Effects of Regional Trading Agreements on South Asian Trade:
A Gravity Model Analysis

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ABSTRACT. *Regionalism in South Asia, through formation of regional and bilateral trading agreements, dates back to mid 1990s. The objective of this study is to assess the effects of various forms of trade agreements on bi-lateral trade of South Asia. Gravity model of international trade was used as the analytical tool and the effects of the World Trade Organization (WTO), Regional Trade Agreements (RTA) such as SAFTA, EU, ASEAN, BIMSTEC and NAFTA, and Bilateral Trade Agreements (BTA) were estimated. Three types of BTAs were included; between two South Asian countries, between a South Asian country and a country not in the region, and between two non-South Asian countries. Distance between the trading partners, sharing of common language, and colonial ties were the remaining explanatory variables included in the models. Cross sectional data covering 2555 bilateral trade for the year 2012 were used for the estimation and the data were extracted from the gravity databases of the Asia Pacific Research and Training Network, the World Bank and the WTO. The models were estimated using Ordinary Least Squares including importer and exporter fixed effects. The results of the estimation suggest that sharing of a common language, sharing a common colony, and membership of WTO positively and significantly affect export values and the effect of geographical distance, as expected, on the same has a negative effect. The memberships in BTA and RTA have mixed effects. Among RTAs used in the study, only the co-efficient for EU is statistically significant. SAFTA, ASEAN, BIMSTEC and NAFTA do not show significant effects on bilateral trade. The effects of all BTAs are positive and significant and they indicate that BTAs within South Asia enhance its regional trade greater than the BTAs with non-members. These results suggest that proliferation of BTAs within South Asia helped in expanding regional trade.*

Keywords: BTA, gravity model, RTA, South Asia

INTRODUCTION

South Asia is known as one of the least integrated region in the world. Its major export destinations and import sources locate outside the region which comprise of developed countries and fast growing economies in East Asia. United State of America, United Arab Emirates and China are three main export destinations of South Asia while China, United Arab Emirates and Saudi Arabia are the three main import sources. However, South Asia occupies relatively a minor position in world trade. The region as a whole supplies only

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about 2 percent of world exports and contributes to 3 percent of world imports. South Asia's intra-regional trade remains less than 5 percent of its total trade (UN COMTRADE, 2012).

As in many other countries, South Asia also has been focusing on various trade arrangements since mid 1990s to secure and strengthen its trade relations. There was upsurge in formation of such agreements more recently. As the first intervention, many South Asian members entered into the World Trade Organization (WTO) in mid 1990s. Accordingly, Bangladesh, India, Maldives, Pakistan and Sri Lanka entered in 1995, Nepal entered in 2004 and Afghanistan and Bhutan are under negotiations currently. Thereafter, the members focused on establishing Regional Trading Agreements (RTAs) to enhance its trade. The first RTA of South Asia was South Asian Preferential Trade Agreement (SAPTA) and came into effect in 1995. South Asian member states moved to Bilateral Trade Agreements (BTA) in spite of SAPTA. At very first stages, South Asian countries entered to BTAs with regional members and later they formed BTAs with non-member states as well. At present, there are 14 BTAs and 2 RTAs are in-force in South Asia and it is notable that India is one party in 11 of BTAs (WTO database). Annex 1 Table 1 shows the evolution of different RTAs and BTAs in South Asia. and Annex 3 depicts noodle ball situation of trade in South Asia due to this increased interest in various trade agreements.

The above phenomena raises important question of whether intra or extra regional trade is more beneficial for South Asian countries. This will be helpful for policy makers in South Asia for future trade negotiations.

In history, trade agreements were more or less limited to geographical scope in the form of colonial influences or bilateral commercial treaties. Provision of GATT agreement in 1947 was the foundation for an expanding multilateral trade system and it was the basis for modern WTO agreement. However, GATT did not diminish the attraction towards different bilateral and regional trade relations. In the mid-nineteenth century, the first major phase of regionalism recorded with creation of European Union (EU). It has been at the center of successive wave of regionalism and later on North America and Asia have also joined with that trading system. Similarly, many developing countries in Africa, Caribbean, Central and South America followed that regional trading system (WTO, 2011).

RTAs provide opportunity for group of countries to negotiate rules and commitments to strengthen their trade relations. However, recently, many countries have focused on various BTAs as well to strengthen their country's trade. The effects of such trade arrangements have been assessed using various techniques and among them gravity model of international trade has been widely used.

Tinbergen (1962) provided initial specification for the gravity model which uses to analyze determinants of trade flows. Aitken (1973) applied this approach to analyze the effects of Preferential Trade Agreements (PTAs) on trade flows of its member countries. It introduced a variable which take the value of one if two trading partners are members of a PTA and zero otherwise. The positive and statistically significant coefficient of the model indicated that PTA increases trade at significant level within its member states.

Muhammad and Yucer (2010) analyzed trade creation and diversion effects of RTAs using a gravity estimation. Trade creation occurs when introduction of a RTA allows supply from a more efficient producer of the product and trade diversion occurs when RTA divert trade away from more efficient supplier outside the region, towards a supplier within the region. The study had used six RTA dummy variables covering 30 countries and results evidenced

for greater trade creation from RTAs except North American Free Trade Agreement (NAFTA). NAFTA and Southern Common Market (MERCOSUR) were shown significant trade diversion effect.

Bayoumi and Eichengreen (1997) assessed the impacts of regionalism on Europian trade using a gravity model. The results were shown that the formation of Europe Economic Community (EEC) and European Free Trade Association (EFTA) had significant impact on Europe's trade and EFTA is heavily trade creating. EEC promoted intra-bloc trade through combination of both trade creation and trade diversion. EEC increased trade between its members at significant level but reduced trade with rest of the world significantly.

Korinek and Melatos (2009) analyzed the effects of three RTAs (i) ASEAN Free Trade Agreement (AFTA) (ii) Common Market for Eastern and South Africa (COMESA) and (iii) MERCOSUR on agricultural trade using a gravity model. The results suggest that AFTA, COMESA and MERCOSUR have increased trade in agricultural products between its member countries significantly and the agreements were net trade creating. The depth of integration within the agreement is important in determining the extent to which it is trade creating. Trade cost remains as important determinant of agriculture trade flows of those member states. Furthermore, historical trade pattern and traditional economic ties are also important determinants of trade flows. It also highlights the fact that RTA creates free trade among member countries, but it does not guarantee welfare improvements either for members and non-members.

Clarete *et al*. (2002) also did similar econometric study for Asia using panel data for the period 1980 to 2000. The results indicated that conventional gravity variables, i.e., size of economies, distance, geographical area and sharing a common border, were statistically significant at 0.05 probability level. Distance between the two countries was the most important basic determinant of trade flows in Asia. The analysis proved that trade agreements of Economic Cooperation Organization (ECO), EFTA, MERCOSUR, SAPTA and South Pacific Regional Trade and Economic Cooperation Agreement (SPARTECA) generate strong positive intra bloc trade effects and it led member states to divert their trade towards its regional members. Asia-Pacific Economic Cooperation (APEC) creates statistically significant trade flows among its members as well as rest of the world. However, EU showed negative and statistically significant results on its intra-bloc trade for the years of 1980 and 1985 and insignificant results for both 1995 and 2000. Estimates of AFTA and NAFTA did not show significant effects on intra bloc trade but reduced trade with both members and rest of the world. Clarete *et al*. (2002) suggest that APEC, ECO and MERCOSUR appeared to be having the greatest impacts on intra bloc trade and AFTA and NAFTA have reduced trade with their members during the study period.

The general objective of the study was to assess the various forms of regional trading agreements on bilateral trade of South Asia. The specific objectives are:

1. To assess the effects of WTO, RTA, BTA on bilateral trade of South Asia
2. To assess the effects of Regional Trading Agreements; SAFTA, EU, ASEAN, BIMSTEC and NAFTA on bilateral trade flows
3. To assess the effects of three types of BTAs, i.e., BTAs with two South Asian countries, between a South Asian country and a country not in the region and two non-South Asian countries on bilateral trade

MODEL AND DATA

Starting with Tinbergen (1962), gravity model has become the key tool of applied international trade literature. It allows an ex-post analysis of trade and links trade flow between two countries, directly with economic size and inversely with trade cost, usually proxied by geographical distance which is an indicator of transport cost. Gravity model was initially presented by Tinbergen (1962) as intuitive way as follows.

$$\log X_{ij} = c + \beta_1 \log GDP_i + \beta_2 \log GDP_j + \beta_3 \log D_{ij} + \varepsilon_{ij} \qquad (1)$$

Where,

X_{ij}	=	Value of exports from i^{th} country to j^{th} country
GDP_i	=	Gross Domestic Product of ith exporting country
GDP_j	=	Gross Domestic Product of jth importing country
D_{ij}	=	Distance between i^{th} exporting country and j^{th} importing country
ε_{ij}	=	Random error

It hypothesizes larger country pair trade more but countries that far away from each other trade less due to high transport cost (Shepherd, 2012). The intuitive gravity model also typically includes indication of common language and culture, historical ties to explain trade pattern (Kowalski and Shepherd, 2006). Later literature evidenced for addition of dummy variables to capture the effects of RTAs on trade flows.

This study assesses the effects of WTO, RTAs and BTAs using institutive gravity model following Aitken (1973), Bayoumi and Eichengreen (1997), and Clarete *et al*. (2002). Log of export value was treated as the dependent variable and conventional gravity variables such as size of economies, distance between two trading partners, dummy variable for colonial ties, sharing common language and policy variables of membership in WTO, RTAs and BTAs were considered as the determinants of value of exports.

Dummy variables for importer and exporter country fixed effects were included to account all possible cultural, historical and other factors that influence on trade. Two gravity models were specified as follows:

$$\log X_{ij} = \beta_0 + \beta_1 \log GDP_i + \beta_2 \log GDP_j + \beta_3 \log D_{ij} + \beta_4 CLAN + \beta_5 CCOL + \beta_6 WTO + \beta_7 RTA + \beta_8 BTA + \varepsilon_{ij} \qquad (2)$$

Where,

WTO	=	Membership in WTO: WTO=1 if both countries are WTO members and zero otherwise
RTA	=	Membership in RTAs: RTA=1 if both countries are members of same RTA and zero otherwise
BTA	=	Membership in BTAs: BTA=1 if both countries are members of same BTA and zero otherwise
CLAN	=	Dummy variable for sharing common official language: CLAN=1 if both trading partners share common official language and zero otherwise
CCOL	=	Dummy variable for colonial ties: CCOL=1 if both trading partners are in same colony and zero otherwise
ε_{ij}	=	Random error

$$\log X_{1j} = \beta_0 + \beta_1 \log D_{1j} + \beta_2 \, CLAN + \beta_3 \, CCOL + \quad \beta_4 \, SAFTA \, + \beta_5 \, EU \, + \beta_6 \, ASEAN$$
$$+ \, \beta_7 \, BIMSTEC \, + \beta_8 \, NAFTA + \, \beta_9 \, BTA_1 + \, \beta_{10} \, BTA_2 + \, \beta_{11} \, BTA_3 \qquad (3)$$
$$+ \, \epsilon_{1j}$$

Where,
SAFTA, EU, ASEAN, BIMSTEC and NAFTA dummy variables were treated as different RTAs which take the value of one if two trading partners are members in the same RTA, and zero otherwise.

BTA_1	=	BTA between two regional members: BTA1=1 when presence of BTA between two South Asian members and zero otherwise
BTA_2	=	BTA between a South Asian member and a non member: BTA2=1 when presence of BTA between South Asian member and a country not in South Asia, and zero otherwise
BTA_3	=	BTA between two regional non members: BTA3=1 when presence of BTA between two non South Asian members and zero otherwise

Cross sectional data covering 2555 bilateral trade for the year 2012 were used for the estimation and the data were extracted from the gravity databases of Asia Pacific Research and Training Network, the World Bank and WTO database. The models were estimated using Ordinary Least Squares. Hetero-scedasticity issue was corrected using robust standard error correction method. Multi-colinearity among variables was analyzed using Variance Inflation Factor (VIF) estimation.

GDP variables were not used in fixed effects estimations due to the assumption that variables which vary in the same dimension as fixed effects cannot be included in fixed effects model.

RESULTS AND DISCUSSION

Descriptive statistics of sample

Out of 2555 country pairs, 80.3 percent represents trade flows between two WTO members, 20 percent represents bilateral trade between two members in same RTA and 8.3 percent symbolizes trade flows between two parties of any type of BTA. Bilateral trade between members in European Union accounts 9.4 percent of total observations, while ASEAN, NAFTA, SAFTA and BIMSTEC records 1.5, 0.2, 0.6 and 0.5 percentages respectively.

As indicated earlier, two sets of estimation were proceeded to estimate the effects of WTO, RTA and BTA on both world exports and South Asian exports. The purpose of proceeding two sets of estimation is to analyze the determinants of trade flows of South Asia, in comparison with determinants of world exports. A sample of South Asian exports was driven from the primary sample of world exports. It includes bilateral trade flows of South Asian countries with both regional members and non members. South Asian exports sample accounts 16.9 percent of observations in the world export sample. Table 1 shows the descriptive statistics on size of economies, value of exports and geographical distance.

Table 1. Descriptive statistics of variables used for the estimation

Variable	World exports		South Asian exports	
	Mean	**St.Err**	**Mean**	**St.Err**
Value of exports (US $)	$1.31*10^{10}$	$0.40*10^{10}$	$3.22*10^{8}$	$1.59*10^{8}$
Exporter GDP (US $)	$1.71*10^{11}$	$0.14*10^{11}$	$0.96*10^{11}$	$0.26*10^{11}$
Importer GDP (US $)	$1.12*10^{11}$	$0.12*10^{11}$	$0.64*10^{11}$	$0.21*10^{11}$
Distance (Km)	$3.8*10^{6}$	0.0104	$4.36*10^{6}$	0.0105
Number of country pairs	2555		431	

Table 1 clearly shows that size of economies of South Asian members is less than the world average, reflecting those member states are still developing countries. It also indicates countries with smaller economies imports goods from larger economies. The average distance between two South Asian countries is greater than world average.

Effects of WTO, RTA and BTA on trade flows

As mentioned earlier, two sets of gravity model estimations were done to assess the effects of both multilateral and regional trading agreements on world exports as well as South Asian exports. Each analysis was done with and without fixed effects. The V.I.F. analysis was done to examine the correlation among the variables used in gravity model estimation. It shows how much the variance of the coefficient estimated is being inflated due to multi-colinearity[2]. As a rule of thumb, if V.I.F. values greater than 10, there might be multi-colinearity issue. Annex 2 Table 1 shows the V.I.F. values for the variables used in econometric estimations. Accordingly, WTO and common colony variables are omitted in fixed effect estimations due to high multi-colinearity.

Given F-statistics for overall significance of the model, all estimations are significant at 0.001 probability levels. As per the results of econometric estimation, size of the economies in two trading partners is positive and significant determinant of world exports as well as South Asia. Geographical distance has negative and significant effects on bilateral trade in both cases. It is noteworthy that the R-square values of fixed effects estimations are greater than the R-square values of estimations without fixed effects. Thus model with fixed effect estimation is treated as the accepted model estimation for this study. Table 2 shows results of the Estimation of Gravity Model depicting the Effects of WTO, RTA and BTA on Bilateral Trade Flows.

In the results of fixed effect estimations, model for world exports records 0.84 R-square value while for South Asian exports model it is 0.86. Among the conventional gravity variables, geographical distance, sharing of common language, common colony are significant in world exports model at 0.001 probability level whereas only the geographical distance is significant in South Asian exports. The memberships in RTA and BTA are significant determinants of world exports while it does not create any significant effects on South Asian exports at aggregate level. Memberships in WTO is also a positive determinant of world exports as well as South Asia in without fixed effect estimation, but it was omitted in fixed effect model due to the multi-colinearity issue.

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[2] The square root of V.I.F. value shows how much larger the standard error compared with what it would be if variables are uncorrelated. For example if V.I.F. is 4 the standard errors are 2 times greater than it would be.

Table 2. Results of the Estimation of Gravity Model depicting the Effects of WTO, RTA and BTA on Bilateral Trade Flows

Independent variable	World exports		South Asian exports	
	Without fixed effects	**With fixed effects**	**Without fixed effects**	**With fixed effects**
Constant	0.622	0.254	-3.224	-0.824
	(0.455)	(0.905)	(1.498)	(4.031)
ln exporter GDP	1.239***		1.192***	
	(0.022)		(0.049)	
ln importer GDP	0.971***		0.964***	
	(0.017)		(0.042)	
ln distance	-1.087***	-1.301***	-0.700***	-1.043**
	(0.050)	(0.566)	(0.178)	(0.450)
Common language	0.619***	0.621***	0.288	0.122
	(0.134)	(0.134)	(0.300)	(0.293)
Common colony	0.473**	0.693***	0.859	
	(0.221)	(0.194)	(0.664)	
WTO	0.573***		1.220***	
	(0.103)		(0.335)	
RTA	0.880***	0.291**	1.034***	0.184
	(0.118)	(0.094)	(0.269)	(0.404)
BTA	0.882***	0.782***	0.664	0.418
	(0.144)	(0.106)	(0.428)	(0.312)
F-value	931.06	108.14	139.49	23.06
R^2 value	0.74	0.84	0.72	0.86
Mean VIF	1.15	2.95	1.16	7.09
No of observations	*2555*		*431*	

*** Significant at 0.001 probability level
** Significant at 0.05 probability level
* Significant at 0.1 probability level
Standard Error values are given in parentheses

Geographical distance negatively affects on value of exports both in world as a whole and South Asia. One percent increase in distance between two trading partners decreases world exports by 1.30 percent and for South Asian exports it is by 1.04 percent. It is the only determinant of trade flows in South Asia according to the estimated results. The sharing common official language and common colony increase value of world exports significantly. Trade between two countries with same official language increase value of world exports by 4178 US\$[3] with compared to the situation of existing different official languages between two countries. Being trading partners with same colonial influence increases world exports by 4931 US\$ in comparison with trading partners with different colonial powers.

Memberships in RTA and BTA also increase world exports at significant level. The RTAs increase value of world exports by 1954 US\$ while in case of a BTA it is 6053 US\$. It is notable that membership in BTA increases value of exports, greater than the value when there is membership in RTA. That value is also larger than the increased value of world

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[3] All the values which explains the changes in value of exports due to dummy variables were taken from antilog of the relevant coefficient

exports due to other significant determinants of trade. Thus it can be concluded that BTA is the most important determinant of value of exports in world, according to the results of the study.

Effects of different types of RTAs and BTAs on trade flows

Given the F-statistics of overall significance of the model, estimated model is significant at 0.001 probability level with 0.84 R-squared values. The results of the Estimation of Gravity Model depicting the Effects of different RTAs and BTAs on Bilateral Trade Flows are shown in table 3 below.

Table 3. Results of the Estimation of Gravity Model depicting the Effects of different RTAs and BTAs on Bilateral Trade Flows

Independent variable	World exports	
	Coefficient	St.Err.
Constant	2.069	0.929
ln distance	-1.449***	0.063
Common language	0.624***	0.136
Common Colony	0.631***	0.197
BTA between two South Asian countries	1.316**	0.666
BTA between a South Asian member and a non member	0.562**	0.182
BTA between two South Asian non members	0.730***	0.123
SAFTA	0.772	0.604
EU	-0.489**	0.163
ASEAN	0.137	0.237
BIMSTEC	-0.256	0.351
NAFTA	0.145	0.751
F-statistics	103.47	
Mean VIF	2.82	
No of observations	*2555*	

*** Significant at 0.001 probability level
** Significant at 0.05 probability level
* Significant at 0.1 probability level

Similarly the previous estimation results, geographical distance, sharing of common language and colonial ties show significant effects on value of world exports at 0.001 probability level. Accordingly, this estimation also evidences that one percent increase in distance between two trading partners decreases the value of world exports by 1.4 percent which is closer to the previous estimated result of 1.3 percent. Country pairs sharing with common official language and common colony increases value of exports by 4207 US$ and 4275 US$ respectively.

Considering the effects of different RTAs used in the estimation, only EU create significant effects on trade flows while SAFTA, ASEAN, BIMSTEC and NAFTA do not create any significant effects. The negative and significant coefficient of EU suggest that regionalization through the formation European Union was not good for its member countries in 2012. According to the results of the estimation, the membership in EU

decreases value of exports in world by 3083 US$. Europe was faced with a financial crisis during recent past and because of that many financial institutions in Europe zone were undercapitalized. As a result, economic growth of Europe declined and it unequally distributed across its member states (Dabrowski, 2010). In such a situation regionalization generate negative and significant effects on trade. However European countries made positive and statistically significant effects on value of world exports individually (See Annex 2 Table 2). Achieving negative and significant coefficient for intra bloc trade and positive and significant coefficients for its overall trade demonstrates, though intra regional trade was disadvantages for European members during the period of study, continuing its overall trade with both intra and extra bloc countries increase its trade at significant level. Clarete *et al*. (2002) showed similar results for EU and indicated that intra-bloc exports of EU were negative and significant for the years of 1980 as well as 1985, and for 1990 it was negative in sign but not significant. During 1995 and 2000 it was positive in sign but not significant too. However the overall exports and imports of European members were significant, across all the above mentioned years with positive sign.

Following the same results of Clarete *et al*. (2002), NAFTA shows positive effects on its intra-bloc trade, but it is not significant. ASEAN is the same and BIMSTEC shows negative effects on value of exports, but it is also not significant. SAFTA is not a significant determinant of world exports, indicating that the failures in achieving its regional trade expectations.

All three types of BTAs; between two South Asian members, between a South Asian member and a country not in South Asia and between two regional non members, are positive and significant determinants of bilateral trade in world. BTAs within South Asian region are statistically significant at 0.05 probability level and it increases world exports by 20701 US$, compared to the situation of none existence of a BTA between two countries. The BTAs between a regional member and a non member increase world exports by 3647 US$ and it is also statistically significant at 0.05 probability level. Existence of BTAs between two regional non members, increase world exports by 5370 US$ at significant level. It is noteworthy that though South Asia failed to achieve its trade expectations through SAFTA, it is capable in expanding regional trade through formation of BTAs with both regional members and non members. Furthermore, BTAs within South Asian region increase value of exports than the value, when there is a BTA with a non member.

Overall results of the analysis suggest that BTAs have mix effects on South Asian trade. They show insignificant results at aggregate level but when it considers BTAs separately, they show positive and significant results. However the study has proven that, among RTAs and both intra and extra-bloc BTAs, the BTA arrangements within the region is the best policy option for South Asia to enhance its regional trade at greater extend.

CONCLUSIONS

Size of the economies, sharing common official language and colonial ties are positive and significant determinants of value of exports in world as well as in South Asia. Distance has negative and significant effects. RTAs and BTAs as a whole have positive and significant effects on world exports but not on South Asian exports. Among different RTAs used in the study, only EU has significant effects on exports while SAFTA, ASEAN, BIMSTEC and NAFTA unable to create any significant effects on it. However EU negatively affected on its intra-bloc exports during the period of study. Since this has done for the year 2012, European

financial crisis may cause for such a negative results. Along with different types of BTAs, entering of BTAs with both regional members and non members create positive and significant effects on South Asian exports. It is notable that value of increase in exports due to the BTAs within South Asian region is greater than the values of BTAs with extra bloc economies.

Though SAFTA failed to create significant increase in regional trade of South Asia, BTAs within the region enhance its trade at significant level. Thus the study evidences for proliferations of BTAs within the region are advantage for South Asia as it enhances regional trade at greater extent.

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ANNEX 01

Table 1.   Evolution of Regional Trading Agreements in South Asia

	Trade Agreement	Member Countries	Entry into force	Type	Coverage	Primary objectives and concessions
01	South Asian Preferential Trade Agreement (SAPTA)	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka	11-April-1993	PSA	Goods	Concessions were given to contracting states partially and promoted trade in goods in South Asian region. Afghanistan was not a contracting party of this agreement. It was replaced by SAFTA in 2006.
02	India Sri Lanka Free Trade Agreement	India, Sri Lanka	15-Dec-2001	FTA	Goods	Promote harmonious development of two economies by expanding trade. Mutually beneficial bilateral trade. Elimination of tariffs. Each country is allowed to take action and adapting measures to protect its nation.
03	India Afghanistan	India, Afghanistan	13-May-2003	PSA	Goods	It expands domestic markets of two countries through economic integration and eliminates trade barriers through preferential treatment. Afghanistan concerns the preferential tariff for black tea, medicinal goods, Sugar refined and Cement. India concerns about raisins, Apricots, Pistachios, Walnuts, plumb, Almond, Mulberries, Pine nuts, Cherry, Melon etc.
04	Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC)	Bangladesh, India, Myanmar, Sri Lanka, Thailand, Bhutan, Nepal	08-Feb-2004	FTA	Goods, service and investment	It involves in linking two major regional groups; ASEAN and SAARC. It provides two track tariff reduction/elimination programs; (i) Fast track (ii) Normal track, liberalization of trade in services and investment and cooperation in identified sectors. It specified different timing commitments for least developed countries (LDC) and non-least developed countries. For normal track products, non-LDCs agreed to eliminate tariff for LDCs by 2010 and tariff among themselves by 2012. LDCs eliminate tariff among themselves by 2015 and for other BIMSTEC members by 2017.
05	Pakistan Sri Lanka Free Trade Agreement	Pakistan, Sri Lanka	12-June-2005	FTA	Goods and services	It is a mutually beneficial BTA within South Asian region to expand trade in goods and services between two parties. It is committed to create duty free market access on 206 Sri Lankan products in Pakistani market including tea, rubber and coconut. Pakistan also gains duty free access on 102 products in the Sri Lankan

						market which mainly include oranges, basmati rice and engineering goods. Pakistan negative list consists of 540 products imported from Sri Lanka and Sri Lanka also notified 697 of Pakistan products as negative list. Sri Lanka has also granted Tariff Rate Quotas (RTQ) for 6000 Mt of Basmati rice and 1000 Mt of potatoes per year on duty-free basis through the agreement. Import of potatoes is permitted only during Sri Lanka's off season. The product import in excess to agreed TRQ will be subjected to normal tariff applied by importing country.
06	India Singapore	India, Singapore	01-Aug-2005	FTA and EIA	Goods and service	BTA between East Asia and South Asia. It is a comprehensive economic cooperation agreement which liberalizes and promotes trade in goods and services. It facilitates and enhances economic integration to form a bridge between India and ASEAN and serve as a pathfinder for India-ASEAN FTA. India provides concessions under main categories of (i) Early harvest program: duty free entry from 1-Aug-2005, (ii) Phased elimination in duty: Duties will be removed in 5 stages and duty free entry from 1-April-2009, (iii) Phased reduction in duty: Duties will be reduced in 5 stages and (iv) Excluded list: No concessions. Singapore eliminates custom duties on all originating goods of India.
07	South Asian Free Trade Agreement (SAFTA)	Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka	01-Jan-2006	FTA	Goods	It eliminates trade barriers and facilitate cross border movement of goods between contracting states. It consists with tariff, para-tariff, non-tariff measures and direct trade measures. SAFTA reduces tariff on products from non-least developed countries to 20% from existing rates and for least developed economies to 30%. Sensitive list will be negotiated by contracting states and it is subjected to maximum ceiling price which was mutually agreed by members. Contracting parties give special consideration to least developed countries in case of anti-dumping measures and the requests from those countries for technical assistance. It enhance sustainable exports form least developed countries through long and medium-term contracts, buy-back arrangements and state trading operations.
08	India-Bhutan	India, Bhutan	29-July-2006	FTA	Goods	Promote free trade and commerce between two countries. Both

	Free Trade Agreement					countries impose non-tariff restrictions on imports of third countries. However Bhutan imposes non-tariff restrictions on imports of certain Indian origin goods. New agreement provides movement of Bhutanese goods from one part of Bhutan to another part of Bhutan through India. India provides 16 entry/exit points for trade.
09	India-Chile	India, Chile	17-Aug-2007	PSA	Goods	A BTA between South America and South Asia to promote economic cooperation between India and Chile. India provides fixed tariff preferences from 10% to 50% for 178 products from Chile including meat, fish, rock salt, chemicals and leather products. Chile provides tariff preferences on 296 Indian products consists of chemicals, pharmaceuticals, dyes and resins, plastic, rubber, textiles and clothing with margin of preference from 10% to 100%.
10	Pakistan-China	China, Pakistan	Goods: 01-July-2007 Service: 10-Oct-2009	FTA and EIA	Goods and services	The agreement is committed to promote reciprocal trade and evasion of trade barriers between two countries. It also strengthens the friendship between two parties and encourages expansion and diversification of trade between them. It eliminates import custom duties on products from both countries under the categories of; (i) Category I: Tariff will be eliminated in four stages as by 25%, 50%, 75% and 100% respectively, (ii) Category II: Tariff will be reduced to below 5% in five years, (iii) Category III: Tariff will be reduced to 50% by five years, (iv) Category IV: import duties will be reduced to 20% by five years and (v) Category V: no concessions.
11	Pakistan-Malaysia	Malaysia, Pakistan	01-Jan-2008	FTA and EIA	Goods and services	BTA between East Asia and South Asia. It is the 1st BTA between two Muslim countries and also Malaysia's 1st BTA with a South Asian country. Pakistan eliminated tariff on 43.2% imports from Malaysia and on the other hand Malaysia eliminated tariff on 78% of imports from Pakistan. Malaysia provided market access to Pakistan in the field of computer; IT related services, Islamic Banking and Islamic insurance. The agreement also promotes investments to facilitate

						entrepreneurs of both countries.
12	MERCOSUR - India	Argentina, Brazil, Paraguay, Uruguay, India	01-June-2009	PSA	Goods	BTA between South America and South Asia. One party is an RTA. It expands and strengthens the existing relations between MERCOSUR and India and promotes trade by granting reciprocal fixed tariff preferences. MERCOSUR member states provide concessions on 452 Indian products which covered food preparations, organic chemicals, pharmaceuticals, essential oils, plastic, rubber product and machinery items. India provide concessions on 450 MERCOSUR's item including meat products, organic and inorganic chemicals, dyes, raw hides, skins, leather, wool, cotton, glassware and steel.
13	India- Nepal	India, Nepal	27-Oct-2009	PSA	Goods	Undertake all measures, including technical cooperation, to promote, facilitate, expand and diversify trade between their two countries. India agrees to promote industrial development of Nepal through grants on the basis of non reciprocity specially the imports to India which subject to custom duties and quantitative restrictions. Positive list (fixed quota basis): Vegetable fats (Vanaspati), Acrylic Yam, Copper products, Zinc Oxide Negative list: Alcoholic Beverages, perfumes and cosmetics with non Nepalese/Non Indian brand name, Cigarette and tobacco.
14	Korea, Republic of India	India, Korea	01-Jan-2010	FTA and EIA	Goods and service	It liberalizes and facilitates trade in goods and services and expands investment between two countries. Concessions through the agreement are subjected to following product categories;(i) E-0: Duty-free, (ii) E-5: Tariff will be removed in five equal annual stages, (iii) E-8: Tariff will be removed in 8 equal annual stages, (iv) RED: Tariff will be reduced to 1% to 5% from the base rate in 8 equal annual stages, (v) SEN: Tariff will be reduced by 50% in ten equal annual stages for India, and for Korea, it is by 50% in 8 equal annual stages (vi) EXC: No concessions
15	ASEAN-India	East Asia, West Asia (Myanmar, Brunei,	01-Jan-2010	FTA	Goods	A BTA between East Asia and South Asia. One party is an RTA. It is committed to establish ASEAN-India Free Trade Area and provide special and differential treatment to ensure the increasing participation

		Cambodia, Indonesia, Lao, Malaysia, Philippine, Singapore, Vietnam, Thailand, India)				of new ASEAN members in economic integration and cooperation activities. Tariff reduction through the agreement are subjected to main five tracks ;(i) Normal Track: MFN tariff remains at zero percent (ii) Sensitive Track: MFN tariff above 5 percent will be reduced to 5 percent (iii) Special Product (iv) Highly Sensitive list (v) Exclusion list
16	India-Malaysia	India, Malaysia	01-Jul-2011	FTA and EIA	Goods and service	Bilateral Trade Agreement between East Asia and South Asia. It was a Comprehensive Economic Cooperation Agreement to enhance economic and social benefit, improving living standards and ensure high and steady in real incomes through expansion of trade and investment flows. Both parties do not maintain non-tariff measures on other party. Tariff lines are subjected to tariff reduction and subsequent eliminations under the main categories of (i) Normal track: MFN tariff remains at zero percent (ii) Sensitive track: MFN tariff above 5 percent will be reduced to 5 percent (iii) Special products: MFN tariff are lower than the preferential tariff (iv) Highly sensitive list: reduction of MFN tariff to 50% or by 50% or by 25% (v) Special track: as per the schedule and (v) Exclusion list: subject to annual tariff reviews
17	India- Japan	India, Japan	01-Aug-2011	FTA and EIA	Goods and service	No quantitative restrictions or import prohibition. All parties should not introduce any restrictions other than custom duty imports or exports to the other party if it is inconsistent with WTO. India positive list: Petroleum products, Diamonds, Light oils, cathodes, organic compounds, rice, cotton, clothes, shrimps and vehicle parts. Positive list of Japan: Gear box, Cylinders, Digital Camera, Television, Processors, Photosensitive devices, chemical elements.

Source: World Trade Organization

ANNEX 02

This section consists with the addition table related to gravity model estimation.

Table 1. VIF values of variables used in Gravity Model Estimation

	World exports		South Asian exports	
	Without F.E.	With F.E.	Without F.E.	With F.E.
ln exporter GDP	1.04		1.12	
ln importer GDP	1.09		1.11	
ln distance	1.41	2.51	1.30	9.52
Common language	1.08	1.78	1.09	2.50
Common colony	1.07	1.24	1.04	10.95
WTO	1.09	18.67	1.17	77.53
RTA	1.43	1.93	1.26	3.97
BTA	1.02	1.24	1.20	1.66

Following table shows the effects on individual countries if it controls the multilateral resistance of country pairs by using exporter and importer fixed effects in the model.

Table 2. Fixed effects estimation of Gravity Model Estimation on the Effects of different RTAs and BTAs on Trade Flows

Country	World total exports	
	Coefficient	S.D.
Australia	2.26**	0.76
Azerbaijan	2.29**	0.75
Belgium	4.76***	0.67
Brazil	3.76***	0.72
Canada	1.43*	0.75
China	8.26***	0.65
Czech Republic	7.05***	0.64
Finland	6.97***	0.81
Georgia	8.25***	0.64
Germany	9.41***	0.64
Hong Kong China	8.68***	0.64
Hungary	8.73***	0.83
Iceland	7.75***	0.65
India	7.09***	0.64
Indonesia	8.66***	0.64
Japan	7.85***	0.64
Kazakhstan	5.65***	0.65
Luxembourg	10.63***	0.64
Macao	10.25***	0.63
Malaysia	10.43***	0.64
Maldives	8.96***	0.64
Mexico	10.05***	0.65
Netherland	9.03***	0.65
New Zealand	9.61***	0.64
Pakistan	10.51***	0.63

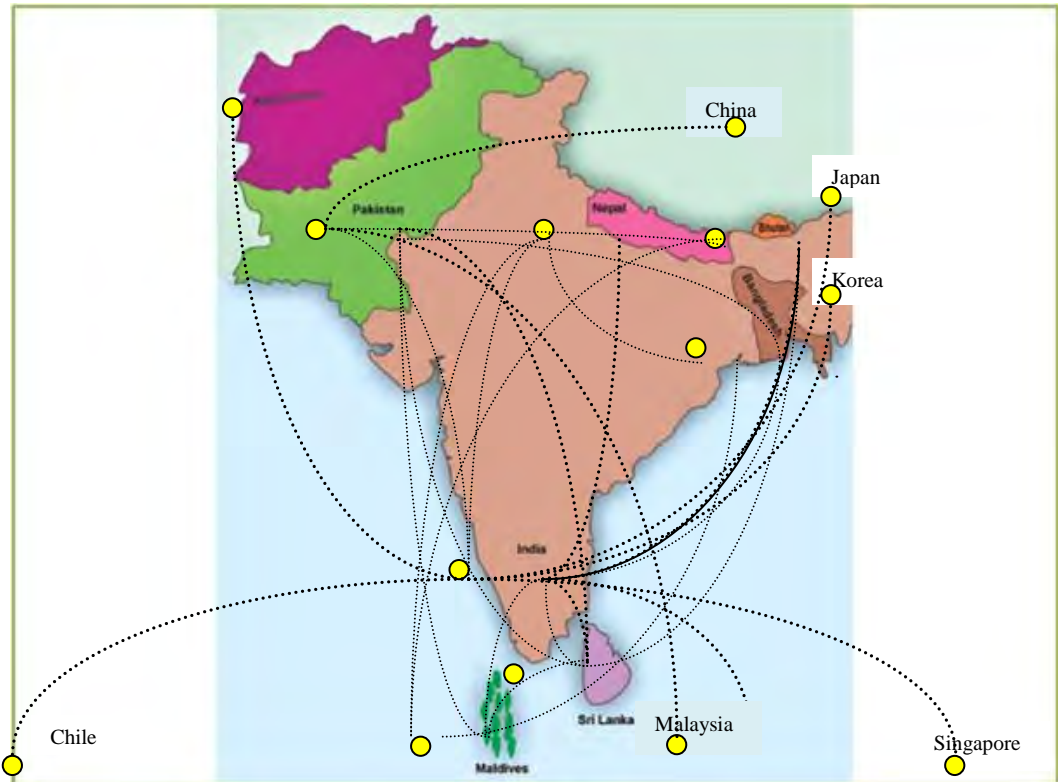|		
Philippine	9.14***	0.65
Poland	10.12***	0.64
Portugal	9.10***	0.64
Russian Federation	10.08***	0.63
Samoa	10.65***	0.63
Singapore	10.14***	0.63
Slovak Republic	10.16***	0.62
South Africa	11.43***	0.77
Spain	10.10***	0.67
Sri Lanka	10.54***	0.63
Switzerland	10.78***	0.63
Thailand	11.68***	0.63
Turkey	11.78***	0.63
United Kingdom	13.05***	0.63
United States	12.57***	0.62

*** Significant at 0.001 probability level
** Significant at 0.05 probability level
* Significant at 0.1 probability level

ANNEX 03

A map depicting various RTAs and BTAs in South Asia

Source: World Trade Organization