Regional Integration and Trade Costs in South Asia

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Abstract

Until now, the value of inter-country trade within South Asian nations has been low. While similarities in the exports profiles can be seen as a reason for this low value of trade, it might not be a valid one, especially given the presence of growing South Asian income. The intra-industry trade theory suggests that complementarity might actually increase trade in the presence of a rising income. There may be other important factors such as trade costs. Using an augmented gravity model in a panel framework, we try to identify the components of trade costs that might have resulted in lower inter-country South Asian trade.

JEL Classification: C32, F02, F15

Contents

I. INTRODUCTION

The beneficial effect of free and fair trade is well known.[1] Trade affects growth in three primary ways. First, trade encourages flow of resources from low productive sectors to high productive sectors, leading to an overall increase in output. Export growth may affect total productivity growth through dynamic spillover effects on the rest of the economy (Feder 1983). The possible sources of this positive dynamic spillover include more efficient management styles, better forms of organization, labor training, and knowledge about technology and international markets (Chuang 1998). Second, with unemployed resources, an increase in export sales leads to an overall expansion in production and a fall in unemployment rate. As production increases, because of increase in scale of operation (economies of scale) firms become more efficient (Helpman and Krugman 1985). Third, international trade also allows for the purchase of capital goods from foreign countries and exposes an economy to technological advances of industrialized countries. Recent theoretical work suggests that capital goods imported from technologically advanced countries may increase productivity and thereby growth, since knowledge and technology are embodied in equipment and machinery and therefore transferred through international trade (Chuang 1998). In other words, trade plays an important role for economic growth of a region.

Despite these positive aspects, free trade is opposed mainly because workers and producers associated with the inefficient industries stand to lose out. There is considerable lobbying pressure by inefficient producers demanding more protection. As raising tariff barriers is not allowed under the World Trade Organization (WTO) framework, individual governments try to protect their respective economies by imposing non-tariff barriers (NTBs), like antidumping measures, import license, sanitary standards, etc.

Besides these policy induced reasons, trade flow can also be affected by other reasons such as transportation costs—both freight costs and time costs (Baier and Bergstrand 1997; Rose and van Wincoop 1991); information costs (Rauch and Trindade 2002); contract enforcement costs (Evans 2001); use of different currencies (Rose and van Wincoop 2001); lack of trade facilitation measures such as inadequate logistics of moving goods through ports, inefficient handling of custom documentation, lack of harmonization of regulation standards, etc. (Wilson et al. 2004); language barriers (Eaton and Kortum 2002); and local distribution costs—wholesale and retail (Feenstra 1998). In fact, these other factors can be more important than price factors like tariffs and exchange rates in affecting trade flows. Anderson and van Wincoop (2004) observe that direct policy instruments such as tariffs and quotas are less important compared to barriers such as lack of infrastructure, informational institutions, law enforcement, and local distribution costs.

Hence, success of trade liberalization can be fully realized if trading partners can control for these above mentioned “non price factors of trade” which are also known as trade costs.[2] Researchers can form an idea about trade costs by trying to account for all other additional costs incurred in moving goods to the final consumer other than the marginal cost of producing the goods. For example, of the US$2 export value for Barbie dolls when they leave Hong Kong for the United States, about 35 cents covers Chinese labor, 65 cents covers the cost of materials, and the remainder covers transportation and overhead, including profits earned in Hong Kong. The dolls sell for about US$10 in the United States, of

[1] In the static sense we think of benefit accruing to countries trading on the basis of comparative advantage (Ricardian theory), or on the basis of different factor endowments (Hecksher-Ohlin-Vanek model). The dynamic effects of trade on growth depend crucially on the extent of technology transfers or knowledge spillovers through foreign direct investment (FDI) across countries (endogenous growth models and Helpman-Grossman models).

[2] In literature, trade liberalization is also known as external sector liberalization. It means reduction in tariff barriers, phasing out of NTBs like quotas, import license, etc., export promotion, and a move towards a market determined exchange rate.

which Mattel (the retailer of Barbie dolls in the US) earns at least US$1, and the rest covers transport

ation, marketing, wholesaling and retailing in the United States (Feenstra 1998).

According to Anderson and van Wincoop (2004) trade costs for industrialized countries is 170%. This number breaks down as follows: 21% transportation costs, 44% border-related trade barriers, and 55% retail and wholesale distribution costs (2.7 = 1.21×1.44×1.55). Further breakdown of the 44% border-related trade barriers shows 8% because of policy barriers, 7% because of language barrier, 14% because of currency barrier (from the use of different currencies), 6% because of information barriers, and 3% because of security barriers.

Given the importance of trade costs in affecting trade flow among nations, it makes sense to understand and to the extent possible identify trade costs in South Asia. Such an exercise will have important policy relevance in the context of South Asian Association of Regional Cooperation (SAARC).[3] In 1995, the SAARC Preferential Trading Arrangement (SAPTA) was formed with the idea of hastening trade flow in the region. In a 1999 report (SAARC 1999) following a call for "greater coordination of monetary and exchange rate policy," a tentative roadmap suggested goals of forming a South Asian Customs Union (SACU) as early as 2015, followed by a South Asian Economic Union as early as 2020.[4] Therefore, at least at the political level, there seems to be some willingness to increase trade flow in the region.

Against this backdrop, the present paper tries to do the following: (a) examine whether SAARC nations actually share economic characteristics favorable for a deeper economic integration; (b) identify trade costs that are coming in the way of deeper integration of South Asian trade; (c) quantify the sources of trade costs using an augmented gravity panel framework; and finally; (d) make policy recommendations.

II. SAPTA, SAFTA, AND THE STORY SO FAR

The South Asia Free Trade Agreement (SAFTA) is one of the many regional trading agreements (RTAs) that have been formed over the last two decades. Repeated failures of multilateral negotiations, especially at various ministerial WTO meetings, have led to an increase in the number of RTAs.[5] Also, increased internationalization of markets (i.e. globalization) and the fear of losing out to other inefficient producers, have put pressure on individual countries to become part of any RTA. The answer to a successful RTA therefore lies in controlling the factors that act against the RTA, and nurturing the factors that help to form and sustain an RTA. Some of the factors that affect formation of an RTA are considered below.

Extent of Trade: Countries trading more among themselves are likely to form an RTA. In fact, an RTA is more likely to be formed when trade takes place in similar commodities, that is, intra-industry trade. The likelihood that an industry association will demand more protection is lower in the case of intra-industry trade. In the presence of intra-industry trade

[3] SAARC was formed in 1985 with Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Sri Lanka, as its members. Initially SAARC focused on areas such as health, population activities and child welfare, culture, and sports. However, with each passing year, the member countries have been working on increasing economic cooperation.

[4] Some initial steps were taken in this direction with the establishment of Saarcfinance, a network of SAARC central bank governors and finance secretaries and its subsequent formal recognition as a SAARC body at the 11th SAARC summit held in Kathmandu, Nepal in 2002. Beginning on January 1, 2006, the South Asian Free Trade Area (SAFTA) came into effect. SAFTA strengthens the relationships defined under SAPTA and is envisaged as the next step towards formation of the SACU.

[5] Around 205 RTAs notified under the General Agreement on Tariffs and Trade (GATT) and the WTO are in force today (WTO 2008).

(for example, India exporting TATA Indica cars to the US and at the same time importing Ford Fiesta cars from the US), adjustment costs associated with removing trade barriers are lower. In this case jobs lost due to customers shifting to more efficient foreign suppliers may to a large extent be offset by the job enhancing expansion in foreign demand for similar, differentiated goods produced domestically. The political opposition to liberalizing and expanding intra-industry trade tends to be far less when compared to trade involving dissimilar items, that is, inter-industry trade.

Country characteristics: Economies that are similar in terms of size are better candidates for forming an RTA. Similarities are measured in terms of economic development and geographical proximities. The more similar the economies, the higher the likelihood of intra-industry trade. Similarity is often measured in terms of per capita gross domestic product (GDP). This is because geographically adjacent economies with a similar level of economic development have access to similar kinds of technology. Consequently they tend to produce more or less similar items and tend to trade in similar commodities (closely differentiated products as in the monopolistic competition type market structure). As the literature on the gravity model on trade demonstrates, similarities in economic structure and geographical distance between respective economies are powerful determinants of trade (Tinbergen 1962; Linneman 1966; and Frankel 1997).[6] Trade increases with economic size and proximity of the trading partners.

Prices: Low technology intensive items, like leather footwear, garments, gems and jewelry, textile products, etc., which are typical of any developing country’s export profile, are very sensitive to movement in prices, i.e. are price elastic. When it comes to forming an RTA, countries analyze whether such an arrangement will enable them to realize a greater demand for their exports. From the demand-side perspective, it can be argued that sustained demand growth cannot be maintained in a small domestic market, since any economic impulse based on expansion of domestic demand is bound to be exhausted. However, export markets do not exhaust quickly. An RTA not only provides a platform for a greater market share but also enables countries to produce efficiently. As the literature on monopolistic competition suggests, a way to produce exports competitively is to take advantage of economies of scale in production which can be realized from a greater market share resulting from an RTA (Helpman and Krugman 1985; Leamer 1984).

Government Policies and Symmetric Economic Activities: A more liberal government policy is likely to be beneficial for an RTA. There is a general consensus in the literature that trade volume, both exports and imports, increases following external sector liberalization (Agosin 1991; Bertola and Faini 1991; Kohli 1991; Clarke and Kirkpatrick 1992; Joshi and Little 1996). Both the imports and exports of a country tend to increase with external sector liberalization. Under small country assumptions, a fall in tariff barriers reduces the price of imports and causes imports to rise. Exports also increase, and this is true whether the economy has a fixed or flexible exchange rate regime. Under flexible exchange rate regimes when the economy opens up, first its imports rise. An increase in imports causes a relative increase in the supply of domestic currencies vis-à-vis the foreign currencies. This happens because foreign currencies are used to finance imports. With flexible exchange rates the value of domestic currency is market determined; an excess supply causes its values to depreciate. This means the price of exports for this economy falls, causing exports to rise. Under fixed exchange rate regimes, increase in exports happens in a different way. First, due to liberalization, imports increase. However, the market price of domestic currency does not fall as it is fixed now. An increase in imports releases resources from the import competing sectors. A considerable portion of these resources finds use in the export sectors. As a result, production of exports increases. The price of exports falls, partly because of increased production and partly because inputs prices are cheaper with more coming from

[6] Another major relevance of the gravity model is that it provides the main linkage between trade barriers and trade flow—something we have used for this paper.

the import competing sectors. Exports increase. Higher trade volume, resulting from external sector liberalization, is expected to increase the likelihood of an RTA formation.

Similarly, symmetric economic activities among member nations also have a complementary effect towards forging deeper economic integration such as customs and economic union. Symmetric economic activity implies that long-run movements in real output are synchronized. Such co-movements of outputs may be due to dependence on common factors such as geographical proximity and countries sharing a similar industrial profile. When countries share a similar industrial profile and are located in close proximity, the demand shocks in one country may affect other countries in the region. This could also arise if these economies all share a common trade linkage with major import markets. For example, if all of these countries engage in trade with the European Union, then changes in the European Union's economic performance would have a similar effect on all the countries concerned and cause them to behave synchronously. In this case, economic trends would become more similar because all the sectors and therefore all the countries would be affected in a similar way. Symmetry in economic activity implies that there is a lesser contradiction in terms of formulating internal and external macroeconomic policies—something which is prerequisite for forming an economic union.

Against this background, we analyze how well SAARC member nations fulfill these desirable criteria for forming an RTA.

Extent of Trade: Trade in the SAFTA region is currently low (Table 1 and Table 2). According to Newfarmer and Pierola (2006) South Asia's intra-regional trade as a percentage of its total trade volume has barely changed from around 2% in 1980 to 3% in 2004. Exports from South Asia have increased from only US$17 billion in 1980 to US$120 billion in 2004, in contrast to exports in East Asia growing from US$80 billion to nearly US$1 trillion within the same period (Newfarmer and Pierola 2006). Considering factors other than trade costs (something we will be dealing with later), lower intra-SAFTA trade is due to a number of reasons.

Table 1: Intra-regional Total Trade, 2004 (In US$ thousands)

	Bangladesh	Bhutan	India	Nepal	Maldives	Pakistan	Sri Lanka
Bangladesh		229.394 (143.784)	105,206.068 (127,8712.080)	66.590 (129.410)	17.20 (402.80)	44663.08 (142378.96)	10212.71 (9567.14)
Bhutan[1]	4,86.870 (6,92.744)		109,509.078 (135,943.023)	596.070 (557.922)	n.a. n.a.	n.a. n.a.	2.941 (2.364)
India	1,593,313.764 (58,754.536)	83,880.161 (70,402.860)		736,905.688 (342,882.634)	42,177.575 (573.767)	505,070.219 (91,952.757)	1,344,050.070 (361,306.620)
Nepal[2]	6,106.596 (4,854.636)	1,366.282 (568.456)	341,798.923 (954,908.121)		n.a. n.a.	994.245 (3,301.730)	1,189.394 (1,990.622)
Maldives	n.a. (6.193)	n.a. n.a.	457.965 (65,833.279)	n.a. n.a.		n.a. (2200.953)	15,120.671 (68,464.407)
Pakistan	197,650.475 (45,077.822)	351.615 (379.499)	158,335.039 (454,408.247)	3,036.545 (3,710.456)	1,936.187 (61.079)		134,693.623 (45,657.907)
Sri Lanka	13,378.370 (7,704.451)	11.803 (0.050)	385,800.500 (1,360,084.49)	275.269 (78.113)	60,084.021 (19,838.733)	39,250.282 (108,059.31)	

Notes: 1. Figures are for year 1999; 2. Figures are for year 2003. Numbers in brackets are net imports while those outside brackets are net exports.

Source: Comtrade Database, United Nations Commodity Trade Statistics Database.

Table 2: Total Trade (in US$) of South Asian Countries, 2004

Bangladesh	Import	11,372,744,850
Bangladesh	Export	8,267,482,023
Bhutan[1]	Import	182,077,408
Bhutan	Export	115,950,052
India	Import	108,247,954,259
India	Export	79,834,064,105
Maldives	Import	641,816,856
Maldives	Export	169,740,947
Pakistan	Import	17,948,583,563
Pakistan	Export	13,379,014,624
Sri Lanka	Import	7,880,453,497
Sri Lanka	Export	5,485,135,246
Nepal[1]	Import	1,347,482,240
Nepal	Export	524,294,592

Notes: 1. Figures are for year 1999.

Source: Comtrade Database, United Nations Commodity Trade Statistics Database.

First is the factor of low purchasing power resulting in a smaller regional market. Although one of the fastest growing regions in the world (GDP growth rate averaging around 7% over the last two years), measured in terms of per capita GDP (read purchasing power) these economies are quite small. For instance, until 2001, South Asia housed one-fifth of the world's population but contributed less than one twentieth of the world income in terms of GDP (Panagariya 2003). There might not be enough demand for major Indian exports like transport and machinery, gems and jewelry, leather products, garments, etc., because of lower purchasing power of other SAARC nations. On the other hand, from a supply side perspective, some of the economies like Nepal, Bhutan, and Bangladesh are small, and suffer from supply constraint to meet demand generated by big economies like India.

The second reason for low trade can be attributed to the presence of high tariff barriers. A reflection of high tariff barriers is a lower trade-GDP ratio in many of these SAFTA member countries. In terms of their *openness* criteria—measured in terms of trade as a percentage of GDP—Maldives and Sri Lanka are more *open* compared to India and Pakistan (Table 3). On the whole, after the Middle East and North Africa, South Asia as a region is least integrated with the world economy. This is particularly true in case of agricultural products, where tariffs levied on developing-country exports were frequently twice as high as those on the industrialized countries. The simple average of the applied duties in non-agricultural goods ranges from 10% in Sri Lanka to 21% in Bangladesh. In India, this tariff is approximately 20%. In agriculture, the level of protection is even higher and ranges from 25% in Pakistan to 100% in India (Panagariya 2003).[7] Higher tariffs within the region have neutralized the benefit of common cultural affinity, common geography and the advantage of common borders that India shares with other SAARC nations.

[7] Sometimes policymakers find it difficult to reduce tariffs for domestic reasons. A good example is that of India. The average land holdings size for the Indian farmer is around 1.4 hectares or 10,000 square meters (Brummer 2006).These marginal farmers work in the land of big farmers. Under the condition of lower tariffs, large-scale farmers take a loss and may stop production. That leaves marginal farmers jobless, further worsening an already unequal income distribution. Recognizing the need to lower tariff barriers, Indian policymakers are currently putting emphasis on educating the rural population to enable a smooth transition (in terms of contribution to national income) from agriculture to the manufacturing and services sectors.

Table 3: Trade as a Percentage of GDP

Year	India	Bangladesh	Nepal	Pakistan	Sri Lanka	Maldives	Bhutan
1995	23.13165	28.20949	59.49052	36.13276	81.63505	170	79
1996	22.18716	29.77754	58.45777	38.33013	78.87396	165	80
1997	22.888	30.01163	64.03554	36.85226	80.13755	170	81
1998	23.98499	31.6062	56.7096	34.01173	78.49499	168	81
1999	25.27612	31.8524	52.56698	32.31996	78.75148	170	80
2000	27.38089	33.20734	55.71059	28.1296	88.63646	161	76
2001	26.3828	36.88216	55.8	30.37153	80.89863	157	71
2002	29.92318	33.32301	46.23067	30.53763	78.89409	152	62
2003	30.77938	34.24911	44.24786	32.84449	78.04928	153	62
2004	38.22035	36.27827	46.1473	30.30013	81.72526	178	93
2005	43.61438	39.62709	44.06298	35.25329	76.27002	n.a.	87
2006	48.77868	44.21832	45.289	38.60547	74.78382	n.a.	77

Source: World Bank 2008c.

The third reason is low technology, labor-intensive tradable items (Table 4). With regard to these products, items such as textiles, animals, leather, etc., not too much disintegration in production is possible. Disintegration of production itself leads to more trade, as intermediate inputs cross borders several times during the manufacturing process (Feenstra 1998). For example, automobile parts and finished autos are both included in trade between the United States and Canada—something clearly missing in the present context.

Table 4: Main Tradables in the Context of SAARC Nations[1]

Textiles (India)	Textiles (Sri Lanka)	Animals (Bangladesh)
Gems and Jewelry (India)	Vegetables (Sri Lanka)	Leather (Bangladesh)
Chemicals (India)	Plastics (Sri Lanka)	Textiles (Bangladesh)
Textiles (Pakistan)	Animals (Maldives)	Textiles (Nepal)
Vegetables (Pakistan)	Textiles (Maldives)	Metal (Nepal)
Leather (Pakistan)	Foodstuffs (Maldives)	Chemicals (Nepal)

Notes: 1. Commodities represent top three exports for the year 2002. Name of respective SAARC member countries are reported in parenthesis.

Source: Industrial Commodity Statistics Yearbook, United Nations, 2004.

Hence, going by the metric of extent of trade, South Asian nations might not qualify for a successful RTA. In fact because of this low intra-region trade factor, Panagariya (2003) commented that forming an RTA in South Asia would result in more trade diversion than trade creation. Trade creation happens when a more efficient producer of one country displaces the less efficient producers of another member country within the Free Trade Area (FTA). On the other hand, trade diversion results in displacement of more efficient producers outside the FTA—losing market share to less efficient producers within the FTA. For example, when Bangladesh allows Indian cement to be imported duty free and this leads to the more efficient Indian cement industry to out compete the less efficient Bangladesh cement industry, it results in trade creation. On the other hand, duty free access to Indian television manufacturers to Bangladesh resulting in displacement of more efficient Japanese television manufacturers who remain subject to duty results in trade diversion. As these economies in South Asia previously had a relatively high tariff structure, the extent of trade diversion was expected to be high. However, with falling tariffs there is a lesser chance of trade diversion.

Country (economic) characteristics: When comparing in terms of economic structure, namely, savings as a percentage of GDP, demographic profile and labor mobility, SAFTA member countries have many similarities (Table 5). The industrial sector constitutes roughly a fourth of GDP in all countries, while the share of agriculture varies from 16% in Sri Lanka to almost 34% in Nepal. Although a majority of the population still lives in rural areas, all of these countries are becoming increasingly urbanized. Except for the Maldives, savings as a proportion of GDP are also similar across these countries. These countries also share a similar demographic profile: in all these nations, age 65 and above is a small percentage of the population (varying between 4% in Bangladesh to 7% in Sri Lanka); that is, these economies have a much younger working population. The more similar the economies, the more similar their export profile. Greater economic cooperation among SAFTA members holds important implications in the form of larger market and economies of scale in production. These factors might act as further incentives for a successful RTA.

Table 5: Socioeconomic Characteristics of SAARC Member Nations, 2006

Country	Bangladesh	Bhutan	India	Nepal	Pakistan	Maldives	Sri Lanka
GDP per capita (constant 2000 US$)	419	1086	634	242	635	3251	1070
GDP growth (annual %)	7	8	9	3	7	9	7
Agriculture, value added (% of GDP)	20	22	18	34	19		16
Industry, value added (% of GDP)	28	38	28	16	27		27
Fertility rate, total (births per woman)	3	2	3	3	4	3	2
Foreign direct investment, net inflows (% of GDP)	1	1	2	-0	3	1	2
Rural population (% of total population)	74	89	71	84	65	70	85
Gross domestic saving (% of GDP)	18	41	31	8	14	..	17
Services, etc., value added (% of GDP)	52	40	55	49	53	..	56
Mortality rate, infant (per 1,000 live births)	52	63	57	46	78	26	11
Population ages 0-14 (% of total)	35	32	33	38	36	33	24
Population ages 15-64 (% of total)	62	64	62	58	60	63	70
Population ages 65 and above (% of total)	4	5	5	4	4	4	7

Source: World Bank 2006.

Government Policies and Symmetric Economic Activity: The encouraging point is that most of the SAARC economies have started to open up and have also registered healthy GDP growth. During the period 2006–2007, all SAFTA countries, except for Nepal, have witnessed strong economic growth in the range of 7%–9% (Table 5).[8] Similarly, despite low intra-regional SAARC trade—accounting for less than 5% of the region's overall foreign trade—it is rising. The upward trend in trade is likely to continue with SAARC economies further reducing tariffs because of their commitment at WTO, and per capita GDP in the region continues to grow. Presently, because of restrictions on legitimate trade, there exists a considerable amount of extra-legal trade. For example, Taneja (2004) estimates that the magnitudes of legal and extra-legal trade between Bangladesh and India are roughly the same, while extra-legal trade is estimated to be nearly one third of the value of legal trade between India and Sri Lanka. Sarvanathan (1994) put the estimate of India's informal exports to Sri Lanka at US$142 million and India's informal exports from Sri Lanka at US$121 million. Estimates of the magnitude of extra-legal trade between India and Pakistan vary from US$100 million to US$1 billion per year (South Asia Development and Cooperation Report 2001; Nabi and Nasim 2001).

As McCombie and Thirlwall (1997) and Paulino and Thirlwall (2004) have pointed out, robust economic growth encourages a more liberalized trade regime. In their study covering

Organization for Economic Cooperation and Development (OECD) countries between 1958 and 1988, Baier and Bergstrand (2001) observed that the average level of bilateral trade grew twice as fast as a country's GDP. About two-fifths of the growth of trade relative to income is explained by the combined effect of falling tariffs and transport costs. Of these, falling tariffs were twice as important as falling transportation costs. A more open economy in the South Asia region will lessen trade diversion—a concern raised by Panagariya (2003).

More importantly, South Asian countries exhibit symmetric economic activity. There is evidence of long term co-movement in supply side components of output in the SAARC region (Banik, Biswas, and Saunders 2006). This means that an economic boom (recession) in one of these nations is likely to reverberate throughout the region. In fact, this aforementioned economic characteristic of South Asian countries will enable them to go beyond the FTA framework and work for deeper economic integration, such as forming a common market and economic union.

Intra-SAARC trade can flourish taking advantage of geographical proximity, rising income, and falling tariffs. As shown by McCallum (1995) in the presence of borderless trade (that is, with minimal trade related disruption), Ontario and Quebec provinces in Canada are expected to export about ten times as much to California as to British Columbia.

III. TRADE COSTS

Having ended the last section on a positive note, it makes sense to reflect on key areas of concern inhibiting trade flow in the South Asian region. As is evident from the literature (as discussed above), success of trade liberalization (read controlling for the policy variables like tariffs and non-tariffs barriers) can be attained only when countries can control for trade costs. In the context of in South Asia, in its 2005 report, the U.S. Trade and Development Agency identified major components of trade cost. Much of the source of trade costs results from lack of trade facilitation and lack of availability of physical infrastructure in South Asia. For instance, logistics costs in India are among the highest in the world (at 13% of GDP), and inadequate infrastructure is responsible for holding back GDP growth by roughly 2%, or an annual hit of approximately US$20 billion to economic progress (Economic Times 2008).

Issues regarding trade facilitation have been discussed in length by Wilson and Ostuki (2007). They pointed out that the South Asian region needs to build upon four areas of trade facilitation: port efficiency, customs environment, regulatory environment, and service sector infrastructures (like electronic documentation, harmonizing regulations, etc.). For instance,

[8] Nepal witnessed political turmoil during the period aftermath takeover of power by King Gyanendra on 1 February 2005.

port congestion because of inefficient handling of goods or lack of adequate capacity affects turnaround time of feeder vessels. Then there are environmental (read hygiene) related issues. For instance, Indian exporters of edible items like rice, tea etc., find it difficult to ship their product from the nearest port of exit. Exporters in eastern India are forced to transport edible items by road to Kakinada—a port in Andhra Pradesh which offers mid-water loading facilities—to avoid contamination. The congested Kolkata port handles export of iron ore and scraps of other metals, items which cause pollution (read, dust particles) and thereby expose edible items to the risk of contamination (Banik 2008). The loss in time adds on cost for the exporters. As Hummels (2001) points out, for each day saved in shipping time it is equivalent to saving 0.5% on ad-valorem tariff.

Coming back to another key element of trade facilitation, complex and nontransparent administrative requirements (often pertaining to documentation) creates space for corruption. Some of these administrative requirements can also be qualified as non-tariff barriers (Box 1). At the India–Bangladesh border a consignment needs at least 22 documentations, more than 55 signatures and a minimum 116 copies for final approval (RIS 2004). Paying bribes is a common phenomenon. Across South Asia the size of a bribe was reported to be between 2.2% and 2.5% of firm sales (Ahmed and Ghani 2007). In the context of South Asia, the size of bribe payments is relatively less in India, Sri Lanka and Bhutan in comparison to Bangladesh, Pakistan and Nepal. According to Wilson and Ostuki (2007), if countries in South Asia raise capacity building in trade facilitation halfway to that of East Asia’s capacity, average trade is estimated to increase by US$2.6 billion. This is approximately 60% of the regional trade in South Asia. The areas that will provide the greatest gains are service-sector infrastructure and efficiency in airtime and maritime ports (Table 6).

Box 1: Constraints for Exports

- In India, each state has its own set of rules with regard to inter state movement of goods. Goods moving across the states are also subject to further inspection and even taxes/fees. For example, the Nepalese Vegetable ghee is subjected to canalization, State-wise quota system and some discriminatory taxes (such as luxury tax, state sales tax, entry tax, etc.) in the importing country.
- Prospective exporters are required to obtain a license from the Bureau of Indian Standard (BIS) besides the application/processing charges, which require payment of costs of inspection visits from India to the exporting countries.
- India continues import licensing of about 600 items on the grounds that restrictions are needed to ensure protection for "human, animal or plant life or health." Imports of nearly all livestock, agricultural and food products require some kind of phyto-sanitary certificate. All consignments of imported food products are required to be tested by the Port Health Officer (PHO). At the Customs Clearance Offices where PHOs are not available, various samples are drawn and forwarded for clearance to some other laboratory, which results in loss of valuable time. Furthermore, the warehouses are not equipped to cater to preservation of perishable goods.
- Rule 32 of the Prevention of Food Adulteration Rules (PFA), 1955 deals with packing and labeling of foods. This rule alone has 30 provisos and provisos within provisos. In addition, there are cross references to other rules.
- The results of the laboratory tests cannot be challenged. In some cases, even certificates by EU accredited labs on this account have been rejected by Indian Customs and such consignments are subjected to repeat tests in India.

Source: Compiled by authors on the basis of various complaints submitted by exporting firms to Ministry of Commerce, Government of India.

Table 6: Trade Gains from Capacity Building by each South Asian Country and Entire South Asia Region in Trade Facilitation (in US$ millions)

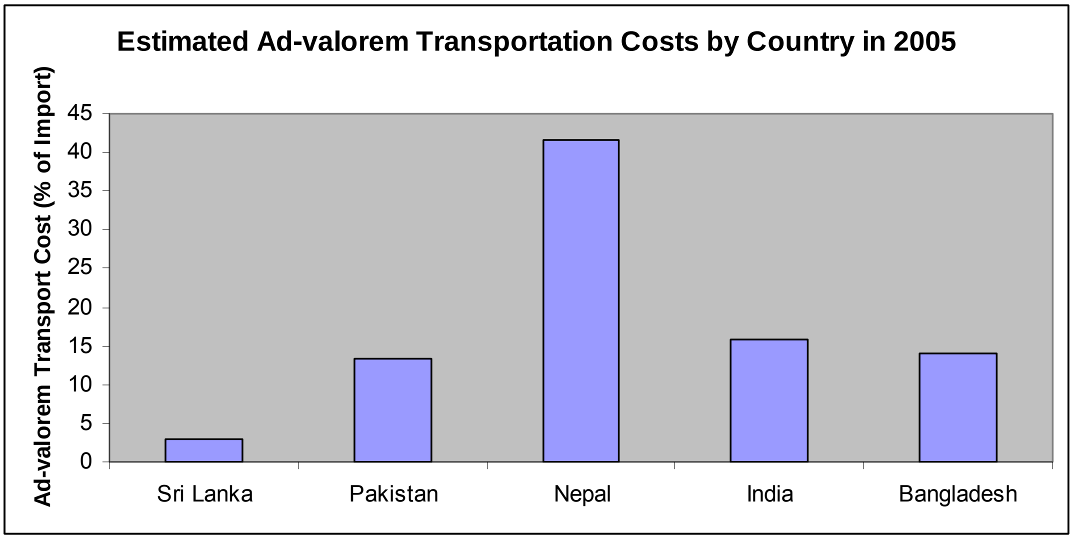
Country	Port Efficiency (Air and Maritime)	Customs	Regulation	Service Sector Infrastructure	All
Bangladesh	228	144	71	339	782
India	314	193	123	519	1149
Pakistan	74	29	42	191	336
Sri Lanka	97	63	41	175	377
South Asia	712	429	278	1224	2644

Source: Wilson and Ostuki (2007).

With regard to the availability of physical infrastructure, South Asia is facing a major problem. The lack of proper infrastructure facilities indirectly raises the costs of exports. Some studies have already commented on the importance of infrastructure in explaining variations in income and export growth among countries (Hall and Jones 1999; Stiglitz 1989). Deteriorating infrastructure due to poor physical conditions (e.g. periodic flooding, soil erosion, poor soil conditions) has resulted in higher transport cost in South Asia (De 2008). For example, the average transport costs on the India (Kolkata)–Bangladesh (Petrapole) route is 2543 Indian rupees—which is about 40% higher than other highways in the East

Asian region (Das and Pohit 2004). A carpet manufacturer in Kathmandu reported that because of poor road conditions he has to spend around 100,000 Nepalese rupees for vehicle maintenance (Biggs et al. 2000). The transport cost is higher for landlocked countries like Nepal while it is least for Sri Lanka (De 2008). The trade-weighted ad-valorem transportation costs are listed in Figure 1. Higher transport cost is a negative factor. As pointed out by Limao and Venables (2001), doubling of transport costs can lead to a drop in a country's trade by about 80%.

Figure 1: Higher Transport Costs in Asia



Source: De (2008).

Another area of concern is the lack of electricity. For example, manufacturers in India on average face almost 17 significant power outages per month versus one in Malaysia and fewer than five in China. Similarly, in Pakistan, the typical business loses 5.6% in annual sales revenue because of power shortages (Newbery 2007). According to data from the World Bank Enterprise Surveys, private businesses in lower and middle income countries worldwide estimate that they lose on average 7.5% of their sales due to electricity and telephone outages and insufficient water supply.[9] This is quite high in comparison to losing 3.8% average sales figures in high income countries.

Factors like poor institutions and government regulation have certainly contributed to South Asian countries not faring well when it comes to ranking countries in terms of "ease of doing business." It also takes time to enforce contracts (Tables 7a and 7b). The World Bank, in its annual exercise, ranks countries in terms of ease of doing business. In *Doing Business Report* 2008, the sample size involved 178 countries. Ease of doing business is measured in terms of procedures (Box 3), time, and cost involved in launching a commercial or industrial firm with up to 50 employees and start-up capital of 10 times the economy's per-capita gross national income (GNI).

Table 7a: Doing Business Report, 2008

Year	Country	Ease of Doing Busines s Rank	Starting a Business			
			Rank	Procedures (number)	Time (days)	Cost (% of income per capita)
2008	Bangladesh	107	92	8	74	46.2
2008	Bhutan	119	52	8	48	10.4

[9] For more on the Enterprise survey visit: http://www.enterprisesurveys.org/ExploreTopics/?topicid=8 (Accessed: 5/28/2008) (World Bank 2008b).

2008	India	120	111	13	33	74.6
2008	Maldives	60	34	5	9	13.4
2008	Nepal	111	60	7	31	73.9
2008	Pakistan	76	59	11	24	14
2008	Sri Lanka	101	29	5	39	8.5

Source: World Bank 2008a.

Table 7b: Enforcing Contracts

Region or Economy	Procedures (number)	Duration (days)	Cost (% of claim)
East Asia & Pacific	37.3	549.8	47.8
Eastern Europe & Central Asia	35.9	443	22.7
Latin America & Caribbean	39.3	699.9	30.7
Middle East & North Africa	43.5	699	24
OECD	31.3	443.3	17.7
South Asia	43.5	1,047.10	27.2
Sub-Saharan Africa	39.4	643	48.7
Bangladesh	41	1,442	63.3
Bhutan	47	275	0.1
India	46	1,420	39.6
Maldives	41	665	16.5
Nepal	39	735	26.8
Pakistan	47	880	23.8
Sri Lanka	40	1,318	22.8

Source: World Bank 2008a.

Box 3: List of Procedures for Starting a Company

Screening procedures

- Certify business competence
- Certify a clean criminal record
- Certify marital status
- Check the name of uniqueness
- Notarize company deeds
- Notarize registration certificate
- File with the Statistical Bureau
- File with the Ministry of Industry and Trade, Ministry of the Economy, or the respective ministries by line of business
- Notify the municipality of start-up date
- Obtain certificate of compliance with company law
- Obtain business license (operation permit)
- Obtain permit to play music to the public (irrespective of line of business)
- Open a bank account and deposit start-up capital
- Perform an official audit at start-up
- Publish notice of company foundation
- Register at the Companies Registry
- Sign up for membership in the Chamber of Commerce or Industry or the Regional Trade Association

Tax related requirements

- Arrange automatic withdrawal of the employees' income tax from the company payroll funds
- Designate a bondsman for tax purpose
- File with the Ministry of Finance
- Issue notice of start of activity to the Tax Authorities
- Register for corporate income tax
- Register for VAT
- Register for state tax
- Register the company bylaws with the Tax Authorities
- Seal, validate, rubricate accounting books

Labor/social security-related requirements

- File with the Ministry of Labor
- Issue employment declarations for all employees
- Notarize the labor contract
- Pass inspections by social security officials
- Register for accident and labor risk insurance
- Register with pension funds
- Register with social security
- Register with unemployment insurance
- Register with the housing fund

Safety and health requirements

- Notify the health and safety authorities and obtain authorization to operate from the Health Ministry
- Pass inspections and obtain certificates related to work safety, building, fire, sanitation and hygiene

Environmental-related requirements

- Issue environmental declaration
- Obtain environment certificate
- Obtain sewer approval
- Obtain zoning approval
- Pass inspections from environmental officials
- Register with the water management and water discharge authorities.

Source: Djankov et al. (2002).

Clearly there is a need for building physical infrastructure and capacity building in terms of trade facilitation. High public debt and shift in focus of development more towards social sector infrastructure like health and education is leaving a government resource crunch. There is a need to tap private sector funds especially when there are many billionaires in corporate India.[10] Unfortunately, not too much private fund is forthcoming due mainly to regulatory reasons (Banik 2007). The government often uses the “force majeure” clause and hence does not fulfill the promises it made to private providers at the beginning of infrastructure projects.[11] For example, if upon the completion of a road, the projected number of vehicles is not realized, the government can alter the agreement. Even appealing at court is a lengthy procedure and may take several years to settle. Some sector specific recommendations are as follows:

a. In the power sector, there is a need to create a market for power and this is particularly true in the context of India where the power-surplus States can trade with the power-deficient States. Although private participation is allowed in power generation in India, not many responses have been forthcoming because of lower power tariffs. Private investors are expected to produce electricity for sale to the state electricity boards, which would control transmission and distribution. These boards are financially very weak, however, partly because electricity tariffs for many categories of consumers, like farmers, are too low and also because very large amounts of power are lost in the transmission and distribution. There is a need to privatize distribution in the hope that this will overcome the corruption that leads to the enormous distribution losses.

b. In railways, there is a need to correct the tilted fare structures, in which freight rates have been set excessively high to subsidize passenger fares. There is also a need to increase operational efficiency as there are problems with project execution. For example, in India, among the 300 projects in the 1 billion Indian rupees and above cost category, more than 130 projects are encountering time overruns of up to 160 months. A comprehensive review of 78 such railway projects has revealed that all suffer huge time and cost overruns due to various problems related to land acquisition, litigation, rehabilitation, contractors, and labor (Kumar 2005). In Bangladesh, railways have a serious problem with maintenance, especially in those areas frequented by floods.

c. Like railways, there are problems with project execution in the road sector. National highway development programs in India are progressing slowly, hampered by time overruns and budgetary constraints (Table 8).

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[10] India has the highest numbers of billionaires in Asia (NDTV 2008).

[11] The *“force majeure”* clause refers to exceptional matters or events beyond the control of either party, that is, the Government and the providers. For example, while building the Bangalore-Mysore highway in India, the promoter (Nandi Infrastructure Corridor Enterprises) was promised free land alongside the expressway to recoup its investment cost. This promise was never fulfilled because of political factors. Delays in land acquisition, red tape, and a five-year legal battle have raised the estimated cost by 6 billion rupees (KPMG Report 2005).

Table 8: Status of India's Road Infrastructure

	Length (km)	Already 4 laned (%)	Being Implemented (%)
NHDP GQ	5,846	94.1	5.9
NS-EW	7,300	12.1	73.3
NHDP IIIA	4,000	0.8	32.4
NHDP V	6,500	0.0	2.3
Total NHDP	23,646	27.1	30.2
Port Connectivity	380	35.5	58.9
Others	945	30.4	67.5
Total by NHAI	24971	27.4	32.0

NHDP-III: Involves four lanes of about 10,000 km of those stretches of national highways connecting the state capitals. NHDP-IIIA refers to the first phase of this construction where building of 4,000 km has been taken up. NHDP-GQ: Connecting four metros, namely, Chennai, Kolkata, Delhi, and Mumbai, with a four-lane highway. NHDP V: Six lanes of NHDP-GQ. NS-EW: Four lane highway connecting Srinagar to Kanyakumari, and Silchar in the east to Porbandar in the west.

Source: National Highway Authority of India, Government of India.

d. Both civil aviation and ports have problems related to labor issues. Individual governments need to introduce labor market reforms, something that is yet to happen in South Asia. In India, the government also needs to address the problems associated with encroachments, where unutilized ports and aviation authority's lands are gradually being taken over by local settlers.

Addressing these concerns will certainly increase cross border trade in South Asia, especially in a period of falling tariffs and rising income. The region will definitely gain through complementary investment in infrastructure and continued regulatory reform. As there is considerable evidence of trade costs it makes sense to try to test the hypothesis of how the presence of trade costs affects trade flow in the South Asian region. We do this using an augmented gravity model, where we try to estimate the effect of trade costs on exports from India to neighboring countries in South Asia. This is done in the following section.

IV. MODEL

The original application of the Newtonian law of gravity in the field of economics goes back to the work of Tinbergen (1962), Poyhonen (1963), and Linnemann (1966) suggesting that bilateral trade between two nations is positively related to their national income and inversely related to the distance between them. Although backed by little economical underpinning, these early models became popular because of their prognostic nature in explaining trade flow. Later, however, economists have worked on building a theoretical (microeconomic) foundation for the gravity model (Anderson 1979; Bergstrand 1985; Deardorff 1998).[12]

In the context of South Asia, Srinivasan and Canonero (1993) include tariffs and exchange rates in the basic gravity model and conclude that, under SAFTA, potential gains for India's trade with its regional partners would increase by 13 times. Considering the time period between 1968 and 1991, and 10 composite commodities, the study suggests that the effect of the removal of tariffs would lead to an increase in trade that is 3% of GNI for India, 7% for

[12] For more discussion on the theory of the gravity model, see Anderson and van Wincoop (2004).

Pakistan, 21% for Bangladesh, 36% for Sri Lanka and 59% for Nepal. This study considered five countries in South Asia and their major trading partners, spanning North America, Europe and Asia. Since the objective of this present paper is to look at trade cost in the context of the South Asian region only, we have considered trade flow within South Asia. In addition, working with a more recent data set, we have also incorporated trade costs as an additional variable in our gravity equation.

Methodology and Data: Following Anderson and van Wincoop (2004), most estimated gravity equations in the literature take the following form:

$$x_{ij} = \alpha_1 y_i + \alpha_2 y_j + \sum_{m=1}^{M} \beta_m \ln(z_{ij}^m) + \varepsilon_{ij}$$

where, x_{ij} is the log of exports from country *i* to country *j*, y_i and y_{j_i} are the log of GDP of the exporting and importing country and z_{ij}^m $(m = 1, \ldots, M)$ is a set of observables to which bilateral trade barriers are related. ε_{ij} is the disturbance term.

For the purpose of our study, following Frankel and Wei (1993), we will estimate a variant of the above equation which takes the following form:

$$x_{ij}^t = \alpha_1 (py_i^t \times py_j^t) + \alpha_2 (I_i^t \times I_j^t) + \alpha_3 T_{ij}^t + \alpha_4 ER_{ij}^t + \alpha_5 TC_{ij}^t + \alpha_6 D_{ij} + e_{ij}^t$$

where, py_i^t and py_j^t are the per capita income (read, per capita GDP) of country *i* and *j*; I_i^t and I_j^t are the state of infrastructure captured through infrastructure index in country *i* and *j*; T_{ij}^t and ER_{ij}^t are the bilateral tariff rates (weighted average) and exchange rates between country *i* and *j*; TC_{ij}^t denotes the transaction cost of trade (measured as a function of the difference between weighted average *cif* and *fob* price); and, finally D_{ij} $(j = 1, \ldots, 4)$ stands for country specific dummy variables. All the variables (except for the dummy variables) are expressed in *log* form with the estimated coefficients interpreted in terms of elasticity.

The expected signs for α_1 and α_2 are assumed to be positive. Trade between countries is expected to increase with a higher per capita income and with a better state of infrastructure. Likewise, inter-country trade is likely to fall with higher tariffs, higher price of exports, and trade costs. Accordingly, α_3, α_4, and α_5 are expected to be negative.

As we are considering a panel framework, the term e_{ij}^t captures both country specific (cross sectional) and temporal effects at time *t*. A general expression for e_{ij}^t is: $e_{ij}^t = \gamma + \beta_j + \mu_t + \eta_{i,j,t}$, where, $\gamma + \beta_{j\text{-}1}$ can be thought of as a country specific intercept; μ_t is a capture time effect, and $\eta_{i,j,t}$ the overall purely random disturbance term.[13] The combined, time, and country specific fixed effect terms eliminate an omitted variables bias arising both from unobserved variables that are constant over time and from unobserved variables that are constant across countries.

If $\gamma + \beta_{j\text{-}1}$ is observed for all countries, then the entire model can be treated as an ordinary linear model and fit by least squares. For the purpose of estimation we consider the classic pool, least square dummy variable model (LSDV), and the within transformation model. If $\gamma + \beta_{j\text{-}1}$ contains only a constant term, then the ordinary least squares estimation provides

[13] The use of $\beta_{j\text{-}1}$ is to avoid dummy variable trap.

consistent and efficient estimates of the common intercept terms and the slope vectors. This is a classic pool model where modeling is done without dummy variables. However, not considering country specific time invariant characteristics seems unscientific and hence country specific dummies to capture such effect are used. This is the LSDV model. However, the problem with modeling in this fashion is a loss in degrees of freedom arising from estimating dummy coefficients. A more efficient way is to use the within transformation model. Here the pooled regression is re-formulated in terms of deviation from the series means leading to disappearance of the intercept terms and the dummies. This model is more efficient than models with dummy variables as it gives *j* degrees of freedom (corresponding to relevant dummies and the intercept term) back with the same parameter estimates. Finally, we consider the random effect model. Unlike in the fixed effect, where the country specific intercept $\gamma + \beta_{j\text{-}1}$ is assumed to be fixed, in the random effect model, we assume that it is a random variable with a mean value $\gamma + \beta = \lambda$ (say), which does not vary across cross section. The intercept value for each cross section can be expressed as $\lambda_{1j} = \lambda_1 + \varepsilon_i$, where ε_i, is a white noise process.

For each one of these variables superscript *t* stands for the time period 1995–2006. This is the period when a considerable amount of the reforms process has been undertaken or accomplished in the South Asian region. Country *i* is India (the base country) and country *j* stands for India's trading partners in South Asia. The reason for treating India as the base country is because it is the largest economy in the region, representing 80% of the total GDP in South Asia (International Financial Statistics Yearbook 2007). The dummy variable is expected to capture India's trade relation with partner countries in South Asia.

For deriving the infrastructure index, we have used Principal Component Analysis (PCA) methodology. PCA involves finding the relationship between the variables that explains the maximum possible variation in the total data. An attempt has been made here to construct a single composite index of infrastructure involving all five subcategories of infrastructure—roads, railways, air, electricity, and telephones—at each point in time. In the PCA approach, the first principal component is that linear combination of weighted indicators which explain the maximum of variance across the observations at a point in time. To the extent one component index of infrastructure has a different variance than another, assigning equal weights, or doing a simple average of different component indexes, seems unscientific, hence the importance of assigning different weights to different component indexes of infrastructure. Each factor is nothing but a linear weighted combination of the various variables used. In all the indices calculated, we used the first factor only. The first factor in all the cases explained more than 60% of the variation. Before multiplying by the respective weights, individual infrastructure variables are converted into "unit-free" values. This is done by dividing the country-wise (that is, column-wise) standard deviation to neutralize the heterogeneity due to varied units. Standardization also eliminates unnecessary weights given to some measures on account of their high unit values.

Therefore, Infrastructure Index (I_{it}) is a linear combination of the unit free values of the individual facilities such that:

$$I_{it} = \sum W_{kt} X_{kit}$$

where, I_{it} = Infrastructure index of the *i*-th country in *t*-th time,

W_{kt} = weight of the *k*-th type infrastructure in *t*-th time,

and X_{kit} = unit free value of the *k*-th type infrastructure for the *i*-th country in *t*-th time point.

Finally, TC_{ij}^{t} corresponds to the ratio (*cif/fob*-1), which, as pointed out by Limao and Venables (2001), contains a cross sectional variation in transport costs, and calculating transaction cost in this fashion is quite consistent with the figures obtained from the shipping cost data.

Some comments about the methodology issue follow. The single equation way of estimation might raise issues relating to endogenity. However, intra-SAARC trade is low. In addition, if one considers bilateral trade flow as a percentage of GDP, it is actually very low. Endogenity is therefore ignored and not expected to result in any biased estimates. Similarly, as is observed in Table 9, robustness of the model has increased moving from a classic pool to LSDV and finally to within the transformed fixed effect. This is because the consistency problem specific to the time invariant factors does not arise in the case of the within transformed fixed effect. For almost the same reason we have not considered the dynamic panel. When the number of time periods *T* is finite and the number of cross section *N* approaches infinity, LSDV estimators are inconsistent for the dynamic panel. Although we worked with finite *N* in the present case, considering applicability of the present model, and more importantly to compare our results with other studies for other geographical areas, we stick to the static panel framework. As *N* in our case is small, generalized method of moments (GMM) estimation techniques, which are expected to yield more consistent estimates in presence of infinite *N*, are also not considered.[14] Accordingly, we have used and report results from the classic pool, LSDV, within transformed fixed effect, and random effect model.

Data Source: Trade between countries is from the United Nations COMTRADE database. Trade figures are reported in current US dollars for each country and all its trading partners. The data are available annually and are deflated with the GDP deflator. Due to insufficient data on respective variables considered for our study, we have dropped Bhutan, Nepal, and Maldives from our analysis. In total we have 48 observations where we considered India's exports (in value terms) to Bangladesh, Nepal, Pakistan, and Sri Lanka for the period between 1995 and 2006. Regarding tariffs, the figures are effective tariffs. [15]These are average tariffs and include import and export duties. The data on tariffs come from the COMTRADE database.

Exchange rate data are bilateral exchange rates between India and its trading partners. We measured the exchange rate as foreign currencies per unit of domestic currency. Exchange rates data are collected from International Financial Statistics Yearbook, International Monetary Fund.

For constructing the infrastructure index, we considered railway lines (in kilometer) as a proportion of total surface area; road length (in kilometer) as a proportion of total surface area; air transport, passengers carried (normalized with respect to number of airports with paved runways for each country); fixed line and mobile phone subscribers (per 100 people) and electric power consumption (in kilowatt per capita). Normalizing respective variables in this fashion (that is, in per capita terms or with respect to country size) is expected to avoid possible heteroscedasticity in the error term. The variables on infrastructure are collected from World Development Indicators Database, World Bank.

Results: The results have come out with the expected sign (except perhaps for the dummy variables) and the significance of the estimates have increased (read, more robust) as we have moved from the classic pool, towards more efficient methodology of LSDV and within transformed LSDV (Table 9). Importantly, the trade costs variables have statistically significant coefficients in three out of four cases. Based on our estimates, we find the income elasticity of India's exports varied between 0.369434 and 0.590614. That is, if we take the income coefficient to be 0.369434, we are saying that for a 100% increase in combined per capita GDP, exports from India will increase by 29% (that is, $2^{0.369434} - 1 = 29$). Similarly,

[14] For more on the application of GMM techniques in the context of gravity equation see Arellano and Bond (1991) and Blundell and Bond (1998). This is a widely acknowledged use of GMM techniques in the presence of a lower number of N which may increase the finite sample bias.

[15] In economics, the effective rate of protection is a measure of the total effect of the entire tariff structure on the value added per unit of output in each industry, when both intermediate and final goods are imported. This statistic is used by economists to measure the real amount of protection afforded to a particular industry by import duties, tariffs, or other trade restrictions.

coefficients with respect to trade cost vary between -0.794491 to -0.498930, which is to say, for a 100% increase in trade cost, exports from Indian to neighboring Asia are expected to fall by 73% and 42%, respectively. Our estimates of income and trade cost are slightly lower than the estimated value by Baier and Bergstrand (2001), and Anderson and van Wincoop (2004). One reason is that we deal with gross exports figures and not commodity specific data. There can be a measurement error. As pointed out by Hummels and Lugovskyy (2006), the measure of trade cost can become biased if high transport cost countries systematically import lower transport cost goods (see also De 2008). However, the main objective of this present paper was to identify the importance of trade costs, among other factors like price, infrastructure, income, and tariffs, more from a macro perspective. We have already documented various elements of trade costs and through our empirical results it becomes evident that it is indeed one of the important variables affecting trade flow among South Asian nations. Indian exports are also quite price sensitive. An expected increase in the price of Indian exports by 100% will reduce demand by a whopping 600% (see *within transformed* column). A realistic way to interpret this number is that in case of monopolistic, or perfect competitive market condition, buyers generally neglect the sellers who charge marginally higher prices compared to their competitors. For example, in the context of US small size (with engine sizes under 1000cc) and medium size (with engine sizes between 1000cc and 1500cc) automobile markets, competition has prevented market players like Toyota, Kia, Hyundai, etc., to increase their price relative to their competitors (Banik and Biswas 2007). This kind of argument is valid more in the context of a perfectly competitive market. For example, during recent years, Assam tea (a product of the State of Assam, India) is losing market share to its Kenyan counterpart because of a higher relative price. As most export items in the context of South Asia are typically comprised of low technology intensive (price sensitive) items, a small increase in price will therefore have a huge impact on demand. Considering exchange rates, in general this data does not come out to be very robust. The dummy variables capturing country specific trading relations with India have come with negative signs which in some way reflect the no trade pact attitude between India and Pakistan. Finally, one of the coefficients on the infrastructure variable has also turned out to be significant, reiterating the need for building physical infrastructure in the region.

Table 9: Results from the Model

Variables	Classic Pool	LSDV	Within Transformed	Random Effect
Constant	-7.755976[1] (3.173088)	-7.297177[1] (3.352789)	-0.050417 (0.095005)	6.403701[2] (0.794306)
Income	0.369434[2] (0.071397)	0.395761[2] (0.075602)	0.590614[3] (0.208238)	0.326190[3] (0.181170)
Infrastructure	0.414557 (0.325230)	0.403931 (0.363619)	0.786731[3] (0.412413)	-
Tariffs	0.003329 (0.057281)	0.031918 (0.086118)	-0.208075[1] (0.085632)	-0.480811[2] (0.065634)
Exchange Rates	0.057627 (0.760277)	-0.062918 (0.770023)	-2.822734[1] (0.653376)	-
Trade Costs	-0.794491[3] (0.444075)	-0.714065[1] (0.331285)	-0.561384 (0.358354)	-0.498930[3] (0.276431)
Dummy 1	-	-2.613576[2] (0.298627)	-	-
Dummy 2	-	-0.272008 (0.449774)	-	-
Dummy 3	-	-2.903105[2] (0.265469)	-	-
Adjusted R^2	0.870151	0.874951	0.893442	0.825819

Notes: 1. Indicates significance at 5% level; 2. Indicates significance at 1% level; 3. Indicates significance at 10%. Standard errors are in parenthesis.

V. POLICY RECOMMENDATIONS AND CONCLUSION

As is evident from the above analysis, income and trade costs are important factors so far as intra-flow of SAARC trade is concerned. Since income in the region is increasing, and

SAARC member nations are also depicting symmetric economic activities, it makes sense to reduce trade cost. However, unlike tariffs measures which are easy to lower, controlling for trade costs will take time and requires some commitments at policy level. The benefit of falling tariffs, geographical proximity, and similarities in economic factors can be leveraged more if some steps are taken at the policy level. The following measures need to be considered for enhancing trade flow in the region:

a. Granting of transit facilities for movement of goods, services, and energy, through their own territories but originating from neighboring countries. At present, Bangladesh does not allow its territory for transporting goods from North Eastern Indian States to mainland India. Similarly, despite having huge reserves of natural gas, Bangladesh does not trade in energy with India because of lack of adequate infrastructure and political unwillingness. Again, there is no simple way to transfer goods from Kolkata in India, to neighboring Dhaka in Bangladesh. In the border towns in Bangladesh, the trains run on meter-gauge, while in India they run on broad-gauge. Similarly, India had an issue with Pakistan to allow shipment of gas from Iran through Afghanistan.

b. There is a need to liberalize trade and investment measures in services. Because of lack of adequate physical infrastructure services, exports in the South Asian region (which are less dependent on infrastructure) are performing well compared to its manufactured exports (which are more dependent on infrastructure). While commenting on the sources of growth, Ahmed and Ghani (2007) found that for the period between 1995–2003 exports of services from South Asia grew at 14% per annum compared to less than 8% for East Asia. India and Bangladesh have performed well in areas of selling computers and information communication, while Pakistan has excelled in the area of transport services and Sri Lanka in travel services. These nations can therefore further build on areas of competitive strength by liberalizing investment and trade in services.

c. Transfer of funds from economically advanced regions to economically poor regions, to help the laggard regions modernize and diversify their economies. A reason that the European Union (EU) became a success story is not only that the member countries removed tariff and quota restrictions, but also because they transferred funds to less developed countries in the region. For example, Poland has been allocated a sum of US$27 billion over the next three years to modernize and diversify its economy. In this way, India can aid by releasing some supply side constraints that currently smaller economies in South Asia are facing. On a similar note, India also stands to gain by extending unilateral duty free and quota free access to its market for products from less developed countries like Bangladesh.[16] The ability to sell in the Indian market will give these countries necessary purchasing power which in turn can be spent on purchasing Indian goods.

d. Reducing the number of negative lists. India's negative list in the context of SAFTA is larger than that in some of its bilateral free trade agreements, and almost four times as large as its latest offer in the negotiation for a free trade area with the Association of Southeast Asian Nations (ASEAN). For instance, India subjects 15 out of Sri Lanka's top 20 exports to either a tariff rate quota (meaning the tariff preferences applies only up to a pre-specified quantity of imports) or

[16] India already has free trade arrangements with Bhutan and Nepal.

negative list (Baysan et al. 2004). Similarly, out of 319 items on which Sri Lanka offered concessions of zero duty to India, only three items are actually exported to Sri Lanka (Weerakoon 2001).

e. And lastly, further easing of political differences with respect to India and Pakistan. Issues relating to Kashmir always come into the forefront whenever some economic decisions need to be taken. Because of political differences, member countries have simply refused to participate in mutually gainful situations, much less try to give any unilateral concession.

The analysis in this paper is built on documenting the existence of trade costs in South Asia. We found factors such as lack of infrastructure—both physical (roads, rails, airports, etc.) and services related infrastructure (proxied by Internet use by business and Ministries), government regulations (pertaining to documentation and investment in infrastructure), port inefficiency (higher shipping turnaround time), corruption in customs, etc., all contribute to the existence of higher trade costs in South Asia. From the perspective of trade, and also to forge greater regional integration in South Asia, there is a need to reduce these elements of trade costs. Part of the lower intra South Asian trade can be explained because of trade costs. Despite a paradigm of falling tariffs, geographical proximity, and similarities in economic factors, trade is South Asia is not growing because of the presence of higher trade costs. This proposition of trade cost leading to lower South Asian trade is validated using an augmented gravity model in a panel data framework. Our results suggest that for a 100% increase in trade costs, the value of exports from India to neighboring Asia is expected to fall by between 42% and 7%. Higher trade costs not only restrict trade but can also downplay political will for forming a greater regional cooperation in South Asia.

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