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INDIA - SAARC TRADE IN RECOVERING MARKETS: AN AUGMENTED TRADE MODEL

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Abstract

The purpose of the paper was to investigate trade patterns exhibited by Emerging Market Economies like India, by using influential traditional trade models. It examined India's trade with its SAARC partners, as also with the top five trading nations from 2000 to 2012. The Gravity Model was extended. Using time series analysis, a set of regression models was used to assess the effect of augmented gravity indicators and relative factor endowments (Heckscher-Ohlin Theorem) on India's trade. These (extended) traditional models were unable to explain observed trade patterns. The paper recommends an 'Augmented Trade Model', incorporating additional variables influencing trade for overcoming gaps in existing trade models. Additionally, such a model would have important policy implications for encouraging intra-regional trade as an 'engine of growth' in post-crisis recovering markets.

Keywords: Recovering Markets, India-SAARC Trade, Gravity Model, Relative Factor Endowment, Augmented Trade Model

***JEL Code*:** F11, F43.

1. Introduction

There is growing recognition of the role that Emerging Market and Developing Economies (EMDEs) can play in the post-crisis global recovery process, with economic transformation of such countries acting as a source of growth (**Canuto, 2011**). At the same time, with Advanced Economies (AEs) recording sluggish growth, there are fears of a 'Secular Stagnation' in Advanced Economies (**Summers, 2013**). However, the economic transformation of the EMDEs, especially in the last two decades, has been driven by trade especially with the AEs. What are the prospects for trade-led growth in EMDEs, particularly India, amidst such sluggish growth in post-crisis recovering advanced economy countries?

Two influential theories, which explain much of the pattern of trade witnessed, are the Heckscher-Ohlin (HO) theorem and the Gravity Model. The former explains trade on the basis of comparative advantage based on differences in relative factor endowments among nations while the theoretical underpinnings for intra-

regional trade can be found in the **Gravity Model,** the work-horse of International trade analysis.

An important regional grouping in the South Asian region, of which India is a member, is the South Asian Association of Regional Cooperation (SAARC). Can EMDEs of the SAARC- currently dependent on large shares of their trade comprising of advanced economy imports and exports- still rely on trade as an 'engine of growth' **(Lewis, 1980)**? Can there be a case for larger intra-SAARC trade in such a global scenario? It is important to understand the factors affecting such trade, especially in the context of traditional theoretical models of trade.

1.1. India and the South Asian Region

The South Asia region comprises of eight member nations of the SAARC- Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka. With a population of nearly 1.7 billion, SAARC accounts for around a quarter of the world population. However, its share is only about 3 percent of world GDP, 2 percent of world exports and imports and around 1.7 percent of world inward Foreign Direct Investment (FDI). India is the largest country in the SAARC regional grouping, with 75 percent of the population of the region, 63 percent of land area and 81percent of the combined GDP.

Table 1 describes the key demographic and trade related statistics for the SAARC grouping. SAARC economies had shown very high growth rates over the period 2002-2012, averaging 6.78 percent for the group as a whole. They were also characterized by a high degree of market openness as evidenced in their shares of merchandise trade to GDP. Trade in goods as a percentage of GDP has risen from 19 percent in 1994 and contributed to between 30 to 90 percent of their overall income of these nations in 2012. However, it was still well below that of other regions like East Asia and Europe.

Despite such openness of these countries, these countries exhibited extremely tepid performance with regard to trade and investment integration within the region and with the rest of the world. Intraregional trade for the SAARC region stood at a low 2 percent of GDP compared to 40 percent for the South East Asian region. SAARC was one of the least integrated regions in the world. Within SAARC, India's trade with each of its SAARC neighbours, even as late as 2012/13, was not even 1 percent of its total trade. **Table 3** describes India's trade with both advanced nations and SAARC countries for the period 2003/04 to 2012/13. **Table 4** looks at the respective percentage shares of these countries in India's trade (both exports and imports) for the period 2012/13. It is clear that India's trade with SAARC member nations remains woefully inadequate.

Within Intra-SAARC trade, the balance seemed to be skewed in favour of certain nations. For instance, India's export to the remaining SAARC countries was much greater than the corresponding imports from the SAARC region. India, in fact, enjoyed a small but positive trade balance with all its SAARC neighbours.

Further, all SAARC countries exhibited greater trade with non-SAARC nations, especially Advanced Economies. For instance, India's share of trade with the top five nations in 2012- United Arab Emirates, China, US, Saudi Arabia and Switzerland – was very high, above 5 percent each. In fact, India's export to high-income developed economies was 64.5 percent compared to 5 percent to the developing economies within the region.

The degree of openness had increased, especially following the signing of trade treaties

with member countries, facilitating free trade. The South Asian Preferential Trade Agreement (SAPTA) signed in 1993, as also the South Asian Free Trade Agreement (SAFTA) in 2006, sought to encourage higher levels of intra-SAARC trade as well as economic cooperation through removing barriers to the cross-flow of goods. Yet, as **Table 2** indicates, as late as 2013, tariff rates across SAARC countries continued to remain high, especially on agricultural goods. Further, despite the advantages of physical proximity, these economies still choose to trade with the more distant economies, especially the United States and European Union.

As a member country of SAARC, India has been a part of both the SAFTA and the SAPTA. India has also signed several bilateral and preferential trade agreements with other SAARC countries as well- Afghanistan, Bhutan, Sri Lanka and Nepal. These include the India-Sri Lanka Free Trade Area, the Indo-Nepal Trade and Transit Treaty, the India-Bhutan Trade relationship etc.

2. Literature Review

2.1. Trade Theories

The doctrine of free trade and an explanation of the patterns of trade date back to the standard theory of trade, based on Adam Smith's Absolute Advantage Theory and Ricardian Theory of Comparative Advantage. The neoclassical theory of trade-the Heckscher-Ohlin Theorem-was based on the supply side explanation of differences in factor endowments as the basis for mutually beneficial trade. The theory of overlapping demand (**Linder, 1961**) provided an explanation for possible South-South demand and intra-industry trade.

New trade theories explained the pattern of trade and the mutual benefits from trade in terms of three deviants from the old theories, especially the HO theorem- the presence of scale economies, the presence of imperfect markets and product differentiation. This formed the basis for strategic theories of trade **(Brander and Spencer, 1985 in Krugman and Obstfeld, 2012, pp.269-271)**.

The 'Gravity Model', based on Jan Tinbergen's seminal work (1962), stated that the size of bilateral trade flows between any two countries, analogous to the force of gravity between any two planets, was a function of their respective sizes (measured in terms of their GDPs) and their proximity with each other.

The gravity equation was stated as T_{ij}

$$= \alpha+\beta(GDPi \times GDPj) + Ò\ Dij + .!ij.$$

Where:

Tij denotes bilateral trade flows between countries i and j

Dij denotes distance between countries i and j.

GDP_i and GDP_j represent the national incomes of the respective countries.

"Gravity" exists when: $\beta > 0$ and $Ò < 0$.

Simply put, larger the size of the two trading countries and closer they were to each other, greater would be the volume of trade between them.

McCallum (1995) studied 'Border Effects' as affecting the Gravity Model through a comparison of within- Canada and US-Canada trade. He found that trade within Canada between cities located at similar distances and comparable in terms of size was 22 times greater than the corresponding trade between US and Canada. Thus trade barriers had an important role in mitigating the positive effects of gravity. **Anderson and Van Wincoop (2003)** however, estimate a general equilibrium gravity model and apply it to McCallum's "border puzzle". The

reason for McCallum's results, according to Anderson and Van Wincoop, is on account of an omitted variable bias. Other recent works involving the gravity model include those by **Anderson (2010)** and **Chaney (2013).**

However, neither the old nor the new theories took into account the effect of trade on growth. The theme of trade leading to underdevelopment was the subject matter of other theories, which explained the link between trade and underdevelopment in terms of deteriorating terms of trade, low price and income elasticities of the demand in developed countries of the developing country exportables, among others **(Bhagwati, 1958; Prebisch, 1950; Singer, 1950).**

These theories require a re-look in the context of modern international trade characterized by two features:

- One, the secular stagnation in Advanced Economies and the inability of trade with such countries to sustain possible growth rates in EMDEs.
- The second factor pertains to the rise of pluri-lateral and bilateral trading regimes, as also differences in the politico-economic atmosphere in the new millennium. In particular, the preference of nations to enter into bilateral trade agreements with other nations (rather than multilateral trade regimes), the presence of ties based on improved political will, as also exchange control regimes, have emerged as significant factors affecting trade.

2.2. Studies on Factors Affecting Intra-Regional Trade

Several studies have attempted to analyze the impact of factors affecting trade in various regional groupings. A detailed exposition of bilateral trade between countries for commodity for different time periods was attempted by several studies**(Feenstra, Lipsey& Bowen, 1997);Feenstra et al., 2005).**There were studies which found that intra-regional trade in three country groups, namely, European Union, Asia Pacific and North America, was largely on account of geographical proximity as well as the traits associated with proximity (**Krugman, 1991and Summers, 1991**).

Frankel, Stein and Wei (1995) studied the effects of Regional Trade Agreements (RTAs) in the Asia-Pacific region and found that 'gravity' indicators- proximity, adjacency, common language and past colonial connections– could be used to explain the inward bias that East and Southeast Asian economies exhibited among themselves.

Feenstra, Markusen and Rose (2001) used the differences in nature of goods (whether homogeneous or differentiated), as also the presence of barriers to entry, to argue for alternative models.

The specification of the gravity models has been the subject matter of various studies as well.

Santos and Teynrero (2006), in their study, showed that the log-linear form of the gravity model in the presence of heteroskedasticity led to inconsistent estimates. Further, log-linear transformations (or other non-linear transformations) of empirical models posed other problems- they were incompatible with the existence of zeros in trade data. In the presence of heteroskedasticity, they suggested the use of the Poisson pseudo-Maximum Likelihood Estimator (MLE) as a substitute for the standard log-linear model.

Martin and Pham (2008) have used the gravity model allowing for heteroskedasticity and zero bilateral trade flows. They used Monte-Carlo

Simulations to estimate the extent to which different estimators can deal with the resulting parameter biases.

Ekanayke et al. (2010) used the gravity model to estimate the trade creation and trade diversion effects of various RTAs on trade flows among 19 Asian Developing countries, as also the effect of RTAs on members' trade with other Asian countries. They found that regional trade blocs do support the theoretical model, based on gravity, explaining the pattern of trade.

Garcia, Pabsdorf and Herrera (2013)applied the gravity model to 75 MERCOSUR countries for the period 1980-2008 using augmented variables. They found that the formation of MERCOSUR had positive but moderate impact on the trade among these countries.

3. Statement of the Problem

While the period 2000-2012 witnessed tremendous spurts in the flow of South Asian Association of Regional Cooperation (SAARC) merchandise trade with the rest of the world, especially Advanced Economies, there was very little intra-SAARC trade. While one theory had attributed patterns of trade to Gravity variables, the Heckscher-Ohlin Theorem of Tinbergen (1962) attributed trade to differences in relative factor endowments. While these models had been used to explain trade in certain cases, they failed to explain the lack of trade among the closely located SAARC countries. With Advanced Economies experiencing a slump, it is important to look at intra-regional trade, especially intra-SAARC trade.

4. Objectives of the Study

This paper thus looks at the issues relating to intra-SAARC trade in the context of two influential trade theories- the Heckscher-Ohlin Theorem and Gravity Model. In an age where the relevance of multilateral trading regimes is being questioned and there is resurgence in plurilateral/bilateral agreements, such research would provide the basis for re-orienting Asian EMDE trade away from its current propinquity towards Advanced Economies, and towards greater intra-regional trade and support. Since India is one of the largest contributors to overall SAARC trade, it addresses the following main research questions:

- What explains the pattern of trade exhibited by India with SAARC countries vs. the Rest of the World?
- Can there be a case for incorporating variables other than Gravity and Relative Factor Endowments in explaining such a trade?
- What would be the policy implications of such an 'Augmented Trade Model'?

The ultimate objective of the study is to see how greater intra-SAARC trade can be used as an instrument for growth in a scenario of recovering markets, with particular emphasis on India.

5. Need for the Study

The augmented gravity models, including those incorporating the Heckscher-Ohlin framework **(Deardoff, 1998; Evenett and Keller, 1998)** fail to explain the lack of economic integration witnessed among the SAARC countries. While recent studies on MERCOSUR countries (**Garcia, Pabsdorf and Herrera, 2013)** found that the effect of the agreement on trade was positive (albeit moderate), the same was not found in the case of SAARC countries. Despite RTAs in the nature of SAPTA and SAFTA, the trade among SAARC countries remains abysmally low. Extant theories fail to explain the low levels of economic integration witnessed within SAARC. Can there be reasons why despite the presence of favorable gravity factors, SAARC countries'

intra-regional trade is low? An understanding of such factors and a mitigation of such trade-reducing factors can lead to a re-emergence of South-South Trade as an engine of growth in such Asian economies, despite the sluggish growth in the AEs.

6. Research Framework and Methodology

India's trade with its SAARC partners, as also with the Rest of the World was modeled as a function of factors posited by the 'Gravity' as well as the neoclassical 'Relative Factor Endowments'. We extended the model of **Ekanayke et al. (2010)**, which estimated the trade creation and trade diversion effects of various RTAs on trade flows among 19 Asian Developing Countries, as also the effect of RTAs on members' trade with other Asian countries. Further, we considered trade with both SAARC countries which were close as well as with the top trading partners.

The dependent variable considered in the model was the trade (imports + exports) of the reporting country 'i' (India) for the period 2000-2012. The explanatory variables considered were:

1. The GDP of the two trading nations, i and j- GDP_i and GDP_j. This reflected the size of the two nations. Larger the GDPs, larger would be the volume of trade.
2. The population of the two countries, POP_i and POP_j was another variable reflecting size. Larger the population of the two countries, larger the trade between them.
3. The distance between the two trading countries ($DIST_{i,j}$). Larger the distance between the two trading countries, lower would be the trade between them.
4. Borders ($BORD_{i,j}$) The existence of shared land borders among trading nations would have a positive impact on trade by reducing transportation costs. Border was modeled as a dummy variable, taking a value 1 in case of a contiguous border and 0 otherwise.
5. Regional Trade Agreements- The existence of regional trade agreements should have a positive impact on trade by reducing restrictions. Two kinds of regional trade agreements were distinguished between- a) Free Trade Agreements and Free trade and Economic Integration Agreements (FTAij) and b) Partial Scope Agreements (PTAij). The former would have a greater positive impact on trade than the latter. Rather than modeling RTAs as dummy variables as is the practice in extant literature, the number of such RTAs were considered.
6. Bilateral Trade Agreements-Two types of bilateral trade agreements were distinguished between other SAARC nations (BTA_S) and with non-SAARC nations (BTA_{NS}). Both types of bilateral trade agreements would have a trade diversionary effect on trade with the nation. Again, the number of such agreements was considered.
7. Relative Factor Endowments ($RFE_{i,j}$)- The relative factor endowments were measured by the capital-labor ratios in the two countries. According to the HO theorem, a difference in the relative factor endowments would affect trade positively.

Variables 1-4 represent the traditional Gravity indicators. This study considered additional gravity variables, namely, Regional Trade Agreements and Bilateral Trade Agreements. Consequently, variables 1-6 represent the Augmented Gravity indicators while variable 7 represents the Relative Factor Endowments (in line with the Heckscher-Ohlin Theorem).

6.1 The Model

Simple OLS, based on time series data, was used to study the effect of the augmented gravity model and RFE variables on bilateral trade between India and each of the remaining SAARC country partners, as also the top five trading nations.

The following equation describes our model:

$$\log(X+M)ij = bo + b1\log(GDPi) + b2\log(GDpj) + b3\log(popli) + b4\log(poplj) + b5\log(Dij) + b6\log(RFEij) + b7Borderij + b8FTAij + b9PSAij + b10BTA_S + b11BTA_{NS} + + e_t$$

Using dummy variables in a simple OLS led to problems of singularity. Also, the data for tariffs ran into problems of singularity. Hence, the OLS was run using the following explanatory variables: GDPi, GDPj, Population i, Population j, Relative Factor Endowments between i and j, Number of Free Trade Agreements between i and j, Number of Partial Scope Agreements between i and j, Number of bilateral Trade Agreements between i and other SAARC countries (other than j) and Bilateral Trade Agreements between i and non-SAARC countries.

Relative Factor Endowment was calculated as:

RFE_{ij} = Country i Capital-Labour ratio/ Capital j Capital Labour ratio

Since there was strong evidence of heteroskedasticity, consistent variance-covariance standard errors of the regression coefficients were derived using the Huber-White consistent variance-covariance estimator.

6.2 Hypotheses

The paper sought to test the following null hypotheses.

NH1: There is no significant effect of gravity indicators on trade between India and its SAARC partners.

NH2: There is no significant impact of differences in relative factor endowments on trade between India and its SAARC partners.

NH3: There is no significant impact of gravity indicators on trade between India and its top five trading partners.

NH4: There is no significant impact of differences in relative factor endowments on trade between India and its top five trading partners.

6.3 Sample Selection

This paper considered India's trade with the remaining seven SAARC partners, as also India's trade with its top five trading partners- USA, China, Switzerland, United Arab Emirates and Saudi Arabia.

6.4 Data Collection and Period of Study

Various databases such as the UNCOMTRADE statistics (for GDP and population), UNCTAD Handbook of Statistics and IMF World Economic Outlook database for Distance and other gravity indicators, Penn World Tables for the data pertaining to Return on Factor Employed (RFE) were used to carry out the analysis. The period considered for the study was 2000-2012.

6.5 Tools Used For The Study

The regressions for India vs. each of the remaining seven SAARC partner countries were run using the package 'R'. Next, these regressions were run for India's top five trading partners- USA, China, Switzerland, United Arab Emirates and Saudi Arabia.

7. Limitations

A longer time frame would have given a better picture of the factors affecting trade. However, lack of data availability, for certain variables considered under the Augmented

Trade Model, acted as a constraint in extending the period of study.

8. Empirical Results And Analysis

The results of the OLS regressions, run on India vs. its SAARC trading partners, are captured in **Table 5.**The coefficients of the nominal GDP exhibited the expected positive sign for all countries (except Bangladesh). Theory posits population coefficients to carry negative signs. Mixed results for population coefficients were, however, obtained. While a high Indian population would cause trade to be lower, as exhibited in most cases, population coefficients carried a negative sign only in the case of Maldives and Pakistan. This may have to do with their lower domestic potential to satisfy demand. As noted earlier, the share of India's exports was far greater in the share of total trade of smaller countries like Bhutan, Nepal, Sri Lanka, Afghanistan and Bangladesh.

Next, turning to Regional Trade Agreements (RTAs), the number of such Regional Trade Agreements was considered, as compared to extant literature which modeled such RTAs as dummy variables. Bilateral Free Trade agreements between countries i and j would be expected to have a greater positive impact on trade (Trade Creation Effect) than partial trade agreements. The former was true for only two countries- Bangladesh and Sri Lanka. Results for Partial Trade Agreements were not obtained on account of the presence of singularities.

Finally, bilateral trade agreements with other SAARC or other non-SAARC countries could be expected to negatively impact trade between country i and country j(Trade Diversion Effect). Again, mixed results were noticed, with the negative sign being obtained in most but not all cases.

Thus the null Hypothesis H1 that there is no significant effect of gravity indicators on trade between India and its SAARC partners, was accepted by the study.

A high relative factor endowment was expected to have a positive impact on trade. This was true, however, for only three countries- Maldives, Pakistan and Sri-Lanka. For three countries, the sign of the coefficient was negative while for Afghanistan, the RFE data were unavailable. None of the results was significant.

Thus, null hypothesis H2 that there is no significant effect of differences in relative factor endowments on trade between India and its SAARC partners, was also accepted by the study.

These regressions were then run for India's trade with its top five trading partners- US, China, Switzerland, United Arab Emirates and Saudi Arabia. The period considered was the same, viz. 2000-2012.The results of the OLS regressions are captured in **Table 6**.

Significant results were seen in the case of trade with China, UAE and Saudi Arabia in terms of gravity indicators. However, the results did not completely follow theoretical predictions in this case either.

Null hypothesis H3 that there is no significant effect of gravity indicators on trade between India and its top trading partners, was rejected.

Significant results were seen in terms of RFE data for the top trading partners - China, UAE and Saudi Arabia. Thus the null hypothesis H4 that there is no significant effect of differences in relative factor endowments on trade between India and its top trading partners, was also rejected by the study.

9. Findings and Suggestions

The study found that India's trade with its SAARC partners was low despite favorable gravity indicators. None of the variables associated with the Augmented Gravity Model or the HO Theorem was significant in explaining bilateral trade between India and its SAARC partners. Thus trade between India and its SAARC partners did not fit the existing literature of Gravity Model or HO Model. The same was true for trade between India and its top five trading partners.

The reasons for low intra-regional trade despite favourable gravity indicators such as proximity, may be due to several factors.

One reason for this anomaly is the difference in the size of economies within the SAARC grouping. For instance, while small economies like Bhutan, Nepal and Sri Lanka had a large proportion of imports coming from India, India's share of exports to these countries was an insignificant proportion of its total exports.

Another issue was the similarity in the basket of goods produced by the SAARC nations. While consumption patterns are expected to be quite similar in the region, the goods produced were also similar and comprised chiefly of low quality manufactured goods, apart from fuel and food. Thus, India's chief export commodities went primarily to the developed economies, with the exception of commodities like rice, cotton yarn and fabrics, spices and oil meals, apart from some engineering goods. These commodities went chiefly to Bangladesh and Sri Lanka.

Again, despite their proximity to each other, as also the forging of a Preferential Trade Agreement, SAARC countries have shown preference to trade with certain countries/ regions due to cultural, ethnic and religious affinity. Pakistan, for instance, has a large proportion of trade with Middle East and African Islamic countries.

Other factors inhibiting intra-regional trade have included the lack of political willingness, high tariff and non-tariff barriers, as also exchange rate controls.

Hence the study suggests an Augmented Tade Model that would include additional variables such as political will and exchange controls. A major factor affecting trade even among countries sharing borders is the existence of political will. Proxies for such a variable could be the number of days it takes to get a visa, the number of items in the negative list of imports, number of items in the sensitive list, grant of an MFN status, as also presence of regulatory procedures which increases the transportation and transaction costs of trading in the country. The presence of exchange controls would also have an impact on the trade among countries. Exchange controls can be incorporated as a dummy variable, with flexible exchange rate regimes taking the value '0'.

This model, resulting from the incorporation of additional variables, is termed the Augmented Trade Model.

10. Conclusion

With high population figures, as also high rates of average annual growth rates of income, the SAARC countries present tremendous potential for growth in trade. The prevalence of political differences in the past has prevented the possibility of working towards improving trade relations, despite multilateral agreements like the SAPTA and SAFTA. There have been economic restrictions and constraints as well- notably exchange rate controls, weak demand and similarity in trade baskets.

While the SAARC economies are constrained by the size of their national incomes, it is clear that the high rates of growth of their GDP as well as their relative openness, pose tremendous potential for growth in trade within the region. The Gravity Model may still provide a rationale for increasing trade within the region. However, there are variables other than gravity variables to explain the pattern of such intra-SAARC trade. For such a trade to grow, factors such as greater bilateral agreements, greater political will, lesser restrictions and non-tariff barriers may play a far greater role. It is time the Gravity Model is revisited and made to work in favour of Asian trade through extending it to include other relevant variables.

This paper attempted to highlight the limited role of augmented gravity model indicators in explaining trade within certain regions of the world. Contrary to theory, such countries exhibit patterns which may compel a relook at extant literature. The Augmented Trade Model is one such attempt in refining the theory.

11. Scope for Further Research

The paper points to the direction future research may take in incorporating some of these variables in more refined versions of theory. The scope of future research may include panel regression incorporating all the variables and country-specific dummies. Preliminary tests for the other SAARC countries' bilateral trade throw up results similar to the India case- lack of significance of the traditional variables in explaining trade of the countries comprising the region in terms of extant theory. Such detailed analyses can be carried out for all the SAARC countries as well. The paper thus points to the need for research that may point to the true factors constraining intra-regional trade among SAARC countries, in a manner which deviates from extant trade theories. The policy implications of such research are wide. It may be time for a shift in the trade arc in the form of a 'Look Asia' policy. Greater SAARC economic cooperation and economic resilience, as originally envisaged, may be in favour of all the countries concerned, not just India.

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Table 1: Key Statistics of SAARC Countries at a Glance (2012)

Country	Population, mid year (millions)	Population growth rate (%)	GDP (US $ billion)	Av annual growth rate of GDP in 2012 (2002-2012)	Merchandise Trade as a % of GDP	Export of goods and services	Import of goods and services
Bhutan	0.74	1.8	1.8	9.4(8.7)	90.5	34.6*	52.7*
Afghanistan	29.8	2.5	20.5	14.4(9.4)	32.0	5.5	39.2
Bangladesh	154.7	1.1	116.4	6.2(6.2)	50.9	23.2	32.1
India	1236.7	1.3	1858.7	4.7 (8.0)	42.1	24	30.7
Nepal	27.5	1.2	19.0	4.9 (4.3)	39.3	34.9	33.4
Maldives	0.34	1.9	2.2	3.4 (7%)	84.1	105.8	106.8
Pakistan	179.2	1.8	225.1	4.0(4.3)	30.5	12.3	20.3
Sri Lanka	20.3	0.4	59.4	6.4(6.4)	48.1	22.8	36.5
South Asia	1649	1.4	2370 (GNI US $billion)				

Source: World Bank, Retrieved on February 15, 2015 from http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:21085384~pagePK:64214825~ piPK:64214943~theSitePK: 469382,00.html.

Table 2: Tariff Rates in SAARC Countries, 2013 (in %), Simple Average of *Advalorem* Duties

Country	All Goods	Agricultural Goods	Non-Agricultural Goods
Bhutan	N.A.	N.A.	N.A.
Bangladesh	169.2	192	37.3
Afghanistan	N.A.	N.A.	N.A.
India	48.6	113.1	34.5
Nepal	26.0	41.5	23.7
Maldives	36.9	48.1	35.1
Pakistan	59.9	95.6	54.6
Sri Lanka	30.2	50.0	19.7

Source: WTO statistics, Retrievedon February 8, 2015 from http://stat.wto.org/TariffProfile/WSDBTariffPFView.aspx?Language=E&Country=AF,BD,IN,MV,NP,PK,LK.

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Table 3 : India's Direction of Foreign Trade (US $ Million)

		DEVELOPED COUNTRIES							SAARC							
	EXPORT/ IMPORT	All EU Countries	China	U.S.A	Switzerland	Saudi Arabia	U.A.E.	Total SAARC	Afghanistan	Bangladesh	Bhutan	Maldives	Nepal	Pakistan	Sri Lanka	Total Trade
2003-04	Export	14717.0	2955.1	11490.0	449.9	1123.3	5125.6	**4148.1**	.	1740.7	89.5	42.3	669.4	286.9	1319.2	**63842.6**
	Import	17539.6	4053.2	5034.8	3312.7	737.8	2059.8	**668.8**	.	77.6	52.4	0.4	286.0	57.6	194.7	**78149.1**
2004-05	Export	18713.0	5615.9	13765.7	540.9	1412.1	7347.9	**4440.7**	.	1631.1	84.6	47.6	743.1	521.1	1413.2	**83535.9**
	Import	22385.0	7098.0	7001.4	5939.9	1301.2	4641.1	**950.2**	.	59.4	71.0	0.6	345.8	95.0	378.4	**111517.4**
2005-06	Export	25151.3	6759.1	17353.1	479.5	1809.8	8591.8	**5547.6**	142.7	1664.4	99.2	67.6	860.0	689.2	2024.7	**103090.5**
	Import	26805.9	10868.0	9454.7	6555.8	1632.3	4354.1	**1413.3**	58.4	127.0	88.8	2.0	379.9	179.6	577.7	**149165.7**
2006-07	Export	29832.3	8293.9	18866.1	466.5	2588.2	12032.1	**6469.5**	181.7	1627.9	57.5	68.7	928.5	1349.6	2255.6	**126414.1**
	Import	34490.2	17460.6	11736.1	9123.4	13383.9	8657.5	**1507.3**	34.5	228.5	141.4	3.1	306.0	323.3	470.6	**185735.2**
2007-08	Export	38413.7	10828.8	20712.0	615.0	3706.5	15626.9	**9617.2**	248.9	2916.8	86.6	89.6	1506.1	1944.2	2825.2	**162904.2**
	Import	38965.3	27102.4	21019.3	9828.7	19401.1	13470.5	**2111.4**	109.2	257.0	194.4	4.1	627.7	287.8	631.1	**251439.2**
2008-09	Export	42274.6	9275.6	20972.3	766.5	4987.7	23966.3	**8440.5**	396.5	2460.9	110.6	128.3	1555.4	1420.3	2368.5	**185295.0**
	Import	35922.2	32092.9	18441.5	11458.9	19513.1	23030.8	**1796.9**	128.8	308.4	149.6	3.9	490.4	362.8	353.0	**303696.3**
2009-10	Export	38348.3	11532.5	19479.4	586.9	3910.4	23891.2	**8356.5**	464.5	2424.2	118.2	79.8	1528.4	1572.6	2168.8	**178751.4**
	Import	46026.3	30783.8	16985.4	14592.6	17002.2	19349.2	**1651.8**	124.4	254.1	152.4	3.6	452.4	275.0	389.9	**288372.9**
2010-11	Export	44505.5	15454.3	25286.6	689.5	4674.1	33770.3	**11636.5**	421.6	3237.9	175.9	100.0	2166.4	2031.3	3503.4	**251136.2**
	Import	52574.2	43474.1	20051.2	24743.9	20379.6	32729.3	**2170.2**	145.3	445.9	201.3	31.9	513.4	332.3	500.1	**369769.1**
2011-12	Export	58465.1	18293.8	34737.9	1102.1	5677.5	35947.0	**13364.8**	506.9	3836.7	230.5	124.7	2739.9	1554.2	4371.9	**305963.9**
	Import	50320.3	57592.2	24475.4	32370.0	31164.6	35708.7	**2602.8**	129.7	582.7	203.4	19.2	550.8	400.2	716.9	**489319.5**
2012-13	Export	53067.5	13505.5	36121.9	1117.9	9780.1	36338.3	**14759.4**	472.1	5122.4	200.8	122.4	3028.6	1837.1	3976.0	**300570.6**
	Import		54313.8	24260.7	29831.0	33350.2	38429.0	**2604.5**	114.7	630.2	152.0	7.4	527.1	512.6	660.5	**491487.2**

Source: RBI, Handbook of Statistics on the Indian Economy, 2013-14. Accessed from http://www.rbi.org.in/scripts/PublicationsView.aspx?id=15925, retrieved on February 20, 2015.

Table 4 : Percentage Share of SAARC vs. Top Partner Countries in India's Trade for 2012/13 (in US $ Million)

Country	(% Share in India's Exports)	Import (% Share in India's Imports)	Total Trade (% Share in India's Total Trade)
Share of SAARC Countries			
Afghanistan	0.16	0.03	0.08
Bangladesh	1.71	0.13	0.73
Bhutan	0.08	0.03	0.05
Maldives	0.04	0.00	0.02
Nepal	1.03	0.11	0.46
Pakistan	0.69	0.11	0.33
Sri Lanka	1.33	0.13	0.58
Share of Top 5 Partner Nations			
China	4.51	0.65	8.32
USA	12.04	5.14	7.76
UAE	12.09	7.98	9.54
Saudi Arabia	3.26	6.93	5.53
Switzerland	0.37	6.55	4.21

Source: Government of India, Ministry of Commerce and Industry, Department of Commerce Accessed from http://www.commerce.nic.in/eidb/, retrieved on February 19, 2015.

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Table 5: Bilateral Trade between India and SAARC

Variable	India-Afghanistan	India-Bangladesh	India-Bhutan	India-Maldives	India-Nepal	India-Pakistan	India-SriLanka
Constant	139.6879883 (652.1550285)	-1.128761e+03 (2718.1770421)	224.9272 (185.8429426)	172.48463241 (374.7208369)	46.43581401 (207.2098543)	-44.20387408 (101.6959133)	164.7171340 (632.4686912)
ln GDP_{IND}	0.2437149 (1.5957033)	-2.838227e-01 (4.1777008)	0.3156605 (1.7364346)	1.73129663 (1.9431759)	1.93933908 (1.6781945)	0.27752426 (2.6500910)	0.9799172 (3.3347583)
$lnGDP_j$	1.0816971 (1.3915763)	-1.156929e+02 (315.4179868)	-1.3426531 (2.0009872)	21.29989761 (45.0659609)	0.85768123 (2.9956220)	1.08385350 (1.2528848)	0.2915861 (4.5318324)
ln POP_{IND}	-25.8700677 (112.5296587)	1.342925e+02 (302.9625879)	-27.5967671 (25.7189383)	-19.51102917 (45.6100251)	-10.21287771 (45.5472190)	27.93158840 (35.1919306)	-62.4888832 (199.2059457)
$lnPOP_j$	17.8673244 (42.5060151)	1.124879e+02 (306.3595237)	35.2108051 (14.2744977)	-0.33812113 (3.3066492)	9.95769350 (35.1993233)	-26.83339869 (26.7876239)	97.0398481 (262.7720296)
RFE_{ij}	Data unavailable	-6.560875e-02 (4.1211689)	-1.6149777 (9.4938223)	1.24011626 (4.3001626)	-4.56270133 (6.8895821)	5.80075621 (7.0647032)	0.1314276 (7.4068492)
FTA_{ij}	NA	1.729579e-01 (0.9587018)	-0.2156179 (0.1285688)	-0.10779704 0.5991172	-0.31601923 (0.5281251)	-0.11118038 (0.5122072)	0.2163532 (0.6439829)
PSA_{ij}	NA	5.907142e-01 (2.0813085)	NA	NA	NA	NA	-0.2307556 (0.9427796)
BTA_s	-0.3350608 (0.4920298)	-3.547825e-01 (0.5974333)	0.1279709 (0.2951192)	-0.08360949 (0.6222030)	0.01397836 (0.4959083)	-0.08991922 (0.2672121)	-0.3257308 (0.7914111)
BTA_{NS}	-0.2945858 (0.3446738)	-8.737107e-02 (0.4825380)	0.1188588 (0.1465635)	-0.19399737 (0.2121003)	-0.09243357 (0.1769251)	-0.22932165 (0.1300183)	0.2224953 (0.4139218)
Res Std. Error	0.2131 on 6 degrees of freedom	0.1836 on 3 degrees of freedom	0.2515 on 4 degrees of freedom	0.09631 on 4 degrees of freedom	0.1298 on 4 degrees of freedom	0.1982 on 4 degrees of freedom	0.1341 on 3 degrees of freedom
Multiple R^2	0.9756	0.972	0.9783	0.9929	0.9875	0.9866	0.9907
Adjusted R^2	0.9511	0.8878	0.9349	0.9786	0.9624	0.9599	0.963
F-Statistic	39.91 on 6 and 6 DF	11.55 on 9 and 3 DF	22.52 on 8 and 4 DF	69.45 on 8 and 4 DF	39.42 on 8 and 4 DF	36.93 on 8 and 4 DF	35.67 on 9 and 3 DF
p-value	0.0001407	0.03436	0.004514	0.0005037	0.00153	0.001738	0.006779

Source : Author calculations

Table 6: Bilateral Trade between India and Top Trading Partners

Variable	India-USA	India-China	India-Switzerland	India-UAE	India- Saudi Arabia
Constant	-53.35275975 (223.2295727)	-2.401342e+03* (2591.1606666)	54.6672584 (82.2336130)	-110.0948703* (57.6990149)	387.5525 (677.5677482)
ln GDP_{IND}	-0.58822176 (1.6910131)	1.840606e+00* (1.5938001)	3.3900203 (1.7875621)	0.8071476 (1.2339276)	1.3067 (4.8460012)
lnGDP_j	2.97904384 (2.2852580)	-4.403569e-01" (2.7186354)	-0.3152735 (1.3873709)	0.5180272 (1.0628846)	4.3370* (2.1171130)
ln POP_{IND}	-13.29844958 (83.3445843)	-1.863325e+02* (306.7007042)	-12.0411497 (17.9397804)	17.9478744* (9.0716823)	-63.2648 (112.2599127)
lnPOP_j	26.62846624 (134.4543043)	5.186668e+02* (656.6554418)	11.1411079 (22.9690821)	-0.5189133 (1.0620541)	15.0464 (53.1748021)
RFE_{ij}	1.64951310 (7.0778380)	-1.143106e+00 (14.4947551)	-3.2143756 (3.2339493)	Data not available	1.4085879 (10.9052369)
FTA_{ij}	NA	NA	NA	NA	NA
PSA_{ij}	NA	-2.421574e-01 (0.7464860)	NA	NA	NA
BTA_s	-0.17314888 (0.2552428)	8.087045e-02 (0.3097255)	0.1385372 (0.3846685)	0.1702220 (0.3404540)	0.5825469 (0.9886235)
BTA_{NS}	0.04185289 (0.2552714)	2.870936e-02 (0.3549718)	0.1238130 (0.1358757)	-0.2112434* (0.0972665)	-0.3292267 (0.3635215)
Res Std. Error	0.06656 on 5 degrees of freedom	0.07185 on 4 degrees of freedom	0.1543 on 5 degrees of freedom	0.1494 on 6 degrees of freedom	0.2792 on 5 degrees of freedom
Multiple R^2	0.9944	0.9989	0.9863	0.9931	0.9821
Adjusted R^2	0.9866	0.9967	0.9672	0.9863	0.9569
F-Statistic	127 on 7 and 5 DF	447.5 on 8 and 4 DF	51.52 on 7 and 5 DF	144.8 on 6 and 6 DF	39.09 on 7 and 5 DF
p-value	2.515e-05	1.243e-05	0.0002318	3.192e-06	0.000454

Source: Author calculations

Note: The standard errors of the regression coefficients have been derived using the Huber-Whiteconsistent variance-covariance estimator. Statistical significance is denoted by the following codes:

0 '*' 0.001 '**' 0.01 '*' 0.05 '" ' 0.1 ' ' 1.**