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Does Regionalism Hinder Multilateralism: a Case Study of India

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Abstract

Today many developing countries fear that regional movements in other parts of the world will adversely impact their trade as regionalism overtakes multilateralism. The response has been that most of them are trying to get into one regional bloc or the other via regional trade arrangements (RTAs). In this paper we have investigated how India as a non-member country is affected by formation of RTAs like ASEAN, EU, NAFTA, and MERCOSUR. Controlling for non-RTA factors that influence exports, we find that India's exports to these RTAs seem to be affected not by the formation of these RTAs per se but by demand side factors.

- **JEL Classification :** F15, F51
- **Key Words:** regional trade arrangements, regionalism, multilateralism, non-member countries, external trade creation, trade diversion

I. Introduction

As is now well known, Article XXIV of GATT was formulated with the objective of promoting regional free trade arrangements (RTAs) or, at least, not

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excluding countries which were already part of existing preferential trade arrangements. Examples like Benelux and the European Economic Community come readily to mind. Since these are obvious violations of the MFN clause underlying GATT, some exception to allow for such arrangements was necessary. However the stipulation in Article XXIV that members of such RTAs could not raise their tariffs above pre-RTA levels ensured that multilateralism could proceed apace.

The logic of Article XXIV must then lie in the international political economy of trade liberalisation. As the theory of second best tells us (see, for example, Lipsey and Lancaster (1956-57), Lipsey (1957), Meade (1955)) it is not possible to argue that limited free trade is better than no trade though both are inferior to multilateral free trade. In other words, the case for Article XXIV must rest on the ground that a series of smaller regional movements may pave the way for multilateral free trade. More importantly, for many countries RTAs are a method of locking in free trade policy reforms which are difficult to sell politically at the multilateral level. To that extent, it can be argued that regionalism helps multilateralism rather than act as a stumbling block.

The welfare arguments of RTAs rest on Viner's well known distinction between trade creating and trade diverting custom unions (see, Viner, 1950). More generally, if efficiency driven trade creation within an RTA is larger than similar trade diverted from the non-RTA countries (who face a tariff disadvantage vis a vis the RTA member countries) then an RTA could be welfare increasing for the RTA as a whole. This itself is questioned by some authors (see, Lipsey, 1958). In any case, the welfare arguments in the Viner tradition are obviously a function of the tariff levels: the higher the tariff levels in the world prior to the RTA the greater the likely Vinerian benefits of an RTA (see, Bhagwati and Panagariya, 1996).

Yet, the history of RTAs reveals something different. The highest tariffs on world trade were in the period 1950-75 with world tariffs dropping in most of the developed countries after 1980 or so (see, Bhagwati, 1992). In fact, by 1990, world tariffs were lower than ever before in the period after the Great Depression. Hence, one should have seen most RTA agreements taking place during the period of high tariffs. In fact, the explosion of RTAs came after 1990 or so and during the build up to the Uruguay round (UR) agreement of 1995. According to the World Bank report on 'Global Economic Prospects' (2005), around 230 new RTAs have been notified to WTO since 1990 to late 2004.. What is even more interesting is that over seventy percent of these RTAs involved some developing country and nearly

40 percent of global trade is taking place between partners. Many developing countries were members of more than one RTA and some RTAs involved only developing countries.

It must be remembered that prior to the UR, the 'non-reciprocity clause' made it unnecessary for developing countries to worry about tariff negotiations under the GATT. The non-reciprocity clause, introduced as a concession to the less developed countries (LDCs) during the Tokyo round of trade negotiations in the late 1970s, exempted LDCs from offering reciprocal tariff cuts in response to tariff cuts effected by the developed countries (DCs). However, the 'single undertaking' of the UR ended this reciprocity. This clause, introduced during the UR negotiations of 1995, required that a country signatory to any agreement was automatically committed to all agreements signed under the WTO irrespective of whether that country was signatory to all or only specific agreements(for some details see, Pant, 2002). The consequence was that after 1995, a country could not unilaterally opt out of tariff cutting agreements and had to make some offers during trade negotiations.

The proliferation of the RTAs after 1990 could thus be a defensive response to multilateralism. However, in LDCs in particular with very high tariff levels, tariff cuts as part of multilateral agreements could be difficult to sell politically. On the other hand, tariff cuts negotiated among similar countries in RTAs could be easier to sell politically and be a preparation for impending multilateralism. It is a common article of faith in developing countries that reciprocal tariff cut agreements with other developing countries does not arouse the same political passions as similar agreements with DCs.

While the political logic for the spate of RTAs after 1990 is not difficult to understand, it has also been argued that RTAs are a defensive economic response to exclusion from other markets. This has, for example, been the justification for India negotiating a whole spate of RTAs in the last few years. This therefore begs the question whether an RTA necessarily implies trade exclusion to non-member countries and hence necessitates a counter RTA. Existing literature has mainly looked at the issue of the welfare gains to members of an RTA after formation of a regional grouping. What is however less studied is what impact an RTA has on the trade of non-member countries. This is the question that this paper seeks to address.

This paper is organized as follows. The next section presents a brief overview of the developments of the principal RTAs which impact on India's trade and India's

own initiatives in this regard. Section III deals with a brief literature review of the economic impacts of an RTA. This is followed in Section IV by a discussion of the methodology used in our analysis, data sources and our main results. Finally, some concluding observations are given in Section V.

II. Overview of RTAs

Like many other developing countries, India too has been negotiating RTAs with a large number of developing countries and trading blocs. A broad overview of the various RTAs India has contracted or is in the process of contracting is given in Appendix A. An inspection of Appendix A indicates that the operating RTAs cover most of India's trading partners in South and South East Asia, Europe, Latin America and North America. However, as India has been a late starter in this regard, it is also clear that the only RTA actually in operation for some time is the bilateral agreement concluded with Sri Lanka. Of the rest, only the RTA with ASEAN has seen closure at the end of 2008 with implementation to begin from 2009. The SAFTA is now in operation but it accounts for only a small part (around 5 percent in the year 2006-07) of India's total exports. The other operative RTA is the CECA with Singapore which was quickly concluded mainly because investment and services are of importance to India while Singapore does not have a significant manufacturing base. Thus Singapore's principal exports to India of Machinery and Transport Equipment accounted for only about 5 percent of India's imports of these items in 2006.

However, for our study what is more important is how the formation of an RTA would impact India's exports if India remained outside of that RTA. For our study we have looked at four RTAs: ASEAN, MERCOSUR, NAFTA and EU. Table 1 gives us regional share of India's total exports. The share of India's total exports to these four regions was around 40 percent of its total exports to the world in the year 1985, going upto around 55 and 49 percent in the years 1995 and 2006, respectively. As nearly a half of India's total exports go to these four regions, so any policy changes like formation of RTAs in these regions might have some impact not only on India's exports to these regions but also India's total exports to the world. Among the four regions, EU and NAFTA accounted for 37.7 percent and 39 percent respectively of India's total exports in the year 1985 and 2005. That means among the four regions, EU and NAFTA are India's major export destinations. For ASEAN the share of India's total exports increased significantly

Table 1. Share (%) of India's Total Exports to Different Regions

Region \ Year	1985	1995	2006
ASEAN	2.51	8.61	9.97
NAFTA	19.37	18.5	16.23
EU	18.33	27.47	21.21
MERCOSUR	0.04	0.45	1.36
Total	40.26	55.04	48.78

from 2.51 percent to 10.11 percent between 1985 and 2005. For MERCOSUR the share is not significant but among four member countries, Brazil had a share of around 70 and 83 percent of India's exports to MERCOSUR in the year 1985 and 2006 respectively. This implies that Brazil alone accounts for a majority of MERCOSUR's imports from India.

In addition, each has been in operation for some time allowing us to assess the impact on India in an econometric model. Finally, the RTAs range from simple Free Trade Agreements (FTAs) like ASEAN and NAFTA to the full economic integration of the EU which has progressed from a customs union to an economic union of member countries and hence constitutes the most integrated form any RTA could take. The details of these four RTAs are given in Appendix B.

III. Literature Review

As we have already noted earlier, the theoretical literature on RTAs has largely concentrated on the gains or losses to member countries. Thus, Viner (1950) initiated the concepts of 'trade creation' and 'trade diversion' to describe the welfare implication of an RTA. In Vinerian framework a union is assumed to be small in terms of its share in world trade and unable to impact on international terms of trade through trade creation and trade diversion effects of an RTA formation. Therefore formation of an RTA cannot affect the rest of the world's welfare. This implies a non-member countries' welfare is unaffected by the formation of an RTA. Later Meade (1955) extended the Vinerian logic in a more general equilibrium framework allowing for changes in international terms of trade. Viner argued that trade creation is welfare improving where as trade diversion is welfare reducing. The net result thus remains an empirical question. However, it was argued by Gehrels (1956-57) that the static Vinerian welfare gains or losses do not allow for the possibilities of consumption changes after formation of an RTA. Latter Lipsey (1957), Kirman (1973), Johnson (1974, 1975) elaborated

further whether trade diverting customs union may be welfare improving or not for the member countries. In another study which deals more specifically with the welfare of non-member countries, Kemp and Wan (1976) showed that under special circumstances there exist a common external tariff for an RTA which keeps the non-members' welfare unchanged and hence increases world welfare unambiguously. Developments in the new theories of trade after 1975 led to new possibilities for welfare gains and losses based on trade in differentiated goods and monopolistic competition. The implication of these considerations has been discussed by Krugman (1979, 1980), Helpman and Krugman (1985).

Corden (1972) incorporated economies of scale into customs union theory. The formation of an RTA may affect non-member countries through supply side improvements. These supply side effects could favourably impact non-member countries via price changes and/or provision of new product varieties. There are some additional possible gains to non-member countries. For example, mutual recognition of standards reduces directly the fixed cost of entering the union's market, and this cost saving may give benefit to non-member firms as well as member firms. In one study, Smith and Venables (1991) suggested that a reduction of these fixed costs may directly lead to an increase in the market share of non-member firms to the union. However, the theoretical literature has in general concentrated on the impact of RTAs on the welfare of member countries.

Since the theoretical literature is largely inconclusive about the welfare gains of RTAs, a large member of authors have tried to empirically test some of the propositions that have emerged in the theoretical literature. However, here too most of the literature has concentrated on measuring the static gains and losses to member countries. (see, for example, Aitken (1973), Balassa (1967), Cernat (2001), Coulibali (2007), Kandogan (2008), Winters and Chang (2000), Yeats (1997)). Some studies which measure the effects of an RTA formation on non-member countries are Cernat, L (2001), Chang and Winters (2002), Winters (1997), Winters and Chang (2000).

To our knowledge there are no studies which capture the effects of an RTA on India's welfare in a case where India is non-member for that RTA. Again there exist a few studies which tried to look at the welfare implication of an RTA in the case where India is a member country. Kelegama and Mukherji (2007) and Joshi, V. (2008) have tried to see the effect of India-Sri Lanka Free Trade Agreement on the intra-regional trade and accordingly the trade creation and trade diversion effects of the formation of India-Sri Lanka Free Trade Agreement (ISLFTA).

Kelegama and Mukherji (op. cit.) studied trade creation and trade diversion of India-Sri Lanka Free Trade Agreement on the basis of bilateral trade flows under different categories of products. Sector wise imports and exports figures were compared for pre and post India-Sri Lanka Free Trade Agreement. Joshi, V. (op. cit.) studied trade creation or trade diversion of India-Sri Lanka Free Trade Agreement base on method used recently by Romalis (2005). In this case Joshi tried to measure trade creation and trade diversion effects of India-Sri Lanka Free Trade Agreement based on comparing the ISLFTA members' imports of products from the control countries (165 countries grouped together as control country which are non-members of ISLFTA) with China's imports of the same products from these control countries. Some studies on SAFTA are mainly based on measuring *ex-post* intra-regional trade and *ex-ante* comparative advantage in the SAFTA region.

IV. Measuring the Impact of RTAs on India

While most of the empirical studies measure the effects of RTAs using volume of trade as a proxy for welfare; some of the studies measure the impacts on terms of trade and prices. In our study we are going to employ the first methodology, that is, to measure the effects on volume of trade resulting from any RTA formation.

In our study, we are going to investigate the issue of how India as a non-member country has been affected by the formation of RTAs like ASEAN, EU, NAFTA, and MERCOSUR. As already noted, the rationale behind considering these four RTAs is that India's exports to these four regions comprise nearly half of India's total exports to the world in 2006 and these four unions are among the major RTAs which have been under implementation for some time.

In this study we are going to use two different methodologies; firstly, the rather simplistic Balassa (1967) methodology measuring *ex-post* 'income elasticities of demand for imports',[1] where imports from India by each of the ASEAN, EU, NAFTA, and MERCOSUR are taken for pre and post-integration periods and, secondly, estimating a modified gravity model to capture the impacts of the formation of these RTAs on India's exports to the various regions. In the gravity model we are able to control for the effect of non-RTA factors on India's exports. This last factor is the obvious shortcoming of the Balassa approach.

[1]This is typically Balassa's 'income elasticity of demand for extra-area import' (see Balassa, 1967, pp. 5).

This rather simple approach rests on calculation of an RTA's income elasticities of import demand for some 'reasonable' period before and after the formation of an RTA. The application to our study gives us the following definition:

$$\text{Income Elasticity}_j = \frac{\text{compound growth rate of Import from India by } j^{th} \text{region}}{\text{Compound growth rate of GDP of } j^{th} \text{ region}}$$

Where j = {ASEAN, NAFTA, EU, MERCOSUR}

Compound growth rate of both imports and GDP have been calculated for pre-integration and post-integration periods separately. Each period has been defined as seven years. The year of effective implementation of each of ASEAN, EU, NAFTA, and MERCOSUR has been taken as the 'benchmark' year that separates the two estimating periods for each region. This is shown in Table 2.

Now the Balassa hypothesis is that if the post-integration 'income elasticity' increases (decreases) for region j that means j^{th} region's imports from India had increased (decreased) due to external trade creation resulting from formation of j^{th} region. Consequently, the formation of the RTA is considered favourable (unfavourable) to India. The Balassa methodology assumes that income elasticities of demand for imports would have remained unchanged in the absence of RTA formation. This assumption is reasonable if the pre and post integration periods are not too long. We have done the exercise at the aggregate level and for ten broad disaggregated commodity categories based on Standard International Trade Classification (SITC Rev.1). Analysis based on commodity categories gives us commodity specific trade diversion or external trade creation resulting from any RTA formation.

A. Modified Gravity Model Approach

The use of the gravity model in investigating the welfare impact of RTAs is now well known. (see, Greenaway and Milner, 2002). However, as we have noted, our

Table 2. Pre-integration and Post-integration Periods for Different RTAs

RTA	Year of RTA Formation or Benchmark Year	Pre-Integration Period	Post-Integration Period
ASEAN	1992	1985 to 1991	1992 to 1998
NAFTA	1994	1987 to 1993	1994 to 2000
EU	1993	1986 to 1992	1993 to 1999
MERCOSUR	1991	1984 to 1990	1991 to 1997

focus in this paper is on measuring the impact of various RTAs on a non-member country, India. In addition, our focus is on India's exports to theses regions rather than all bilateral trade pairs as in usual gravity model applications. Hence, in the second methodology we have used a modified gravity model to measure the impact of any RTA on India's exports to that region controlling for other variables which have some impacts on India's exports. Our purpose of using the gravity model is to overcome an obvious shortcoming of the Balassa approach; it does not allow us to 'control' for non-RTA factors which affect India's exports to these regions. Our first modification to the gravity model implies dropping the distance variable. Since our focus is on time series rather than cross sectional data (as in most gravity model studies) the distance variable is irrelevant. Second, rather than working with log variables we have defined variables in ratio form which serves the same purpose of reducing the impact of extreme values in our estimation.

The regression equation obtained for our 'modified' gravity model is as follows:

$$\frac{X^j_{it}}{X_{Wt}} = \alpha + \underset{(+)}{\beta_1}\frac{GDP_{It}}{GDP_{Wt}} + \underset{(+)}{\beta_2}\frac{GDP^j_{it}}{GDP_{Wt}} + \underset{(-)}{\beta_3}RTA^j_t + \underset{(+)}{\beta_4}t + u_{it} \qquad \text{(A)}$$

Where, j is any one region among ASEAN, EU, NAFTA, MERCOSUR, i: is one of the member country of j[th] RTA, *t*: time period in year comprises both pre-integration and post-integration periods, *W*: World, I: India, X^j_{it} : Exports from India to i[th] country of j[th] region in the year *t*, X_{Wt} : Exports from India to the world in the year *t*, GDP_{It} : India's GDP in the year t, GDP_{Wt} : World's GDP in the year t, GDP^j_{it} : GDP of country i in region j, RTA^j_t : This is dummy variable for RTA. It takes values 1 for the years in post-integration period, and values 0 for the years in pre-integration period, and finally u_{it} : Normally distributed random error term which captures other influences on X .

We have normalised the figures for exports and GDPs taking ratios to world totals. This normalization helps us to reduce the severity of multicollinearity within these variables. These variables have standard economic interpretations.

B. Dependent Variable

$\frac{X^j_{it}}{X_{Wt}}$: The share of India's exports to i[th] country of j[th] region to its total exports to the world in the year t. This term captures the i[th] country's imports from *non-*

member India where i^{th} country is a member of region j or in other words this is an extra-area import by i^{th} country of j^{th} region.

C. Independent Variables

$\frac{GDP_{It}}{GDP_{Wt}}$: Share of India's GDP to the world GDP. This term captures India's economic capacity to export. This is typically a supply side argument that as any country's GDP increases it is potentially more capable of increasing its production base and therefore exports. So, this variable should have a positive impact on India's exports.

$\frac{GDP^{j}_{it}}{GDP_{Wt}}$: Share of i^{th} country's GDP to the world GDP. This variable gives a demand side specification. As any country's GDP increases then demand for imports should increase. So this value should also have a positive impact on India's exports.

RTA^{j}_{t}: This is a dummy variable for RTA, which captures the effect of j^{th} region's RTA formation on India's exports. If the impact of this variable is negative (positive) on India's exports, that implies a trade diversion (trade creation) for India resulting from the formation of the jth RTA.. Clearly trade diversion harms India's exports, whereas external trade creation benefits India's exports.

***t*:** t is the time trend so that β_4 measures the trend effect on share of India's exports to i^{th} country of j^{th} region to its total exports to the world.

As our aim is to investigate the region specific RTA effect on India's exports we have to estimate the above mentioned gravity equation (A) for each of regions separately.

For ASEAN and EU we have taken the major member countries from each RTA for regression analysis since in the case of other countries we either do not have available data for whole period and/or India's exports to these countries are negligible. For NAFTA and MERCOSUR, we have data for the whole period for every member country. The member countries which have been taken to estimate the gravity model for ASEAN are Indonesia, Malaysia, Singapore, and Thailand. For EU, gravity equation has been estimated considering the following countries; United Kingdom, Netherlands, Germany, France, Belgium, and Italy. For NAFTA and MERCOSUR we have data for all the members of each RTA.

The data sources our study are United Nation's COMTRADE database for all kinds (aggregate level and 1 digit commodity classifications level SITC Rev.1) of

trade data. For GDP data for all countries and for all regions we have used International Monetary Fund's World Economic Outlook Database for October, 2007.

D. Model Estimation

It is first necessary to look at the major commodities imported by each RTA from India. The details are shown in Appendix C. If a commodity category holds a significant share of total imports from India by a region, then trade diversion effect or external trade creation effect on this commodity is much more important to the policy makers than in the case of a commodity which has a negligible share. We have used this information to identify those commodities where sectoral results for our estimation have been generated.

Using the methodology outlined in Section IV we have calculated Balassa's income elasticities of import demand for the four regions both for the pre and post-integration periods. This is shown in Table 3 below. From an inspection of Table 3, it is clear that ASEAN's post-integration income elasticity declined to 1.98 from pre-integration income elasticity 3.63. For rest of the regions post-integration income elasticities increased, for EU it increased to 2.28 from 1.53, for NAFTA it increased slightly to 2.08 from 1.64, and for MERCOSUR the income elasticity increased to 3.7 from 2.86.

The income elasticities at aggregate level clearly show a decline for ASEAN, which indicates there was a possible trade diversion effect of ASEAN on India's exports. This implies India's exports to ASEAN were adversely affected in the post-integration period of ASEAN. For EU, NAFTA, and MERCOSUR the income elasticities increased, thus implying an external trade creation in the post-integration periods of these RTAs. So India would have been better off due to external trade creation effects.

In Table 4 we present income elasticities of imports calculated at a disaggregated

Table 3. Income Elasticities of Demand for Imports from India by Different Regions

Region	Pre-Integration Income Elasticity	Post-Integration Income Elasticity
ASEAN	3.63 (1985-1991)	1.98 (1992-1998)
NAFTA	1.64 (1987-1993)	2.08 (1994-2000)
EU	1.53 (1986-1992)	2.28 (1993-1999)
MERCOSUR	2.86 (1984-1990)	3.70 (1991-1997)

Note: Range of years of each period in parenthesis.

commodity level. We have seen in Table 4 that for ASEAN, food and live animals, crude materials & inedible except fuels, chemicals & related products, manufactured goods classified chiefly by material, and machinery and transport equipment (i.e. Product codes: 0, 2, 5, 6, and 7) are the major exportable commodities with a share of more than 90 percent of India's total exports to this region. From Table 4, we see that post-integration income elasticities had declined for all these major products. Hence there seems to have been trade diversion effects on all major commodities exported from India to ASEAN. This result is consistent with our previous estimated income elasticities at the aggregate level. Note that there are some commodity categories like beverage and live animals, animal & vegetable oils, fates & waxes, and miscellaneous manufactured article for which income elasticities increased which imply that for these products there was external trade creation in ASEAN.

In case of EU we considered food and live animals, manufactured goods classified chiefly by material, and miscellaneous manufactured articles (Product Codes: 0, 6, and 8) accounting for more than 80 percent of India's total exports to this region. From Table 4, it is clear that for all these commodities post-integration elasticities declined. But at the aggregate level the overall income elasticity had increased. So our commodity wise break up of income elasticity give results which contradict what we obtained at the aggregate level. We think more useful conclusions can be reached if the data are appropriately disaggregated.

Next, for NAFTA food and live animals, manufactured goods classified chiefly by material, and miscellaneous manufactured articles (Product Codes: 0, 6, and 8) are the major export commodities with a share of more than 80 percent of India's total exports to this region. It should be noted that product code 6 accounted for almost fifty percent of India's total exports to NAFTA. For this product income elasticity increased to 5.29 from 4.98. For the other two products, namely, product codes: 0 and 8, income elasticities declined. Hence no unambiguous trade creation or trade diversion can be inferred.

Finally, for MERCOSUR, Product Codes: 2, 5, 6, 7, and 8 accounted for more than 90 percent of India's exports to this region. Inspection of Table 4 indicates some mixed results. We see that for product code 2 and 7, income elasticities increased and for product codes 5, 6, and 8 income elasticities declined in the post integration period. Hence no unambiguous trade creation or trade diversion can be inferred.

As already mentioned, the Balassa methodology using income elasticities does

Table 4. Commodity Wise Income Elasticities of Demand for Imports from India by ASEAN, EU, NAFTA, and MERCOSUR.

		ASEAN		EU		NAFTA		MERCOSUR	
Commodity Code (SITC Rev 1)	Commodity	Pre-integration (1985-1991)	Post-integration (1992-1998)	Pre-integration (1986-1992)	Post-integration (1993-1999)	Pre-integration (1987-1993)	Post-integration (1994-2000)	Pre-integration (1984-1990)	Post-integration (1994-1997)
0	Food and live animals	7.53	-0.31	8.05	1.74	4.11	3.73	18.55	-1.23
1	Beverages and tobacco	8.17	14.09	8.62	7.35	12.19	18.13	NA	NA
2	Crude materials, inedible except fuels	8.48	-1.38	7.16	3.09	-0.45	5.98	-0.69	18.54
3	Mineral fuels, lubricants and related materials	NA	-7.61	NA	-2.24	NA	60.31	NA	NA
4	Animal and vegetable oils, fates and waxes	-10.47	17.84	14.22	7.81	63	6.34	NA	NA
5	Chemicals and related products	11.74	5.08	20.37	5.74	17.34	7.78	34.85	12.61
6	Manufactured goods classified chiefly by material	8.2	-0.26	11.07	2.84	4.98	5.3	10.95	9.78
7	Machinery and transport equipment	6.07	0.97	19.5	7.42	14.11	8.36	4.68	9.9
8	Miscellaneous manufactured articles	7.95	9.67	13.1	2.91	8.25	5.27	12.47	9.39
9	Commodities and transactions not classified elsewhere in the SITC	16.69	11.9	28.6	5.26	4.61	6.87	31.49	12.6

not control for non-RTA factors that impact trade. In addition, our earlier results show that the conclusion are ambiguous and vary from commodity to commodity. We have tried to control for non-RTA factors using the regression model given in equation A.

The current data available for pre and post integration phases gives us a limited number of data points. One way to enlarge our data set and obtain a comprehensive estimation of A is to estimate our model for all RTAs taken together. However, such a panel data estimation will need to test for both country and region specific effects. The issue is whether there are country and /or region specific peculiarities which justify estimation of a fixed or random effect model (see, Cheng and Wall

Table 5. Panel Estimation of Modified Gravity Equation

Dependent variable: $\frac{X^j_{it}}{X_{Wt}}$			
Independent variable	(1) Pooled Cross- Section Regression	(2) Random Effects Panel Regression on the Cross Section of 17 Countries Over 10 Years (5 Years pre-RTA and 5 Years Post RTA)	(3) Random Effects Panel Regression on the Cross Section of 4 Regions Over 10 Years (5 Years pre-RTA and 5 Years Post RTA)
Constant	.013	.008	.018
$\frac{GDP_{It}}{GDP_{Wt}}$	-489	-.116	-.838
$\frac{GDP^j_{it}}{GDP_{Wt}}$	.702**	.69**	.698**
RTA^j_t	.0004	.003	.003
t	-.00008	-.0004	-.001
R Squared	.874	Within = 0.078 Between = 0.907 Overall = 0.878	Within = 0.873 Between = 0.92 Overall = 0.878
	F (4, 216) = 374.03**	Wald chi^2 (4) = 166.88**	Wald chi^2(4) = 1186.43**
Number of Observations	221	170	170
Hausman Fixed		Ho: difference in coeffi-cients not systematic. chi2(4) = 0.00 Prob>chi2 = 1.000	Ho: difference in coeffi-cients not systematic. chi2(4) = 2.11 Prob>chi2 = 0.716

Note: ** denote significance at 5 percent level.

(2005)). The results of our estimation are shown in Table 5 below. Column 1 in the Table 5 shows the pooled cross-section regression results vis a vis the 'random-effect' panel estimation results in column 2 and 3 for all RTAs taken together..

In estimating the results given in Table 5 we have confirmed that the Hausmann test statistic indicates that there is no heterogeneity among the countries or regions and hence the random effects model is appropriate. The two panel regressions in Columns 2 and 3 have been run to test for both counry and region specific fixed effects. As the last row of table 5 indicates, there are no region or country specific effects. .

Inspection of Table 5 clearly indicates that the formation of the RTAs themselves has had no impact on India's exports to these regions: the coefficient of the RTA dummy variable is statistically insignificant. In fact the only variable that significantly impact India's exports to these regions is the demand factor represented by the GDP of a partner country of any RTA. In Table 5, the coefficient of the variable GDP^{j}_{it}/GDP_{Wt} is positive and statistically significant. In other words, what drives India's exports is how a country's GDP's behaves rather than whether or not a country is part of any RTA. Our results also show that there are no significant supply constraints on India's exports.

However, it is also useful to estimate equation A as an ordinary least squares regression (OLS) separately for each RTA to see how demand expansion has impacted India's exports in these regions. Since the coefficient of GDP^{j}_{it}/GDP_{Wt} in Table 5 is a weighted average of that for the various regions it could hide some regional/country specific differences. The final results of our estimation are shown in Table 6.

In Table 6, equation A is estimated for each region separately using standard OLS techniques based on pooled cross section data. We first tested for multicollinearity among the independent variables. The significant positive correlation coefficient between the time trend, t, and the RTA dummy needed to be adjusted for. We have done this by removing the trend component from the dependent variable and then regressing the detrended variable on RTA and other determinants.

From the estimation results we can draw the following findings specified for each region:

It is interesting to note that for ASEAN, the coefficient of GDP^{j}_{it}/GDP_{Wt} has a statistically significant negative sign which means as ASEAN's GDP relative to world GDP increased then its imports from India decreased. This result is

Table 6. OLS Estimation of Modified Gravity Equations

Dependent variable: $\frac{X_{it}^{j}}{X_{Wt}}$				
Independent variable	(1) ASEAN	(2) EU	(3) NAFTA	(4) MERCOSUR
Constant	0.031**	.034*	-.032	-.002**
$\frac{GDP_{It}}{GDP_{Wt}}$	-1.183	-.679	2.402	.139*
$\frac{GDP_{it}^{j}}{GDP_{Wt}}$	-2.153**	.398**	.752**	.077**
RTA_{t}^{j}	0.003	-.001	.007	.0004
t	0.0007	-.00006	-.001	.0001**
Adjusted R squared	0.43	.23	.95	.72
F statistics	F (4, 43) =10.15**	F (4, 79) = 7.28**	F (4, 28) =169.8**	F (4, 51) =37.65**
Number of observation	48	84	33	56

Note: *, ** denote significance at 10 percent and 5 percent levels respectively.

consistent with another study[2] where ASEAN's extra-regional imports decreased in the post-integration period. If we compare the results of Balassa's income elasticity approach with our modified gravity model, for ASEAN, then we can argue that the decrease in income elasticity of ASEAN might be because of negative effect of GDP_{it}^{j}/GDP_{Wt} (demand constraints) rather than trade diversion due to formation of ASEAN. Our results thus indicate that India's exports are losing competitiveness in the ASEAN market. In the absence of price information, we could infer that Indian exports are considered inferior goods in the ASEAN markets so that their demand falls with income. However, further study on price competiveness is essential for any firm conclusions.

As can be seen from columns (2) to (4) of Table 6 for EU, NAFTA, and MERCOSUR the same variable, that is, GDP_{it}^{j}/GDP_{Wt} has a significantly positive sign. This implies that as the GDPs of these regions relative to world GDP increased, India's exports to these regions increased. This is quite reasonable to us as a demand side argument that as importer country's GDP increases then it increases imports from all sources. This is a kind of income effect.

[2]Cernat, Lucian (2001), 'Assessing Regional Trade Arrangements: are South-South RTAs more Trade Diverting', Policy Issues in International Trade and Commodities Study Series, No. 16. pp.9.

In general, as can be seen from columns (1) to (4) of Table 6 none of the RTA dummies are statistically significant. This implies that for all the regions, formation of an RTA, per se, had no impact on India's exports. This conclusion has already been seen in the results of panel estimation shown in Table 5.

The coefficients of GDP^{j}_{it}/GDP_{Wt}, which measures the impact of India's GDP relative to world GDP on India's exports to these regions, is seen to be positive and statistically significant only for MERCOSUR. This seems to indicate that exports to these countries, being of recent origin are supply constrained and determined by availability of an export surplus unlike in the case of traditional markets like the US, EU or ASEAN where supply lines are already in place.

V. Conclusion

Particularly in the last decade, there has been a proliferation of RTAs globally. Many of these are in fact among the developing countries themselves. It may be argued that developing countries are contracting these RTAs in order to avoid any trade exclusion effects of existing RTAs. It has thus been inferred that these RTAs are a hindrance to trade multilateralism. On the other hand, tariff reductions in RTAs may be politically easier to conclude and this could be a useful method of locking in tariff reductions in later multilateral negotiations. In addition, getting into some RTA or the other may make it politically easier to negotiate at the multilateral level.

This paper looks at these issues using India as a case study. India has been slower than other developing countries in contracting RTAs but has been doing so vigorously in the last few years. The issue is to what extent have existing RTAs affected India's exports? Have the exclusion effects of major RTAs on India been strong enough to require some defensive response by India? Here the issue is to what extent India's exports to its major trade partners have been affected by the formation of RTAs per se. In other words, has the formation of RTAs like ASEAN, NAFTA, EU and MERCOSUR had a negative impact on India's exports to any region or is the impact due to supply and/or demand factors unrelated to the RTA formation?

Using the a regression model to isolate the impact of an RTA per se, we observe that India, as a non-member of ASEAN, EU, NAFTA, and MERCOSUR, is not impacted by any RTA formation per se. India's exportability to ASEAN seems to be impacted mainly by demand constraints. Thus in the case of all the RTAs except

ASEAN, India's exports increased in the post RTA period due to the demand effect of increasing GDPs in the member countries. The negative income effect in case of ASEAN, is probably related to either the nature of commodity exported and/or lower price competitiveness of India's exports. However our present study is not designed to investigate these issues. In addition, our regression results also indicate that supply side positive impacts are only observed in the case of MERCOSUR. In conclusion, the defensive response of India to RTA formation in other parts of the world do not seen warranted at least on economic grounds. In addition, if India's example is looked at, it would be seen that RTAs have not been the stumbling block to multilateralism as often feared. We suggest a more detailed study of this at a disaggregated commodity levels and also expansion of the model to allow for possible terms of trade effects.

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Appendix

Appendix A. RTAs involving India (as of 2008)

Agreement	Status of Implementation	Coverage
ASEAN-India Free Trade Agreement (AIFTA)	The ASEAN-India FTA (AI-FTA) is to commence from 1st January, 2009.	Negotiations on AIFTA free trade agreement (FTA) which will result in elimination of tariffs on 80% of the commodities traded between the two sides by 2015 have been formally concluded. Under the pact, India and ASEAN will eliminate import duties on 71% products by December 31, 2012, and another 9% by 2015. Duties on 8-10% products presently in the sensitive list will also be brought down to 5%.
India-Singapore Comprehensive Economic Cooperation Agreement (CECA).	The CECA has become operational with effect from 1st August, 2005.	Joint Study Group identifies areas of increased economic engagement between two countries. These areas are FTA in goods, services, and investment.
Framework Agreement for establishing Free Trade between India and Thailand.	The tariff concessions on 82 items of EHS list began in 2004. The tariffs on these items would become zero for both sides on 1st September, 2006. FTA in goods would commence from March, 2005. However, due to difference of opinion on certain issues, this deadline could not be met.	The Framework Agreement covers FTA in Goods, Services, Investment and Areas of Economic Cooperation.
Preferential Trade Agreement (PTA) between India and Chile.	The PTA has been signed in 2006.The PTA has come into force in India from November 2007.	India has offered to provide fixed tariff preferences ranging from 10% to 50% on 178 tariff lines at the 8 digit level to Chile; the latter have offered a similar range of tariff preferences on 296 tariff lines at the 8 digit level. The products covered in the mutual offers account for more than 90 percent of the value of total bilateral trade.
India-Sri Lanka Free Trade Agreement.	Bilateral trade between India and Sri Lanka is regulated by India-Sri Lanka Free Trade Agreement (ISFTA) signed in December 1998 and operational with effect from March 2000.	Now, both sides are negotiating on not only trade in goods but also on trade in services and Economic Cooperation.

(continued)

Appendix A. RTAs involving India (as of 2008) (continued)

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) was launched in December 1997 and has membership of Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan, and Nepal.	The negotiations are at an advanced stage on FTA in goods which is scheduled to be implemented from 1st July, 2006. The negotiations on the Agreement on Services & Investment have also commenced.	Six areas were identified for cooperation in BIMST-EC, namely, trade and investment, technology, transportation and communication, energy, tourism and fisheries.
Agreement on South Asia Free Trade Area (SAFTA). The members are India, Pakistan, Sri Lanka, Bangladesh, Nepal, Bhutan, and Maldives. Afghanistan is slated to join the SAFTA in January 2008.	SAFTA has come into force from 1st January, 2006. Tariff reductions will take place at different rates for the least developed members (LDMs) namely Bangladesh, Nepal, Bhutan and Maldives as against the non-least developed members (NLDMs) namely India, Pakistan and Sri Lanka.	The agreement had exclusive coverage of trade in goods and provided for gradual concessions on tariffs and non-tariff measures in various stages. In two years NLDMs will reduce tariffs from the existing levels to a maximum of 20 per cent while LDMs will bring them down to 30%. In 5 years NLDMs will bring down tariffs from 20% to 0-5%, while LDMs will do so in 8 years.

Appendix B. Major RTAs for which India is a Non-Member

Agreement and Economic Characteristics of the RTA	Status of Implementation	Coverage
Association of South-East Asian Nations (ASEAN): As on 2005, ASEAN's combined GDP was 893 billion US dollar, its intra-regional imports were 142 billion US dollar and extra-regional imports were 441 billion US dollar. ASEAN's import from India was 10.4 billion dollar in 2005 and India's export to ASEAN region was 10.11 percent of India's total export to the world.	ASEAN initiated its free trade agreement called ASEAN Free Trade Area (AFTA) in 1992. It is now working as a free trade area among ten member countries.	As on January 1, 2005, tariffs on almost 99 percent of the products in the inclusion list of the ASEAN-6 (Brunei Darussalam, Indonesia, Malaysia, the Philippines, Singapore, and Thailand) have been reduced to no more than 5 percent. More than 60 percent of these products have zero tariffs. The average tariff for ASEAN-6 has been brought down from more than 12 percent when AFTA started to 2 in 2005. The average Common Effective Preferential Tariff (CEPT) tariff rates for products in the inclusion list is approximately 2.7% in 2003, down from about 12.76% in 1993 at the start of the tariff reduction program. Within the CEPT mechanism tariffs on goods traded within the ASEAN region should meet a 40% ASEAN content requirement and expected to be reduced to 0 to 5% by the year 2002/2003 (2006 for Vietnam, 2008 for Laos and Myanmar, and 2010 for Cambodia).
Southern Common Market (MERCOSUR): As on 2005, MERCOSUR's combined GDP was 1.08 trillion US dollar, its intra-regional imports were 22 billion US dollar and extra-regional imports were 94 billion US dollar. MERCOSUR's import from India was 1.3 billion dollar in 2005 and India's export to MERCOSUR was 1.3 percent of India's total export to the world.	The CECA has become operational with effect from 1st August, 2005. On January 1, 1995, MERCOSUR designated itself as a customs union by establishing a common external tariff (CET).	For MERCOSUR CET covers 85 percent of traded goods. In 1999, most trade between Brazil and Argentina became duty-free under the intra-MERCOSUR duty phase out schedule. In 1999, most trade between Brazil and Argentina became duty-free under the intra-MERCOSUR duty phase out schedule. In case of rules of origin the value content should be more than 40 percent of the free of board (FOB) export value of the final product and it must be produced within any of the member states.

(continued)

Appendix B. Major RTAs for which India is a Non-Member(continued)

North American Free Trade Agreement (NAFTA): As on 2005, NAFTA's combined GDP was 14.3 trillion US dollar, its intra-regional imports were 809 billion US dollar and extra-regional imports were 1510 billion US dollar. NAFTA's import from India was 18.9 billion dollar in 2005 and India's export to NAFTA region was 18.2 percent of India's total export to the world.	Implementation of the North American Free Trade Agreement (NAFTA) began on Jan. 1, 1994 and will complete in 2008.	Under NAFTA, tariffs on qualifying goods traded within the NAFTA countries became duty free from January, 1998. The tariffs on virtually all originating goods traded between have been eliminated by 2003.
European Union: As on 2005, EU's combined GDP was 13.6 trillion US dollar, its intra-regional imports were 2503 billion US dollar and extra-regional imports were 1535 billion US dollar. EU's import from India was 22.5 billion dollar in 2005 and India's export to EU was 21.78 percent of India's total export to the world.	The PTA has been signed in 2006. The PTA has come into force in India from November 2007.	India has offered to provide fixed tariff preferences ranging from 10% to 50% on 178 tariff lines at the 8 digit level to Chile; the latter have offered us a similar range of tariff preferences on 296 tariff lines at the 8 digit level. The products covered in the mutual offers account for more than 90 percent of the value of total bilateral trade.

Appendix C. Shares (%) of different commodity groups in total imports from India by ASEAN, EU, NAFTA, and MERCOSUR.

Commodity Code based on SITC Rev 1.	Commodity Group Based on SITC Rev 1,	ASEAN			EU			NAFTA			MERCOSUR		
		1985	1991	1998	1986	1992	1999	1987	1993	2000	1984	1990	1997
0	Food and live animals	29.28	27.6	24.45	15.41	11.25	9.38	10.24	8.43	6.81	0.56	0.84	0.96
1	Beverages and tobacco	0.37	0.39	0.79	1.55	1.18	0.91	0.03	0.05	0.16	NA	NA	0.21
2	Crude materials, inedible except fuels	6.24	6.91	3.82	5.02	3.41	3.58	4.23	2.25	2.11	19.15	1.97	4.55
3	Mineral fuels, lubricants and related materials	NA	0.02	0.26	NA	0.06	0.07	NA	0.09	0.02	NA	NA	NA
4	Animal and vegetable oils, fates and waxes	2.42	0.03	0.49	0.44	0.52	1.19	0.01	0.5	0.38	NA	NA	2.68
5	Chemicals and related products	6.08	11.32	16.93	3.79	7.02	9.43	1.96	4.89	6.38	9.05	66.74	38.13
6	Manufactured goods classified chiefly by material	32.49	34.32	29.76	43.06	40.03	37.11	53.79	47.95	42.7	22.93	13.67	18.53
7	Machinery and transport equipment	18.14	13.26	12.19	2.32	4.04	7.18	2.07	4.02	6.2	38.92	9.61	20.84
8	Miscellaneous manufactured articles	4.59	4.65	8.8	27.66	30.08	28.1	24.14	28.78	31.64	9.29	6.73	13.14
9	Commodities and transactions not classified elsewhere in the SITC	0.4	1.5	2.5	0.75	2.42	3.06	3.53	3.04	3.6	0.07	0.4	0.96

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