Title

MORIBUND SAFTA AND TRADE POLICY OPTIONS FOR SOUTH ASIA

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Abstract

In response to meager intra-regional trade flow South Asian countries formed their regional trade bloc SAFTA (South Asian Free Trade Area) in 2004 and made operational from 2006. Defying the rhetoric of the leaders and expectation of the masses, this bloc could not make any progress until now. Using panel data over the past thirty years from the seven member states and a random effect methodology that controls for endogenous predictors, the study shows that when gravity related and other variables are controlled for SAFTA turns out to be dysfunctional. The reasons for such failure can be attributed to the thin preferential margins on only a few number of tariff lines whose benefits are evaporated once complying with the rules of origin issue and complicated administrative procedure are taken into account. Moreover appearances of new generations of traded products (e.g. computing and telecommunications equipment) that are sourced from outside the region and changes of demand structure in favor of these commodities have made South Asian trade more outward oriented. Since the "free" trade bloc is not working in South, the paper concludes that alternative trade policy options like unilateral liberalization and seeking for multiple preferential agreements can buttress trade linked growth of the region.

JEL classification: F10, F13, F15

Keywords: Trade Flow, Regional Integration, Extended Gravity Model, Trade Policies, South Asia.

1. INTRODUCTION

The domino effect of regional trading agreement that occurred throughout the world during the nineties caught South Asia in 1993 when it formed the South Asian Regional Trading Agreement (SAPTA). The agreement was later converted into the South Asian Free Trade Agreement (SAFTA) in 2004 and made operational after two years. In spite of the geographic and cultural proximity, South Asian countries trade less with each other than they do with countries outside of the region. Like other regional blocs, a major goal of regional integration policies in South Asia has been to bring momentum in the intra-regional trade flows. The purpose of this paper is to identify the determinants of bilateral trade flows among the South Asian countries using quantitative econometric techniques, as well as supporting qualitative economic analysis, and control for the quantitative factors to investigate the efficacy of preferential trade liberalization in changing the observed regional trade pattern. Since a free trade agreement is already in place from 2006 in South Asia, though in its nascent stage, some data are available now to provide an ex post evaluation of the performance of the bloc in terms of its creating additional trade flow for the region and to surmise about its future potential. While existing literature shows positive effect of regional integration in South Asia based on some type of ex-ante or counterfactual trade policy analysis, this paper finds different result when actual data are used and probable endogenous predictors are taken into consideration.

The rest of the paper is organized as follows. A selection of current literature that relates bilateral trade flows to regional integration is analyzed in section 2. The dataset and the methodology of

the study are explained in section 3 which is followed in section 4 by the estimated results and their interpretations. Alternative trade policy options in the presence of ineffective regional economic integration is analyzed in section 5 and the final section concludes with few remarks.

2. REVIEW OF SELECTED LITERATURE

To grasp the mechanism of bilateral trade flow, researchers often turn to gravity model in which trade flows are assumed to be dependent directly on the economic size of the trading partners and inversely on their distance. In order to incorporate the effects of preferential trade, some dummies are introduced to capture the differential treatment of trade between partner countries. Notwithstanding the expectation that discriminatory tariffs and other barriers favoring members will increase regional trade relative to trade with outsiders, World Bank (2004) argues that forming a Regional Trading Agreement (RTA) does not automatically lead to increased regional trade flow. In some cases, major firms producing tradable commodities lobby in such a way that their industries remain outside the domain of FTA (Free Trade Area) concession or persuade the respective governments to include their products in the repository of sensitive list.

Empirical evidence regarding the effects of RTAs on bilateral trade is mixed and tends to depend on the characteristics of the member countries. The instability of the RTA coefficients across cases is highlighted in Cipollina and Salvatici (2010) and similar findings are also reported in Word Bank (2005). Because of the wide varieties of available estimates of the trade effects of RTAs, Cipollina and Salvatici (2010) use a meta-analysis technique to investigate the true effects of RTAs. Meta-analysis is an appealing technique for combining numerous empirical results on a specific area of research and then getting a combined result. Utilizing a total of 1827 estimates available over 85 previous studies their kernel density estimate produces a significant mean

value of 0.59 implying, that amid variability of estimates, preferential agreements considered as a whole have positive effects on trade flows for the members. Frankel et al (1995) is ambiguous about the impact of RTAs, as the relevant coefficients in their study are insignificant, but Wonnacott (1996) is more optimistic about the positive effects of RTA by stating that under scale economies RTA can lead to welfare improvement even in the presence of trade diversion.

Examining a set of seven RTAs, Carrere (2006) finds that trade flows among members rise with integration, but it comes at the expense of non-members facing trade diversion. Bair and Bergstand (2007) contend that traditional estimates of trade effects of RTAs are biased downward as members are often selected endogenously. Their revised estimate suggests that trade flows among the members rise by 50 to 100 percent over a sufficiently long period of time as the bias factors are corrected. However, effects on non-members' trade pattern or the welfare implication thereof are not considered in their study. Moreover, though a total of 96 countries are considered for the analysis, general equilibrium comparative static effects on the trading partners are missing.

Vicard (2011) tries to find which country pair gains more from regional integration by introducing interaction variables between country specific economic characteristics and the RTA dummy. The size and distribution of GDP between members are found crucial in determining trade flows in case of trade between North-North, and also between South-South. When the trading partners are large and symmetric with respect to these two aspects of size and GDP distribution, and the rest of the countries are small and asymmetric, trade effects are stronger. Apart from the general findings on the effects of discriminatory trade regime, some region

specific studies are also available whose major conclusions are given below to place the current research in perspective.

2.1 Literature on Trade Flow: Studies on Regions outside of South Asia

Considerations of changes in trade flow patterns for the South Asian countries that are likely to arise from the creation of NAFTA are important and deserve special attention, as this North American trade bloc includes Mexico, a developing country, along with two other developed countries of the United States and Canada. Both the USA and Canada are the major markets for the South Asian countries, especially for the textile products and Mexico is also an exporter of this product in the world market suggesting that Mexican textile and similar other products will replace third countries' products in the NAFTA market. Fukao et al (2003) investigate the trade diversion possibilities in NAFTA by a partial equilibrium framework running 70 regressions for various harmonized system (HS) 2-digit level commodities. Textile is found to be one of the 15 categories of the products that strongly respond to tariff preferences, while some other products like motor cars and vehicles do not respond much. The presence of outsourcing and FDI activities tends to dominate the trade pattern in case of these commodities.

To counter the economic dominance of Mexico that is now allied with the USA and Canada, other countries in the central American region tried hard to integrate themselves by removing internal barriers to trade and establishing a integrated regional industrial development policy. This occurred through bringing life to the CACM (Central American Common Market) that was established long before in 1958, but was impeded by occasional military conflicts in the region. Taking the six Central American countries of Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua and Panama, Gordillio et al (2010) analyze the impact of physical barriers on regional

trade. The strengths of connectivity between the countries are measured by a Euclidian distance factor adjusted for real average transport time. With a partially constrained augmented gravity model, the authors show that if these countries could reduce their existing distance to the benchmark level of the EU, the intra-regional export would double, export to the US and the EU would rise by one-third of the current level, and at the same time will accumulate trade benefit through the dissipation of inefficiencies.

South Asia took much of its inspiration from the success story of the neighbor region South East Asia that formed the ASEAN free trade bloc, AFTA (Association of South East Asian Nation's Free Trade Area) in 1992. According to a study of Bun, et al (2007), it is shown that an enormous increase in bilateral trade flow within this region is not merely driven by economic growth of this region, but in fact a consequence of its regional integration policy. More particularly, within an extended gravity model that accounts for unobserved heterogeneity, they show that AFTA has contributed to 9 per cent bilateral export growth per annum within the region after the inception of the free trade agreement. Sawyer et al (2009) explain that a large portion of the increased intra-South Asian trade represents intra-industry trade. The rising share of manufacturing export and increasing research and development expenditure along with increasing openness of the region is supporting this fragmented production structure of the region.

2.2 Literature on Trade Flow: South Asian Context

Literature on the impact of regional trade liberalization, especially on trade flows, in the context of South Asia is rather paltry. Hassan (2001) proclaims to be the first to apply the gravity type of

model to evaluate the viability of a South Asian free trade bloc[1]. The current level of intra-regional trade in the region is found to be less than that predicted by his model. The result should be taken with a grain of salt as the author includes, among the set of explanatory variables, both log of per capita GDP and log of total GDP which are highly correlated (the correlation matrix reported by the author in fact produces the 0.60 correlation coefficient for these two variables). The consequent multicollinearity problem results in non-sense highly significant negative regression coefficient for the per capita GDP variable, and without correcting for the problem or modifying the model, the rest of the analysis follows. Similarly Filippini and Molini (2003) mingle collinear variables in their analysis of East Asian trade flows by incorporating both log of total GDP and log of population among the regressors and obtain a confounding significantly negative coefficient for the population variable, which means that as the economies grow larger in terms of their population size, their bilateral trade falls.

Rahman et al (2006) follow Coulibali (2004) who suggested a two-stage regression model to assess the impact of the South Asian and other RTAs on bilateral trade flows. Coefficients of only the time varying variables are estimated with a Tobit regression in the first stage, while in the second stage coefficients of both time varying and time unvarying variables are estimated with least square method and then respective coefficients from these two stages are added together to evaluate their impact on bilateral exports. Since the data period covered in the study is 1991 to 2003, three years before SAFTA became operative, the regional dummy of their study is pointing at the intra-bloc trade creation possibility of the SAPTA regime. Moreover, in the absence of additional dummies, their suggestion about trade diverting South Asian bloc is only

[1] However, Srinivasan and Canonero (1995), Rajpakse and Arunatilke (1997), and Samaratunga (1999) also apply gravity models for assessing the impact of regional integration in South Asia.

hypothetical. Though SAPTA is found to be intra-bloc trade creating in the overall sense, country specific effects are mixed: Bangladesh, India and Pakistan experiencing intra-bloc trade creation and the rest suffering a negative effect in their bilateral trade flows. However, when the dataset is examined we see that for all of the South Asian countries' trade with the rest of the world is growing faster than their intra-bloc trade, which makes us suspicious of overall effectiveness of the bloc.

Dayal et al (2008) estimate the trade potential in South Asia on the basis of a fixed effect gravity equation with GDP, population, distances and weighted average of tariffs, all in log form, including border and language dummies as determinants of bilateral trade. The unrealized trade opportunity is calculated as the difference between the predicted trade from the estimated equation when all variables are set at their average values during the sample period and when tariffs are set to zero but all other variables retain their average values. Their estimates vary between – 66 per cent for trade between Sri Lanka and Maldives to 100 per cent for trade between Bhutan and Maldives. Their findings of – 11 per cent trade potential between India and Sri Lanka is at odds with reality, as these later two countries are experiencing one of the highest increase in bilateral trade flows in the region, especially during the past decade. Their predicted average trade potential figure of 55.7 per cent for the region as a whole is also uncertain, as the trade creation and trade diversion possibilities of such instant complete trade liberalization or the productivity implication thereof are not taken into consideration, let alone the possibility of implementing such drastic reform measure in the absence of political willingness and bureaucratic complication.

Weerakoon (2010) considers the shallowness of integration as the root cause of low intra-regional trade flow in South Asia and feels anxious that SAFTA might be upstaged by other sub-regional or bilateral initiatives of the members. The author points out that only 8.4 per cent of LDC tariff lines and 6.2 per cent of the non-LDC tariff lines fall under the tariff concession scheme. When the complicated nature of bureaucracy that the legal trade channel faces is considered, this little concession has no significant impact on intra-SAARC trade flow. Slow progress of SAARC is forcing members to take alternative routes of liberalization. Bangladesh, India and Pakistan all are now looking eastward to increase their trade flow and on the sub-regional front India has established bilateral agreements with Nepal, Bhutan, and Sri Lanka, while Pakistan has made such an agreement with Sri Lanka, and Bangladesh is in the process of negotiating an FTA with India. The fear of falling back of SAFTA in the sideline arises because these alternative agreements are more open in terms of providing their concessions.

The intensity of trade relationship between the South Asian countries with special emphasis on India is analyzed in Raghuramapatruni (2011). Based on revealed comparative advantage (RCA) index, the author identifies potential commodity groups that could contribute toward enhancing regional trade flows in South Asia. The trade intensity of India with the South Asian countries, calculated for the period 2000 to 2009, shows that the index reached a top of 12.27 per cent in 2003 but then monotonically dropped to 5.54 per cent in 2009. India's recent trade reform along with her increasing ties with the rest of the world, especially with the industrialized countries, is responsible for such change in trade intensity pattern. From the comparative advantage perspective, after examining thirteen broad SITC categories, the author concludes that Bangladesh and Sri Lanka have strong competitive position in clothing (SITC 26) with calculated revealed comparative advantages of 31.464 and 18.129 respectively. On the other

hand India and Pakistan are enjoying competitive advantages in Machinery-Transport equipment (SITC 75) with a RCA value of 3.782 and textile sector (SITC 26) with a RCA of 22.649 respectively. Competitive advantages in similar product groups like agricultural commodities for Sri Lanka and India, textile for Pakistan and India, and clothing for Bangladesh and Sri Lanka highlight the need for regional export diversifications or creation of intra-industry trade as vital for success of the South Asian regional trading bloc.

The shortcomings of the current literature when it comes to evaluating South Asian free trade area are reflected in their inability to incorporate time-series properties of the data and ad hoc or ex ante nature of their analysis. After a thorough preliminary data analysis and checking for panel stationarity of the series, this paper specifies a suitable version of the gravity model and adopts a more appropriate approach to assess the ex-post consequences of regional integration initiative for the South Asian countries. The empirical results thus obtained are expected to provide an improvement over the existing results on the effect of SAFTA on regional trade integration. Reliable results on the trade effects of integration are important as the decision to join for new members or carrying out the liberalization process further to achieve deeper integration hinge on these crucial estimates.

3. DATA AND METHODOLOGY

3.1 Description of the Data:

The data exploited for this study combines both the cross-section and time-series attributes, where all of the seven South Asian countries including the rest of the trading partners constitute the cross-section units whose values are observed over the period 1981 to 2010. Thus we have a

time-series and cross-section (TSCS) dataset, also known as panel data[2], which is different from a simple pooled series that combines at each interval of time a randomly selected sample from the same population. Because of the panel nature, where the same units are observed repeatedly over times, certain unobserved characteristics associated with the cross-section units remain unchanged over time. It is now legitimate to experiment with such things like what happens to Bangladesh exports as the population of India rise, which is not possible for a simple independently pooled series where new individuals or units appear in each period. In analyzing the impact of RTAs on bilateral trade flow, panel data are considered more appropriate as they allow for unobserved heterogeneity to be modeled and thus avoid omitted variable bias and endogenity problem (Bun et al 2007). Panel features of the data also enable us to apply a variety of panel techniques in the estimation procedure.

The data on the relevant variables for estimating the trade flow equation are from various secondary sources. Many important historical data bases including International Monetary Fund's Direction of Trade statistics, International Financial Statistics, and data from national sources are maintained by the Datastream[3]. Most of the data that have been used for this study are from this source. The bilateral trade flow data are from the IMF's Direction of Trade Statistic database. Import figures are expressed c.i.f. (cost, insurance, and freight) while export figures are in f.o.b. (free on board), both of these are in millions of current US dollars. The conversion rate for national currencies and the US dollars are obtained from the International Financial Statistics.

[2] Independently pooled cross section data are termed as panel data in Beck (2005) whereas Wooldridge (2003) calls TSCS as panel data. Because of popularity we stick to the later nomenclature.

[3] Datastream is an online product of Thomson Reuters, USA. It contains collections of historical and cross-section databases from around the world.

Exchange rates are expressed as amount of national currencies per unit of US dollar. So increases in exchange rates imply devaluation or depreciation of national currencies, while the reverse overvalues or appreciates the home currency. Moreover, as the variables are in log form, their changes indicate relative or percentage changes of the concerned variables. The distance measure is from the CEPII (Centre d'Etudes Prospectives et d'Informations Internationales). In case of country groupings the figures are weighted averages.

3.2 Methodology

Empirical literature on trade flow often employ gravity type models incorporating GDPs and distances as explanatory variables. However, to make the model suitable for prediction, it should have some theoretical underpinnings. Estimating an atheoretical model can lead to serious problems regarding the interpretation of the model. McCallum (1995) attempts to measure the border effect for trade between the United States and Canada through the use of an atheoretical gravity model and obtains an implausibly high border effect known in trade literature as the border puzzle. More reliable estimates of the border effect are found by Anderson and Wincoop (2003) when they apply the gravity equation derived from an utility based theoretical model. From that perspective, and taking direction from Feenstra (2004) and Cernat (2003), the following model is proffered here to capture the effect of regional integration on bilateral trade flows.

$$(1)\quad \Delta \ln X_{ijt} = \beta_0 + \beta_1 \Delta \ln\left(Y_{it} + Y_{jt}\right) + \beta_2 \Delta \ln(s_{it} s_{jt}) + \beta_3 \Delta \ln P_{it} + \beta_4 \Delta \ln P_{jt} + \beta_5 \Delta \ln E_{ijt} + \beta_6 \log(D_{ij}) + \beta_7 B_{ij} + \beta_8 RTA1 + \beta_9 RTA2 + \beta_{10} RTA3 + u_{ijt}$$

where among the additional variables used here, s_i and s_j represent the share of each country's GDP relative to their total GDP, i.e. $s_i = \left(GDP_i / (GDP_i + GDP_j)\right)$ and $s_j = \left(GDP_j / (GDP_i + GDP_j)\right)$. $s_i s_j$

is a measure of size dispersion between trading partners, first introduced in Helpman (1987). It is expected that, the more unequal countries are in terms of income the lower is the amount of trade between them, given of course the other things. For a given total economic size, two countries of unequal size are expected to trade less than if they were more equal. P_i and P_j are local and foreign prices of commodities respectively, both proxied here by the respective country's GDP deflators. E_{ij} is a measure of bilateral exchange rate calculated using the triangular relationship between the exchange rates of the currencies of the partner countries and the US dollar. D_{ij} is the distance in kilometer between the capital cities of the trading partners and B_{ij} is a dummy for common border.

To capture the trade creation and trade diversion consequences of regional integration the following three dummies are introduced in the regression equation (1) above.

(i) RTA1 = 1 if trading partners are in the same bloc, and 0 otherwise (bloc ➔ bloc).

(ii) RTA2 = 1 if importer belong to the bloc while the exporter to the RW, and 0 otherwise (RW ➔ bloc).

(iii) RTA3 = 1 if the exporter belong to the bloc and the importer to the rest of the world, and 0 otherwise (bloc ➔ RW).

In case of South Asia as the regional bloc SAFTA is operative from 2006, the regional dummy RTA1 gets a value of 1 in the period from 2006 to 2010 and 0 in the remaining periods for trade between members, while for trade between members and non-members the dummy receives 0 for the whole sample period. Other dummies are constructed similarly.

3.3 Model Selection and Estimation Strategy

All the time varying non-dummy variables of the estimating model (1) is found panel stationary when they are subjected to Im, Pesaran, Shin (2003) Levin, Lin,Chu (2002) and Maddala (1999) test (the results of the various panel unit root test are relegated to the appendix). So to retain the valuable long-term relationship information among the variables the model is estimated in level form instead of difference form. An important purpose of obtaining panel data is to control for country specific unobserved variables that may affect the variable of interest. Depending on the correlations of the unobserved variables with the variables included in the model and the distributions of these latent variables, two methodologies commonly adopted in this context are random effect (FE) and fixed effect (RE) models. The FE method converts the data in mean difference forms and kills the individual specific time-fixed unobserved variables along with the observed time-fixed variables during the data transformation phase. It is then a simple application of OLS to the transformed data. Possible correlation of the unobserved variables with the model included explanatory variables is no longer a concern for this methodology. RE on the other hand assumes that the individual-specific unobserved variables are randomly distributed across countries and uncorrelated with the model explanatory variables. Given these assumptions are fulfilled, RE than treats the unobserved variables as a part of the idiosyncratic error term and follows a GLS procedure to efficiently estimate the model parameters.

One advantage of the RE over FE is that it gives us the parameter estimates of time invariant variables, which sometimes are variables of interest. The other advantage is that, since it utilizes the information from the new error structure, it is more efficient than the FE estimators. However, when the assumptions are not valid in the data and especially when the error term is correlated with the regressors, RE gives biased and inconsistent estimates, i.e. the bias persists even in large data. How seriously the RE assumptions deviates from reality and based on that

which method we should follow has been suggested in Hausman (1978). The data at hand support random effect against the fixed effect model when they are subjected to the Hausman test procedure. The standard RE technique however does not control for endogenity of the regressors. In the context of trade flow model this causes us some concern as bilateral trade flows and GDPs are most likely to be influenced by one another. So we follow here Hausman and Taylor (1981) suggest asymptotically efficient instrumental variable estimator to estimate the RE model and obviate the endogenity problem.

For convenience let us the trade flow model (1) in the following generic form:

(2) $$Y_{it} = X_{it}\beta + Z_i\delta + \alpha_i + \eta_{it}, \quad i \in N, t \in T$$

Where,

$$\underset{(NT\times k)}{X_{it}} = \underset{(NT\times k_1)}{\left(X_{1it}\right.} \vdots \underset{(NT\times k_2)}{\left.X_{2it}\right)}$$ All time varying variables

$$\underset{(NT\times g)}{Z_i} = \underset{(NT\times g_1)}{\left(Z_{1i}\right.} \vdots \underset{(N\times Tg_2)}{\left.Z_{2i}\right)}$$ All time invariant variables

$$\underset{(NT\times ?)}{\alpha_i} =$$ Unobserved individual effects

$$\underset{(NT\times 1)}{\eta_{it}} =$$ Idiosyncratic errors

Equation (2) is framed in such a way that portions of both the time varying and time invariant variables (e.g. X_{2it} and $Z_{2i)}$ are potentially correlated with unobserved variables, while the remaining portion (i.e. X_{1it} and $Z_{1i)}$ is purely exogenous. Since GDP is potentially endogenous, it is considered as a part of the $X_{2it.}$ All parameters of β in equation (2) are identified, since only the time invariant part of the error can be correlated with the explanatory variables, any vector

orthogonal to the time invariant vector can be used as instruments of the endogenous X variables. The number of linearly independent instruments obtained from such orthogonal matrix is NT-N and are always sufficient to estimate all β. However, identification of the all the parameters including δ requires $k_1 \geq g_2$ which is clearly satisfied in our case. The number of exogenous explanatory variables is 7 whereas there is no endogenous variable among the time invariant variables. That is $k_1 = 7 > g_2 = 0$, satisfying the identification in this particular application.

4. RESULTS AND DISCUSSION

Table 1 summarizes the major findings of the paper on bilateral trade flows. All the non-dummy controls, except for the distance variable which is however statistically insignificant, have theoretically expected signs. The pull of gravity is expected to be stronger, the higher the partners' aggregate economic size. Larger economies have capacity to export more or have more purchasing power to import. Moreover, larger economies permit production at levels to reap scale economies which is also an important determinant of trade according to the new trade theorists (Krugman, 1980, Helpman, 1981). The estimated coefficient of this theoretically important variable for the current dataset is found to be significantly positive with a p-value of lower than one per cent and has a magnitude of 1.66 indicating that for a percentage change in the combined GDP of the trading partners, bilateral exports respond by more than one and half percent. This strong response of bilateral exports to GDP is consistent with observed increased outward orientation of the South Asian economies and their rising GDP growth in their post reform era. The coefficient value of higher than one also implies that South Asian traded commodities have been in the income elastic range during the sample period.

Table 5 Estimation Results

Dependent variable: log of bilateral exports, X_{ijt}

Variable	Description of the Variables	RE results treating GDPs as endogenous		
		Coefficient	Standard Errors	p-values
(1)	(2)	(3)	(4)	(5)
Constant	Intercept	- 41.24	5.38	<0.001
$\log(Y_{it} + Y_{jt})$	Log of total GDP of the partners	1.6598	0.2087	<0.001
$\log(s_{it} s_{jt})$	Log of similarity index	0.5614	0.1288	<0.001
$\log(P_{it})$	Log of exporter's price index	-0.9105	0.2613	<0.001
$\log(P_{jt})$	Log of importer's price index	0.7084	0.1836	<0.001
$\log(E_{ijt})$	Log of bilateral exchange rates	1.0566	0.1838	<0.001
$\log(D_{ij})$	Log of distance between trading partners	0.4569	0.8381	0.568
B_{ij}	Border Dummy	0.6702	1.3624	0.623
RTA1	Regional dummy 1	-0.2851	0.1437	0.047
RTA2	Regional dummy 2	0.2153	0.2378	0.365
RTA3	Regional dummy 3	-0.6034	0.2520	0.017

Number of observations, NT = 900 and Multiple $R^2 = 0.78$

Source: Author's estimation

The second important control, the log of GDP shares of each country, is designed to capture the effect of similarity of economic size of the partner countries on their trade flows. Multiplicative form of the GDP share terms restricts the share coefficients for each partner to be equal and this is quite reasonable. Positive coefficient of this variable is consistent with the hypothesis that countries trade more with each other if they are more similar in terms of their economic sizes. The estimated highly significant coefficient of this variable indicates that for every percentage

point improvement toward equality in their income share, bilateral export increases by about 0.56 per cent. This finding is in line with economic theory and also conforms to other studies. Size similarity between countries leads to preference similarity and overlapping demand (Linder, 1961), which is often responsible for creating bilateral trade in diversified manufacturing products. Wang et al (2010) uses panel data from OECD countries to examine the link between size similarity and bilateral trade. Their estimate of 0.85 indicates a higher trade flow response with respect to the similarity index for the developed countries compared the estimate obtained here for the South Asian dataset. Some studies consider distribution of income within (instead of between) partner countries, but in that case interest centers around the changes in the structure of commodity flows. Darling et al (2004), for example, consider intra-country income allocation in a gravity model framework and find that growing inequality has positive effect on bilateral trade of luxury goods while negative effects on necessary commodities. Bohman and Nilsson (2007) find income distribution effects more pronounced for the developing countries compared to the developed countries.

In open economies with a flexible exchange rate policy, as has been the case with South Asian countries, the bilateral exchange rate plays an important role in determining the trade flow. Unfortunately most of the extended gravity model based studies performed on South Asian data, while explaining the impact of regional free trade agreement on trade flow, lack this important variable. Presumably they are assuming that exchange rate does not fluctuate much in the sample period which is not true and the exchange rate influence on trade flow is picking up by other included variables in the model when they are correlated with the exchange rate, thus biasing the estimate of the models parameters. This motivation has been sufficient for us to include the log of exchange rate among the set of explanatory variables and not surprisingly the

parameter estimate of this variable is found to be of expected sign and highly statistically significant. For a one per cent increase in bilateral exchange rate (devaluation or depreciation, as the case might be), for all countries in the sample considered together, bilateral export increases by about the same rate. The price variables are also of expected signs and combined with the exchange rate variable, we have an indication of positive effect of real devaluation on bilateral exports.

The estimated distance variable carries a positive coefficient that may seem puzzling as it indicates rising bilateral trade flow with physical remoteness. The theory of gravity model and intuition suggest that geographic proximity should reduce trade costs and hence, given other controls, increase bilateral trade flows. With a wide range of dataset incorporating 182 countries over the period 1984 to 2005, giving a total of 169,113 observations, Tumbarello (2007) finds statistically significant negative coefficient for the distance variable. However, Sawer et al (2009) while searching for determinants of intra-industry trade in Asia though gravity models get fragile coefficient estimates for the distance variables depending of industry categories. Of the eight SITC categories, four (SITC 1, 4, 5 and 8) yields positive and the rest carry negative signs with the distance variables. The authors conclude that transportation cost is more important for trading primary products than it is for manufacturing products. The positive distance coefficient in the case of South Asia may be the influence of some unobserved variable. We suspect that increasing network of South Asian countries with remote trading partners like the USA and the EU is producing the awkward positive distance coefficient.

With regard to the insignificant distant coefficient, two explanations can be put forward. First, literature on off shoring activities suggests that transport is cost is important when trade costs are

incurred each stages of production (Baldwin and Taglioni, 2011). This happens when parts and components trades are dominant in total trade, a feature not yet noticeable in case of South Asian trade. Second, though distances are measured here as between capital cities, traded commodity in practice travels more or less than this path. Hence, we are in a situation of classical errors in explanatory variables problem, a circumstance where, as Wooldridge (2002) shows, variances of estimators inflate and estimates tend to be less significant.

Finally, the variables of interest for the purpose of the study are the three regional dummies. The trade creation and trade diversion consequences of regional trade liberalization in South Asia through their SAFTA initiative can be analyzed with the help of the coefficient estimates of the three regional dummies. Trade creation occurs when extra trades are generated among the members as they remove their tariff and non-tariff barriers at the regional level. In a regionally protected market members find it cheaper to source their imports from the free trade area. Though producers in the rest of the world are more efficient, once external tariffs are taken into account they are in a competitive disadvantage position in the regional market. Trade diversion results when members' additional import can be explained as a substitution of import from the rest of the world. Possible scenarios for new trade patterns that may emerge from regional integration is explained in Table 2 where an up (alternatively down) arrow in a cell indicates rise (alternatively fall) in export from the source to the destination region.

Table 2: Effects of RTAs on Trade Patterns

Source / Destination	South Asia	Rest of the World
South Asia	↑ = Trade Creation ↓ = Dysfunctional Integration	↑ = Trade Creation ↓ = Import Trade Diversion
Rest of the World	↑ = Trade Creation ↓ = Export Trade Diversion	Not Applicable

Source: Author's Construction

There is no theoretical certainty regarding the direction of these two effects of trade creation and trade diversion. All depend on how the future state of the world is revealed after the policy changes. Regional specialization and the attendant scale economy can increase intra-regional export as well as the region's export to the rest of the world, should the falling cost enable regional producers to achieve the level of international competitiveness. Introduction of new product or changing structure of demand in favor of the rest of the world, in contrary, may reduce intra-regional trade flows. Moreover, different pattern of productivity changes within and outside the region can be consistent with any sign pattern of the three regional dummies. The up arrow in the first two cells, i.e. positive signs with the first two regional dummies, indicates trade creation. Down arrow in the second cell or negative sign with the second regional dummy is associated with trade diversion. The main purpose of regional economic integration is to enhance intra-regional trade flows and hence a down arrow in the first cell shows a case of dysfunctional integration whereby the particular FTA does not work according to the expectation.

The nature of trade creation and trade diversion effects of the SAFTA can be understood in the light of the estimated three regional dummy coefficients. To avoid misinterpretation, the coefficients of the dummies need to be explained in the context of semi-log regression model where the exact percentage change in the dependent variable due to presence of the attribute in the dummy variable is measured as $[100\times(\exp(\hat{\beta})-1)]$ and following delta method its asymptotic standard error is computed with $[100\times\exp(\hat{\beta})\times se(\hat{\beta})]$ (Wooldridge, 2002). Column two and column three of Table 3 below represent respectively the coefficients and the implied percentage change in the dependent variable arising from a discrete change in the corresponding dummy variable. The standard errors in column four are for the percentage change estimates.

Table 3: Calculating Percentage Changes in Trade Flows

Dummies	Coefficients	Implied Percentage Changes	Standard Errors
RTA1	-0.2851	-25% (***)	10.81%
RTA2	0.2153	24%	19.17%
RTA3	-0.6034	- 83% (***)	13.78%

Source: Author' calculation

The coefficient of RTA1 gives the amount of additional trade flows among the members in the free trade area regime compared to the non-preferential era or trade with non-members. In general, because of reduced trade barriers, the coefficient is hypothesized to be positive. However, we do not find support for it in the context of the South Asian trade flow data. Empirical estimate of the three dummy indicates that, controlling for gravity variables (economic sizes, distances, and prices) and fluctuations in exchange rate, the current free trade agreement in

South Asia (SAFTA) that is in place since 2006 has in fact reduced bilateral trade flow within the region. Any upward trend in the bilateral trade flows within the region that may result from simple two dimensional plot of the dependent variable hides the underlying influences of other factors like GDP growth and currency depreciation. This can not be taken as the impact of the regional integration per se. The estimated RTA1 coefficient of -0.2851 suggests that during the free trade regime intra-regional bilateral trade has been lowered on average per year by 24.8 per cent (=100×($e^{0.2851}$-1)) compared to the baseline non-SAFTA regime in the sample period.

However, as the countries of South Asia are growing fast, the import requirements of these countries could not be denied in their early phase of development and these are being supplied by the rest of the world. The estimated positive coefficient of 0.2153 for the RTA2 dummy supports this argument. It shows that the South Asian countries' import from outside the region jumped up by 24 per cent (=100×($e^{0.2153}$-1)), on average per year, after the formation of the SAFTA compared to the non-SAFTA periods. Thus we have the indication that either the South Asian producers are not producing the types of goods required by their member partners or the concession granted through the SAFTA could not produce the critical mass necessary for turning South Asia into an intra-regional trade enhancing bloc. A more negative result arises when we consider the RTA3 dummy which has a significantly negative coefficient of -0.6034, implying that the countries of the region could not keep up with the productivity improvement attained by the rest of the world, and as a result are showing worse export performance in their post- regional trade liberalization regime. Thus, looking at the trend export from South Asia to the rest of the world might seem to be growing, but it faced a structural downward shift of about 83 per cent (i.e. 100×($e^{-0.6034}$-1)) in their post FTA regime.

5. ALTERNTIVE TRADE POLICY OPTIONS

Considering the importance of international trade in economic growth and development, trade liberalization program is now an integral part of policy reform agendas of many developing countries. Trade liberalization through regional integration is one of several other trade policy options. The depth of economic integration depends not only on the amounts of tariff lines covered in the concession lists and the amount of preferential margins offered. Free movement of resources, harmonization of standards and coordination of economic policies among the participating nations also play crucial role in fostering intra-regional trade flows. There are no signs or willingness on the part of the South Asian nations to extend cooperation in these fields.

Complementarity of the production structure among the members is required for successful regional economic integration. When there is substantial overlapping in the range of goods among the members, production structure is considered as competitive in Vinerian sense. However, from Makwer and Morton's (1953) point of view considerable differences in the cost structure is required for countries to be complementary. Whichever definition we follow, South Asian countries look more competitive than complementary. Because of this complementarity there export similarity is also higher. In an estimate, Hasan (2007) shows that export similarity between India and other South Asian countries are around 50 per cent for manufacturing products and the figure is staggeringly high at around 80 to 90 per cent for the textile related products. Instead of specializing in various types of products they seem to compete in the same market for the similar products.

Given that SAFTA remains an ornamental institution till now, a relevant question arises as to what alternative policy options are available for South Asian countries to sustain their trade

supported growth. One obvious response to the weak regional trade liberalization approach is to reduce tariff and non-tariff barriers unilaterally without considering the trade policy measures of other countries. It is argued that though such independent policy will not invoke reciprocal tariff concession from trading partners, it will improve society's welfare by enabling consumers and producers access to more varieties at lower prices. If it happens that productive resources are not utilized properly at their potential level in the protected regime, liberalization will give productivity boosts by increasing competitiveness. In case the protected sectors cannot survive the competition, resources will be allocated according to the comparative advantage of the economy. Even for a given overall tariff rate, making the tariff structure more uniform across product categories may be beneficial in that it brings transparency in the tax system, makes administrative procedure simple and reduces the risk of corruption. Government and international supports are however crucial for a smooth transition of the shocked economy to a new equilibrium state. Unilateral liberalization policy is hard to implement especially in countries where government policies are influenced by interest groups or political lobbies. There are also risk of balance of payment deterioration and the associated dependency on foreign funding.

Another alternative is liberalization on reciprocal basis which covers both multilateral and bilateral approaches. Advantages of reciprocal against unilateral liberalization include limited increase in foreign competition and opportunity of market access to other countries. Because of these two offsetting effects producers are less reluctant to oppose liberalization on reciprocal basis. Though both regional and multilateral approaches embrace reciprocity, the former has elements of discrimination within it in that only a handful of members receive concession. Principle of non-discrimination is inherent in multilateral negotiations. The very first article of

GATT/WTO states that any concession offered by any members should be equally enjoyed by the every other member. However, diversity of interests among a large number of countries makes process slow moving. The latest multilateral trade talk that started in Doha in 2001 could not be concluded as of March 2012. The progress of the multilateral talks become slower as new complicated issues like agricultural and services sector liberalization arise. While regional liberalizations are quicker and relatively easy to negotiate, the stability and irreversibility of commitment are not as good as achieved through multilateral talks. Many regional agreements have fallen dormant after their creation. Under WTO it is harder to renege on agreement. Many arguments showing static and dynamic gains from regional integration also applies to other forms of trade liberalizations. Increased competition and knowledge dispersion through export and import activities are inherent in increased trade flows, by whichever means these are achieved.

Though regional integrations and numerous PTAs complicate world trading system through their rules of origin issues, there is a general consensus among economists that they will thrive side by side multilateral system. Preferential agreements are now deep rooted and a common pattern for many countries is not to lock themselves in a single PTA, but to actively search for and participate in multiple PTAs. This latest trend reduces the possibilities of trade diversion or the detrimental effects that arise from the given amount of diverted trade. In case of multiple FTAs new sources of supplies are not drastically below the previous world standard sources. Fear of deteriorating trade balances also disappears if increased import form one contract is offset by increased from another agreement. Opportunities for knowledge diffusion and productivity gains from a single PTA are also limited. Schiff (2003) has reached similar conclusion after examining

Chile's trade policy options of entering into PTAs with an array of countries including the US, the EU, and the so called four Asian tigers: Hong Kong, Korea, Singapore, and Taiwan.

6. CONCLUSION AND RECOMMENDATIONS

The paper investigates the effectiveness of SAFTA in changing the trade flow pattern among the South Asian countries. As regional agreements have proliferated rapidly during the past few decades, economists and policy makers ask whether such a regime shift facilitates trade expansion or merely divert trade to make production structure more inefficient. Empirical results show that though geographic, cultural and ethnic proximity can have positive impact on trade flow, regional integration does not always guarantee additional trade flow irrespective of regions. At the level of integration South Asia has attained so far, this paper shows that SAFTA in general has not been effective in producing extra trade flow within the region. The bloc appears more of a promise than reality.

Important policy choice options for the South Asian countries regarding their liberalization method can be drawn from the result of the analysis. Among the three available broad categories of liberalization mechanisms, unilateral, multi-lateral and bilateral, the first deserves assiduous consideration as the second method has been historically found to be very slow moving and the third one as trade diverting for many regions. The South Asian regional integration experience shows that the numbers of tariff lines covered in the concession list are not only scanty but also important commodities that account for a lion's share of their trade remains outside the concession list. Moreover, the margins of preferential benefits are shrinking with their unilateral trade reforms. Whatever little preferences remain are compensated for by the presence of non-economic barriers and the rules of origin issue. In spite of rhetoric of the leaders, SAFTA

continues to be an ornamental institution. Since world trading system is dominated by discriminatory trades of NAFTA and the EU, Panagariya (2007) suggests a larger Asia-wide regional bloc including China to counteract the detrimental effects of preferential trade arising from outside the region. Alternatively they can engage in several FTAs that befit them.

Trade flow effect of regional integration per se does not guarantee enhanced welfare or lower trade can be associated with increased welfare if the opportunity for new commodity substitution generates enormous benefits for both consumers and producers. In the realm of second best theory and general equilibrium setting, Lipsey (1970) shows that even trade diversion can create welfare if intra-commodity and inter-country commodity substitutions are allowed for. Efficiency changes of the trading partners in the rest of the world are also important. When preferential liberalization allows inefficient partners to increase exports to member countries, the risk of trade diversion rises at the same time. So the efficiency effect, which is closely related to productivity and the welfare dimension, of preferential liberalization on the trading partners can be undertaken in separate studies in the future.

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APPENDIX

Table A: Panel Unit Root Test

Variables	Test Type	Statistic & Test Value	p-value
$Log(X_{ijt})$	Maddala-Wu (1999)	$\chi2$=201.49 [a]	< 0.0001
	Levin, Lin, and Chu (2002)	Z= -6.1741 [a]	< 0.0001
	Im, Pesaran and Shin (2003)	Z= -5.1312 [a]	< 0.0001
	Hadri (2000)	Z= 31.002 [a]	<0.0001
$Log(Y_i+Y_j)$	Maddala-Wu (1999)	$\chi2$=163.702 [a]	< 0.0001
	Levin, Lin, and Chu (2002)	Z= 13.316 [a]	< 0.0001
	Im, Pesaran and Shin (2003)	Z= 20.698 [a]	< 0.0001
	Hadri (2000)	Z= 97.810 [a]	<0.0001
$Log(Y_i/(Y_i+Y_j) \times(Y_j/(Y_i+Y_j)))$	Maddala-Wu (1999)	$\chi2$=129.598 [a]	< 0.0001
	Levin, Lin, and Chu (2002)	Z= 2.2563 [a]	0.0241
	Im, Pesaran and Shin (2003)	Z= 2.8799 [a]	0.0040
	Hadri (2000)	Z= 38.295 [a]	<0.0001
$Log(P_i)$	Maddala-Wu (1999)	$\chi2$=230.063 [b]	< 0.0001
	Levin, Lin, and Chu (2002)	Z= -8.7926 [b]	< 0.0001
	Im, Pesaran and Shin (2003)	Z= -3.7358 [b]	0.0002
	Hadri (2000)	Z= 54.7418 [b]	<0.0001
$Log(P_j)$	Maddala-Wu (1999)	$\chi2$=230.063 [b]	< 0.0001
	Levin, Lin, and Chu (2002)	Z= -8.7926 [b]	< 0.0001
	Im, Pesaran and Shin (2003)	Z= -3.7358 [b]	< 0.0001
	Hadri (2000)	Z= 54.7418 [b]	<0.0001
$Log(E_{ij})$	Maddala-Wu (1999)	$\chi2$=182.945 [b]	< 0.0001
	Levin, Lin, and Chu (2002)	Z= 3.0118 [b]	0.0026
	Im, Pesaran and Shin (2003)	Z= 3.3415 [b]	0.0008
	Hadri (2000)	Z= 54.2061 [b]	<0.0001

Notes:

a) The estimated equation contains a drift (constant) term.

b) A trend term is included among the set of dependent variables in the auto-regressive equations.