreign currencies as legal tender or considering engaging in monetary unions.
In the short run, they argued that an adjustment process leading to monetary union is preferable to unilateral full dollarization because of various interest groups. When full dollarization is chosen, an introduction of the dollar after a period of preparation, such as the case of Argentine, is preferable to an Ecuadorian approach in which the adjustment takes place after implementation. In reality, the two regimes of full dollarization and monetary union are subject to variety of possible variations.[11]

Arndt (2001) stated that Asia-Pacific countries should continue to search for ways of making regionalism work for them. The regional economic integration of the European Union is the best example especially for groupings of smaller countries, which exclude the region”s larger economies. Arndt argued that the EU approach is basically inward-looking, discriminatory, and import-substituting in its orientation, which tends to be preoccupied in its early stages with trade liberalization and leave the creation of a single regional market at later stage. He proposed the development of regional production networks in order to make the region”s producers more efficient and competitive in regional and global markets for Asia-Pacific Countries. The traditional approach of economic integration emphasizes the comparative advantage at the product level while the proposed approach stresses comparative advantage at the level of parts, components and assembly.[12]

Mansfield & Milner (1999) stated that economic regionalism is growing rapidly. The United States is actively promoting the formation of PTAs. Regional arrangements have seldom been used as instruments of power politics; instead, they have often been used to promote and consolidate domestic reforms that liberalize markets and foster democracy. The latest pace of regionalism has accelerated by substantial economic interdependence, a desire by countries to mediate trade disputes, and a multilateral framework that facilitates mediation and commercial relation. The current wave of economic regionalism is expected to persist, which will provide a stepping-stone to greater global openness. During the second half of the nineteenth century, an open international trading system was forged largely through bilateral agreements and little to multilateral cooperation. But fears of economic regionalism that can put strain to the multilateral trading system are not without merits and create trade-diverting PTAs and limit the systematic openness of the region.[13]

III. Data & Methodology

The present study is based on secondary data. The data has been collected from the official website of the Ministry of Commerce, Govt. of India and from World Integrated Trade Solution. Base shifting index has been used to standardize GDP (at Constant US$) of BIMSTEC countries. GDP of 2010-11 has been used as base. Dummy variable has been used to indicate the situation of regional integration. The period with existence of integration is denoted by 1 and the period with no integration sign is denoted by 0. Dummy variable has been used to indicate distance from India to other countries. Cross bordering distance has been denoted by 1. Medium and large distance has been denoted by 2 and 3. The study has used the average weighted tariff rates imposed by India”s export destinations in BIMSTEC countries as independent variable for estimating the impact on India”s exports. Similarly, the average weighted tariff rates of India, in case of import of goods from the
BIMSTEC countries have been taken as independent variable while estimating the impact on India’s imports. Econometric techniques like panel data regression has been used to study the impact of regional integration on India’s trade with BIMSTEC countries.

\[ IX_{it} = \alpha + \beta_1 GDP_{it} + \beta_2 ER_{it} + \beta_3 DL_{it} + \beta_4 RECEit + \beta_5 AWEDEXit + \beta_6 EI_{it} + e_{it} \]  
\[ i=1,2,...,6 \]  
\[ t=1,2,...,15 \]

Where, \( IX_{it} \) is India’s export to country \( i \) at time \( t \). \( GDP_{it} \) is GDP of country \( i \) at time \( t \). \( DL_{it} \) is the distance from India to country \( i \) at time \( t \). \( RECEit \) is the economic recession of country \( i \) at time \( t \). \( AWEDEXit \) is the average weighted tariff rate of country \( i \) at time \( t \). \( EI_{it} \) is the economic integration of country \( i \) at time \( t \). The dependent variable is \( IX_{it} \). The independent variables are \( GDP_{it}, DL_{it}, RECEit, AWEDEXit \& EI_{it} \)

\[ IM_{it} = \gamma + \beta_6 GDP_{it} + \beta_7 ER_{it} + \beta_8 DL_{it} + \beta_9 RECEit + \beta_{10} AWEHCit + \beta_{11} EI_{it} + e_{it} \]  
\[ i=1,2,...,6 \]  
\[ t=1,2,...,15 \]

Where, \( IM_{it} \) is India’s import from country \( i \) at time \( t \). \( GDP_{it} \) is GDP of country \( i \) at time \( t \). \( DL_{it} \) is the distance from India to country \( i \) at time \( t \). \( RECEit \) is the economic recession of country \( i \) at time \( t \). \( AWEHCit \) is the average weighted tariff rate of home country at time \( t \). \( EI_{it} \) is the economic integration of country \( i \) at time \( t \). The dependent variable is \( IM_{it} \). The independent variables are \( GDP_{it}, DL_{it}, RECEit,AWEHCit \& EI_{it} \).

The panel data estimation is employed in the study to capture the dynamic behaviour of the parameters and to provide more efficient estimation and information of the parameters. Panel data techniques are used because of their advantages over cross-section and time series in using all the information available, which are not detectable in pure cross-sections or in pure time series. Panel data suggest individual heterogeneity to reduce the risk of obtaining biased results and provide a large number of data points (observations) to increase the degrees of freedom and variability and to be able to study the dynamics of adjustment.

The Panel data model includes two different methods: **Random Effects Method**: The Random effects method is an alternative method of estimation which handles the constants for each section as random parameters rather than fixed. Under this model, the intercepts for each cross-sectional unit are assumed to arise from a common intercept \( \alpha \) (which is the same for all cross-sectional units and over time), plus a random variable \( e_i \) that varies cross-sectionally but is constant over time. \( e_i \) measures the random deviation of each entity’s intercept term from the „global” intercept term \( \alpha \). We can write the random effects panel model as

\[ Y_{it} = \alpha + \beta X_{it} + \omega_{it} \]

where, \( \omega_{it} = e_i + V_{it} \)

Here \( X_{it} \) is still a \( 1 \times k \) vector of explanatory variables. The parameters (\( \alpha \) and the \( \beta \) vector) are estimated consistently, but instead of OLS, Generalised Least Square method (GLS) is used.

**Fixed Effects Method**: The Fixed effects method treats the constant as group (section)-specific, i.e. it allows different constants for each group (section).

The Fixed effects are also called as the Least Squares Dummy Variables (LSDV) estimators. The model for fixed effect method is

\[ Y_{it} = \alpha + \beta X_{it} + U_i + V_{it} \]
where, Ui and Vit are decomposition of disturbance term. Ui represents individual specific effect and Vit represents „remainder disturbance“, that varies over time and entities (capturing everything that is left unexplained about Yit ).

**Hausman Specification Test:** The test evaluates the significance of an estimator versus an alternative estimator. It helps one evaluate if a statistical model corresponds to the data.

We have two equations as above. We have to take up Hausman Specification Test for ascertaining the acceptability of Fixed Effect model or Random Effect model to study the impact of GDP, Distance, Exchange rate, Economic Recession ,Tariff rate on India’s trade with BIMSTEC countries and Regional Integration by using eviews.

Null Hypothesis: Random Effect model is appropriate
Alternative Hypothesis: Fixed Effect model is appropriate

Following Hausman Specification Test if it is found that the P value of Chi-Square statistic is more than 5% we cannot reject the null hypothesis. If null hypothesis is accepted, we will choose Random Effect model. If null hypothesis is rejected, we will choose Fixed Effect model.

**The Granger Test of Causality:** We need to examine the causality nexus between these two variables, i.e Economic Integration and Trade. We have used granger test to know is Trade causes Economic Integration between India and BIMSTEC? or Economic Integration causes Trade between India and BIMSTEC?. The Test involves estimating the following pair of regressions:

\[
\begin{align*}
E_{it} &= \sum_{j=1}^{n} a_i T_{it-j} + \sum_{j=1}^{n} \beta_j E_{it-j} + U_{1t} \quad (3) \\
T_{it} &= \sum_{i=1}^{n} a_i T_{it-i} + \sum_{j=1}^{n} \beta_j E_{it-j} + U_{2t} \quad (4)
\end{align*}
\]

To test the hypothesis we have applied F test by equation 3 and 4.

**IV. Results and Discussions**

We have used E-views for analysing the factors affecting India-BIMSTEC trade. The estimated results are discussed below. The entire analysis is carried out at 5% level of significance.

In general random effect is considered suitable when the number of cross section of the unit is large and the number of time series observation is small. An explanation of this is that as the intercept in random effect model is a random variable it must be allowed to assume a wide spectrum of values over \(-\infty\) to \(+\infty\). The selection between fixed effect model and random effect model performed more rigorously by applying the Hausman test. In the present case the Hausman test indicated that random effect model is more appropriate.

**TABLE I: Estimation Results of REM (Random Effect Model) Of Equation 1**
From the above result we find that the average intercept value is -2653.97. The coefficient of GDP is 24.17. The p value shows that it is statistically significant. So India’s export to BIMSTEC countries depends on the GDP of the destination countries. The coefficient of ER is -24.67. The p value is less than 0.01. So it is statistically significant. India’s export to BIMSTEC countries has an inverse relationship with exchange rate. The coefficient of DI is positive. But it is statistically insignificant (P value is 0.07). The coefficient of RECE is 33.57. The p value shows that it is statistically insignificant. The coefficient of AWTDEX is negative. The p value shows that it is statistically significant. It indicates that imposed tariff in the destination countries has negative impact on India’s exports. The coefficient of EI is 2.56. The p value shows that it is statistically significant. So India’s export to BIMSTEC countries depends on the regional integration.

**Table II: Cross Section Effect**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bangladesh</td>
</tr>
<tr>
<td>2</td>
<td>Bhutan</td>
</tr>
<tr>
<td>3</td>
<td>Nepal</td>
</tr>
<tr>
<td>4</td>
<td>Sri Lanka</td>
</tr>
<tr>
<td>5</td>
<td>Thailand</td>
</tr>
<tr>
<td>6</td>
<td>Myanmar</td>
</tr>
</tbody>
</table>

In case of Bangladesh, Nepal & Thailand, the effect of different variables concerning India’s export to those countries is positive. On the other hand, the effect of different variables concerning India’s export to Bhutan, Sri Lanka & Myanmar is negative.

**Table III: Estimation results Of FEM (Fixed Effect Model) Of Equation 1**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>24.37</td>
<td>2.40</td>
<td>10.04</td>
<td>0.00</td>
</tr>
<tr>
<td>ER</td>
<td>-25.35</td>
<td>27.77</td>
<td>-0.90</td>
<td>0.37</td>
</tr>
<tr>
<td>DI</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>RECE</td>
<td>-30.74</td>
<td>17.88</td>
<td>-1.70</td>
<td>0.08</td>
</tr>
<tr>
<td>AWTDEX</td>
<td>34.02</td>
<td>9.24</td>
<td>3.08</td>
<td>0.00</td>
</tr>
<tr>
<td>EI</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
</tbody>
</table>

From the above result we find that the average intercept value is -1920.36. The coefficient of GDP is
24.12. The p value shows that it is statistically significant. So India’s export to BIMSTEC countries depends on the GDP of the destination countries. The coefficient of ER is 25.35. The p value shows that it is statistically insignificant. Distance and Economic integration value was not available following use of E-views for the purpose of measuring fixed effect model. The coefficient of RECE is -30.74. The p value shows that it is statistically insignificant. The coefficient of AWTDEX is positive. The p value shows that it is statistically significant.

**Table IV: Hausman Test**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Fixed</th>
<th>Random</th>
<th>Var(Diff)</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP</td>
<td>24.12</td>
<td>24.17</td>
<td>0.08</td>
<td>0.87</td>
</tr>
<tr>
<td>ER</td>
<td>25.35</td>
<td>24.67</td>
<td>0.88</td>
<td>0.47</td>
</tr>
<tr>
<td>RECE</td>
<td>-30.74</td>
<td>-33.57</td>
<td>30.08</td>
<td>0.60</td>
</tr>
<tr>
<td>AWTDEX</td>
<td>28.48</td>
<td>27.28</td>
<td>3.93</td>
<td>0.54</td>
</tr>
</tbody>
</table>

The Hausman test result shows that the p value of Chi-Sq statistic is more than 5%. So we cannot reject the null hypothesis. Therefore we can say that random effect model is appropriate for equation 1.

**Table V: Estimation Results Of REM Of Equation 2:**

From the above result we find that the average intercept value is -485.00. The coefficient of GDP is 11.59. The p value shows that it is statistically significant. So India’s import from BIMSTEC countries depends on the GDP of the destination countries. The coefficient of ER is 1.37. The p value is less than 0.01. So it is statistically significant. India’s import from BIMSTEC countries has a positive relationship with exchange rate. The coefficient of DI is positive. But it is statistically insignificant (P value is 0.07). The coefficient of RECE is 21.10. The p value shows that it is statistically insignificant. The coefficient of AWTDEX is negative. The p value shows that it is statistically significant. It indicates that imposed tariff of India has negative impact on India’s imports. The
Coefficient of EI is -4.32. The p value shows that it is statistically significant. So India’s import from BIMSTEC countries has inversely related with the regional integration.

**Table VI: Cross-Section Effects**

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bangladesh</td>
<td>-323.3828</td>
</tr>
<tr>
<td>Bhutan</td>
<td>-287.4598</td>
</tr>
<tr>
<td>Nepal</td>
<td>-34.75067</td>
</tr>
<tr>
<td>Srilanka</td>
<td>-400.1057</td>
</tr>
<tr>
<td>Thailand</td>
<td>800.2115</td>
</tr>
<tr>
<td>Myanmar</td>
<td>285.4835</td>
</tr>
</tbody>
</table>

In case of Bangladesh, Bhutan, Nepal & Sri Lanka the effect of different variables concerning India’s import from those countries is negative. On the other hand, the effect of different variables concerning India’s import from Thailand & Myanmar is positive.

**Table VII: Estimation Results Of FEM Of Equation 2**

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>-272.75</td>
<td>1004.05</td>
<td>-0.27</td>
<td>0.78</td>
</tr>
<tr>
<td>GDP</td>
<td>11.59</td>
<td>2.52</td>
<td>4.59</td>
<td>0.00</td>
</tr>
<tr>
<td>ER</td>
<td>1.35</td>
<td>23.10</td>
<td>0.05</td>
<td>0.95</td>
</tr>
<tr>
<td>DI</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
</tr>
<tr>
<td>RECE</td>
<td>20.81</td>
<td>157.75</td>
<td>0.13</td>
<td>0.89</td>
</tr>
<tr>
<td>AWTDEX</td>
<td>0.43</td>
<td>0.68</td>
<td>0.66</td>
<td>0.49</td>
</tr>
</tbody>
</table>

From the above result we find that the average intercept value is -272.75. The coefficient of GDP is 11.59. The p value shows that it is statistically significant. So India’s import from BIMSTEC countries depend on the GDP of the destination countries. The coefficient of ER is 1.35. The p value shows that it is statistically insignificant. Distance and Economic integration value not available following use of E-views for the purpose of measuring fixed effect model. The coefficient of RECE is 20.81. The p value shows that it is statistically insignificant. The coefficient of AWTDEX is negative. The p value shows that it is statistically insignificant.

**Table VIII: Correlated Random Effects - Hausman Test**

The Hausman test result shows that the p value of Chi-Sq statistic is more than 5%. So we cannot reject the null hypothesis. Therefore we can say that random effect model is appropriate for equation 2.

**Table IX: Causality between TR & EI**

The direction of causality is from EI to TR is statistically significant (the critical F value is 1.31, df = 156). On the other hand, the direction of causality is from TR to EI is statistically insignificant. It means that it is the economic integration that impacts India’s Trade with BIMSTEC countries over the
Conclusion: We may therefore infer that economic integration through Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation has positive and significant impact on India’s exports to the entire region of BIMSTEC. The study also points to the fact that in future, success of BIMSTEC as a regional trade block will have significant bearing on recent policy adopted by Government of India – Make in India. Though, policies are being continuously formulated to strengthen the integration of BIMSTEC, proper implementation of the policies is crucial to make the economic integration of the region a sustainable one.

References: