India-Pakistan Trade Liberalization: A CGE Modelling Apporach

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2013

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1. Introduction

Today, world has become a global village. Yesterday's foes are friends now. Their economic fortunes are twined together. Independent sovereign nations have been given way to economic community as in Europe. However, the picture in South Asia is stark contrast to this worldwide trend. Two largest economic powers in South Asia namely India and Pakistan are at economic loggerheads with each other. Three wars, political disputes, border skirmishes have largely dictated the trade relations between themselves. Consequently, intra-regional trade in South Asia is abysmally low, roughly about 5 per cent in South Asia. By contrast, intra-regional trade accounts for roughly 65 per cent of European Union's total trade; it is 51 per cent in the North American Free Trade Agreement (NAFTA) area, 25 per cent in the Association of South East Asian Nations (ASEAN) and 16 per cent in the Latin American trade bloc.

Of late, a new beginning has commenced. After long years of negotiation, South Asian Free Trade Area (SAFTA) finally became operational on January 1, 2006. Given the slow pace and quantum of liberalization under SAFTA due to the logjam of India and Pakistan debating points, India bypassed SAARC and has move ahead by signing free trade agreement (FTA) with Sri Lanka. India already had extremely liberal trade regimes with Nepal and Bhutan. India is also pursuing trade liberalization with other neighboring countries like Bangladesh, Myanmar, etc under BIMSTEC. Furthermore, *India Look East Policy* has given impetus to India signing FTA with individual ASEAN members such as Thailand, Singapore and finally with ASEAN in 2010 (see Table 1).

Table of India and Pakistan: RTAs in Force

RTA Name	Coverage	Type	Date of notification	Notification	Date of entry into force	Status
ASEAN - India	Goods	FTA	19-Aug-10	Enabling Clause	1-Jan-10	In Force
Chile - India	Goods	PSA	13-Jan-09	Enabling Clause	17-Aug-07	In Force
India - Afghanistan	Goods	PSA	8-Mar-10	Enabling Clause	13-May-03	In Force
India - Bhutan	Goods	FTA	30-Jun-08	Enabling Clause	29-Jul-06	In Force
India - Japan	Goods & Services	FTA & EIA	14-Sep-11	GATT Art. XXIV & GATS Art. V	1-Aug-11	In Force
India - Malaysia	Goods &	FTA &	6-Sep-11	Enabling Clause &	1-Jul-11	In

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	Services	EIA		GATS Art. V		Force
India - Nepal	Goods	PSA	2-Aug-10	Enabling Clause	27-Oct-09	In Force
India - Singapore	Goods & Services	FTA & EIA	3-May-07	GATT Art. XXIV & GATS Art. V	1-Aug-05	In Force
India - Sri Lanka	Goods	FTA	17-Jun-02	Enabling Clause	15-Dec-01	In Force
MERCOSUR - India	Goods	PSA	23-Feb-10	Enabling Clause	1-Jun-09	In Force
Pakistan - China	Goods & Services	FTA & EIA	18-Jan-2008(G) / 20-May-2010(S)	GATT Art. XXIV & GATS Art. V	01-Jul-2007(G) / 10-Oct-2009(S)	In Force
Pakistan - Malaysia	Goods & Services	FTA & EIA	19-Feb-08	Enabling Clause & GATS Art. V	1-Jan-08	In Force
Pakistan - Sri Lanka	Goods	FTA	11-Jun-08	Enabling Clause	12-Jun-05	In Force

Source: www.wto.org,
SAFTA is not shown here.

Given this move towards regionalism by India, Pakistan has also embarked, albeit on a limited scale, by signing FTA with Sri Lanka and China. In contrast to India's FTA with Sri Lanka with coverage of goods and services, Pakistan's FTA with Sri Lanka extends only to goods. However, Pakistan's FTA with China embodies deep cuts and covers broad tariff lines (see Table 1).

Table 2 gives a status reports on different FTAs that the countries of South Asia are pursuing. Clearly, FTAs seem to be very much in purview of both India and Pakistan's trade policy as long as it is not between them.

Table 2. FTA Status by India and Pakistan, 2013

COUNTRY	Proposed	Under Negotiation		Signed but not yet In Effect	Signed and In Effect	TOTAL
		Framework Agreement Signed / Under Negotiation	Under Negotiation			
Bangladesh	0	2	1	1	2	6
India	7	4	10	0	13	34
Nepal	1	1	0	0	2	4
Pakistan	11	4	3	3	6	27
Sri Lanka	2	1	0	1	4	8

Source: Asia Regional Integration Center (www.adb.org)
Notes:

Proposed: Parties consider an FTA, with the governments or relevant ministries issuing a joint statement on its desirability or establishment of a joint study group/joint task force for the conduct of feasibility studies.
Framework Agreement Signed: The parties initially negotiate the contents of a framework agreement (FA) , which serves as a framework for future negotiations.

Negotiations launched: The parties, through the relevant ministries, declare the official launch of negotiations or set the date for such, or start the first round of negotiations.

Signed but not yet in effect: Parties sign the agreement after negotiations have been completed.

However, the agreement has yet to be implemented.

Signed and in effect: Provisions of FTA come into force, after legislative or executive ratification.

Lately, there have been moves towards normalizing trade between India and Pakistan which augur well for economies of both nations. Though India has given Most Favoured Nation (MFN) status to Pakistan way back in 1996, signals seem to emerge from across the border that Pakistan would also grant MFN status to India shortly. The Joint Statement issued in November 2011 indicated that Pakistan would firstly graduate from the positive list of items to be traded with India to a small negative list of items. Later, the negative list would be phased out. This would also apply to the road route on which the number of permitted item is only a fraction of total items on positive list.

In this context, this study makes an attempt to assess the impact of bilateral trade liberalization on their respective economies and also on the rest of the South Asia. No doubt, there has been other studies analyzing the economic impact of same (Hussain, 2011; Rahman, 2006; Raihan and Razzaque, 2007; Sikdar, 2007; Taneja, 2006, 2011, 2013). In two aspects, this study differs from other. One, we have used a standard global computable general equilibrium model, namely GTAP, to understand the economic impact. Two, we have used the GTAP database release 8, the latest global data base of trade and protection coefficient, for our analysis.

The plan of the rest of the paper is as follows. The following section provides a brief review of trade regimes of India and Pakistan. Logistics issues are also discussed in this section. The following section describes our modeling framework, sectoral and regional aggregation scheme of the model. Section 4 discusses the rationale of our proposed simulations and the economic impact of same. Finally section 5 provides concluding remarks.

2. Trade Regimes of India and Pakistan

Over the years, India trade regimes have become fairly liberal. Quantitative restrictions on imports have given way to tariff. By and large, liberalization in tariff cuts has been unidirectional in the sense that reduced tariffs have not been increased in case of economic difficulties. However, there have been few instances where export restrictions have been imposed on few agricultural products (onion for example) to arrest domestic price rise. Average non-agricultural tariffs have fallen below 15 percent while agricultural tariffs average between 30-40 percent. Overall, the simple average MFN (most favoured nation) tariff rate in India has declined to 12 per cent in 2010-11 from 15.1 per cent 2006-07.[2] Foreign investments norms have also been relaxed for a number of sectors. In one aspect,

[2] www.wto.org/english/tratop_e/tpr_e/s249_sum_e.pdf

India has been extremely pro-active, namely imposing anti-dumping duties. In fact, India accounts for nearly 17% of all anti-dumping duties, highest among all countries, imposed by importing countries between 1995 and 2006.

India has continued to streamline customs procedures and implement trade facilitation measures. An electronic system for customs clearance has been introduced and a risk management system is in place to selectively screen high- and medium-risk cargo for customs examination. Despite the implementation of these measures, India's import regime remains complex, especially in respect of tariff structure, which has multiple exemptions, with rates varying according to product, user or specific export promotion programs. Moreover, with multiplicity of RTA in place with multiple rates, and partners, transaction costs have increased.

By contrast, Pakistan's trade regime is more restrictive, similar to what India had ten years back. Pakistan's simple average applied MFN rates comes to about 14% in 2010 as per trade profiles statistics of WTO. However, this hides the complexities of Pakistan's trade regimes (Pursell et al, 2011). As Pursell et al (2011) writes, the following are the principal black spots of Pakistan's trade regimes:

a) Reversal of duty liberalization in certain cases notably sugar, fertilizer, etc;
b) High tariffs in auto industry along with continuation of interventions by Engineering Development Board;
c) Use of WTO compatible tools such as TBT and SPS, anti-dumping duties to restrict imports;
d) Since August 2008, the introduction of a number of *Regulatory Duties;*
e) Since 2006, the expanded use of *Statutory Regulatory Order.* For instance, more than half (54%) of the total number of tariff lines in 2010-11 were subject to at least one special condition announced in an SRO. Most of these are exemptions for inputs and are confined to specified firms or groups of firms. They are not available to other importers, in particular commercial importers. Their administration is a de facto import licensing system run by ministries in conjunction with the Customs service;
f) Trading with India on the basis of *Positive List.*

No doubt, Positive List is big hindrance to trade with India. The physical infrastructure is also a major impediment for trade between these two nations. The physical infrastructure at the land routes is inadequate. The transport protocols need to be modified for movement of containerized cargo (without transshipment) in each other's nations. The small list of commodities under road based *Positive List* is a hindrance to vibrant trade between themselves. The capacity of rail bound cargo is

limited due to the absence of dedicated cargo train on a regular basis. Currently, only freight cars (6-8) are attached to the Samjhauta Express that runs on a twice-weekly basis. Against this backdrop, the amendment of maritime protocol in 2005 have now boosted sea-borne trade between the two nations (Taneja, 2013). As Taneja (2013) points out, nearly 60% of India's trade with Pakistan was carried through sea in 2011-12.

Expectedly, the restrictive trade environment between India and Pakistan has given fill up to large volume of informal trade. However, heightened security measures in the border area is an impediment to land-based informal trade which is prevalent in respect of India's informal trade with Nepal, or Bangladesh. The most well documents route for informal trade is Mumbai-Dubai-Karachi which nearly caters to 88 percent of total informal trade (Khan et al, 2007). The rest is moved through Amritsar-Lahore and Sindh-Rajasthan cross-border routes.

Of course, these studies are dated. However, they highlighted the inefficiencies of the existing logistics arrangement of trade between these two nations.

3. Modeling Framework, and Aggregation Scheme

A complete analysis of trade and trade related issues require an analytical framework which takes into account a holistic view of the economies across the world. This is so because there are not only inter linkages existing between various sectors of an economy but different sectors in an economy are also linked to rest of the world by the way of exports, imports of final products, intermediate goods, capital goods and so on. Thus, linkages are present at the national, regional as also at the global level both in product as well as in the input markets. In order to take a complete account of these inter linkages the present study chooses to use the Global Trade Analysis Project (GTAP) as the analytical tool. The global computable general equilibrium (CGE) modeling framework of the GTAP is one of the best possible ways to analyze ex ante the economic consequences and trade implications of multilateral and bilateral trade agreements.

The GTAP model is a multi-regional applied general equilibrium (AGE) model which captures world economic activity in 57 different industries of 129 regions (version 8 of the database). However, to keep the analysis in manageable form, we have used an aggregated version of this database with 20 sectors and 13 regions.

The theory behind the GTAP model is similar to that of other standard, multi-regional AGE model. The underlying equation system of GTAP accordingly includes two different kinds of equations. One part covers the accounting relationships, which ensure that receipts and expenditures of every agent in our model economy are balanced. The other part of the equation system consists of

behavioral equations, which based upon microeconomic theory. These equations specify the behavior of optimizing agents in the economy, such as demand functions.

There are 5 principal factors of production in the GTAP model, namely, skilled labor, unskilled labor, capital, natural resources and land. Out of these, the first three are considered to be perfectly mobile across sectors. These factors earn the same market return regardless of where it is employed. In the case of immobile or sluggish endowment commodities, returns in equilibrium may differ across sectors.

The GTAP model employs the so-called Armington assumption in the trading sector which provides the possibility to distinguish imports by their origin and explains intra-industry trade of similar products. Thus, imported commodities are assumed to be separable from domestically produced goods and combined in an additional nest in the production tree. The elasticity of substitution in this input nest is equal across all uses. Under these circumstances, the firms decide first on the sourcing of their imports and based on the composite import price, they then determine the optimal mix of imported and domestic goods.

The market structure in all sectors of the standard GTAP model is assumed to be perfect competition. Commodity supplies are based on single-output production functions. Substitution between inputs is modeled with two-level nested production functions. Demand for land, labor, and capital are based on Constant elasticity of Substitution (CES) functions. International trade clears commodity markets, with each commodity being differentiated by its place of origin. Trade polices operate as ad valorem distortions, which in addition to transportation costs, form a wedge between domestic and world prices.

Households maximize utility derived from market goods (i.e. consumption and savings) subject to regional income, which consists of primary factor payments and net tax collections. Regional production of new capital goods is financed by domestic savings and net capital inflow. The price index for international capital is the numeraire. The model is implemented and solved using GEMPACK.

For the present analysis, we have used the following scheme for sectors and regions using GTAP release 8 database as shown in Table 3. The base year of this database is 2007.

Table 3 Scctoral/Regions Aggregation Scheme

Sectors		Regions
Grains & Crops	Mineral Products	India
Meat products & Livestock	Motor Vehicles & parts	Nepal
Extraction	Transport Equipments	Pakistan
Processed Food	Electronic Equipments	Sri Lanka
Textiles	Machinery	Rest of South Asia
Wearing Apparel	Trade & Communication	Malaysia
Leather Products	Sea Transport	Singapore
Light Manufacture	Air Transport	Rest of ASEAN
Heavy Manufacture	Other Transport	China
Chemicals, Rubber etc,	Other Services	European Union (EU_25)
		Japan
		NAFTA
		Rest of World

The regional aggregation scheme is based on two criteria. One, major trading partners of India and Pakistan are modeled as individual entities. Two, countries which have entered into FTA agreements with India and Pakistan are modeled as individual nations. We have attempted to model sectors as disaggregated as possible. The different models of transport service are modeled separately so as to incorporate productivity shocks in our simulations. After all, most writings on India-Pakistan trade have stressed the inefficiency of trading routes. While manufacturing sectors have been modeled as disaggregated as possible, we have not done same for the service sectors. The reason being GTAP database does not include any trade barriers for India and Pakistan in the service sectors. So, we are not in a position to give any trade related policy shocks in the service sectors of India and Pakistan. Thus, there is no gain in decomposing service sectors further.

The structure of India-Pakistan trade in base year viz. 2007 is shown in Tables 4. This ex-post trade is of course subject to existing trade barriers including list of commodities covered under

Pakistan's list of positive items and other non-tariff barriers which both countries impose on each others.

Table 4 Overview of Trade Linkages in Base Year

Sectors	Exports: India to Pakistan		Exports: Pakistan to India	
	US $ Million	Share (%)	US $ Million	Share (%)
Grains & Crops	409.9	21.73	65.7	20.73
Meat products & Livestock	21.9	1.16	1.1	0.35
Extraction	64.1	3.40	5.0	1.58
Processed Food	170.2	9.02	5.5	1.74
Textiles	28.7	1.52	57.9	18.27
Wearing Apparel	0.3	0.02	1.3	0.41
Leather Products	7.9	0.42	14.0	4.42
Light Manufacture	29.1	1.54	2.0	0.63
Heaving Manufacture	362.5	19.22	88.0	27.77
Chemicals, Rubber etc	599.1	31.76	14.8	4.67
Mineral Products	5.0	0.27	11.7	3.69
Motor Vehicles & parts	0.4	0.02	0.4	0.13
Transport Equipments	1.2	0.06	0.0	0.00
Electronic Equipments	0.3	0.02	0.0	0.00
Machinery	29.3	1.55	5.4	1.70
Trade & Communication	5.4	0.29	2.2	0.69
Sea Transport	1.2	0.06	4.0	1.26
Air Transport	1.9	0.10	12.7	4.01
Other Transport	13.8	0.73	1.8	0.57
Other Services	134.0	7.10	23.2	7.32
Total	1886.2	100.00	316.9	100.00

The relative importance of various trading partners is shown in Table 5. As column 3 in Table 5 indicates, Pakistan's sourced nearly 14% of its imports from China in 2007. China is the second most trading partner of Pakistan. On the other hand, India sourced most of its imports from European Union followed by NAFTA and China. India seems to be a source country for imports of Sri Lanka. In 2007, Pakistan sourced nearly 5% of its imports from India. By contrast, India sourced only 0.1% of its imports from Pakistan.

Table 5 Share of Country/Region's Import in Total in Base Year

Country	India	Nepal	Pakistan	Sri Lanka	Rest of SA	Malaysia	Singapore	Rest of ASEAN	China	EU_25	Japan	NAFTA
India	0.0%	48.0%	4.9%	27.0%	11.9%	1.6%	2.3%	1.8%	1.8%	1.1%	0.8%	1.6%

Nepal	0.2%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Pakistan	0.1%	0.1%	0.0%	1.6%	4.8%	0.1%	0.0%	0.1%	0.1%	0.1%	0.1%	0.2%
Sri Lanka	0.2%	0.0%	0.2%	0.0%	0.5%	0.0%	0.0%	0.0%	0.0%	0.1%	0.0%	0.1%
Rest of SA	0.3%	0.1%	0.5%	0.3%	0.1%	0.0%	0.0%	0.1%	0.0%	0.1%	0.0%	0.2%
Malaysia	2.4%	0.6%	3.3%	3.1%	2.4%	0.0%	8.1%	4.7%	3.0%	0.5%	2.3%	1.5%
Singapore	3.6%	1.3%	1.5%	3.8%	2.6%	14.9%	0.0%	8.2%	2.1%	0.6%	1.7%	0.8%
Rest of ASEAN	3.4%	2.6%	4.5%	6.0%	6.9%	13.2%	7.7%	8.0%	6.4%	1.4%	9.1%	2.7%
China	9.2%	14.6%	13.2%	10.5%	15.3%	12.5%	8.8%	12.7%	0.0%	5.1%	17.6%	12.7%
EU_25	20.2%	13.9%	18.9%	16.4%	10.6%	16.9%	16.3%	13.2%	13.8%	60.0%	13.0%	19.0%
Japan	2.9%	2.1%	4.3%	3.2%	4.2%	11.2%	8.1%	12.7%	14.2%	2.0%	0.0%	6.3%
NAFTA	10.8%	5.3%	8.8%	5.0%	7.5%	9.3%	15.4%	8.3%	10.0%	7.0%	15.4%	32.2%

4. Policy Simulations and Results

To understand the economic impact of India-Pakistan bilateral liberalization, we have undertaken three basic policy simulations:

- Simulation 1- Full Liberalization

  India and Pakistan removes all tariffs and barriers against each other on all goods

- Simulation 2 – Full Liberalization + 50% productivity improvements in all modes of transport services (i.e. land, sea and air) between India and Pakistan
- Simulation 3 – Simulation 2 + Full Liberalization in FTA (in force) signed by India & Pakistan

In all the above simulations, we have abolished tariffs on goods even though some of the FTAs in force encompass services. This is done since trade protection coefficient of service sectors between India and Pakistan are absent in GTAP database/model.

We understand that all these simulation are only hypothetical ones. But, it would help us to to understand the gaining and loosing sectors in both these economies. Since several researchers have highlighted the transportation issues in trade between these two nations, we have undertaken simulation 2. Simulation 2 quantifies additional economic gains that may be realized if productivity improvement occurs in different modes of transport services engaged in trading between India and Pakistan. Since both India and Pakistan are very engaged in regionalism spree, it would be

interesting to see what would be the impact of these FTA on their respective economies and on economic welfare. Simulation 3 basically does the same. To undertake this simulation, we have assumed that there exist zero tariffs in trade between Indian and ASEAN members, India and Sri Lanka, India and Nepal, India and Pakistan, India and rest of South Asia and India and Japan. Similarly, there exist zero tariffs in trade between Pakistan and Malaysia, Pakistan and China, Pakistan and Sri Lanka, Pakistan and Nepal, Pakistan and India, Pakistan and rest of South Asia.

4.1 Welfare Implication of Trade Liberalization on India and Pakistan

In GTAP model, regional household behavior is governed by an aggregate utility function specified over per capita private household consumption, per capita government spending and per capita savings. The percentage change in this aggregate per capita utility for a region is the welfare change variable that is computed in any GTAP model during simulations. This measure referred to as equivalent variation (EV) summarizes the regional welfare changes resulting from any policy shock.

In a comparative static applied general equilibrium model with population, endowment and technology being fixed, the only way to increase welfare is to reduce the excess burden arising from existing distortions. Any change in allocative efficiency may be directly related to tax/tax changes interacting with equilibrium quantities changes. Thus, the sources of changes in real income arising due to the policy simulation under study are the following: change in income due to change in endowments net of depreciation (this is normally zero in a comparative static situation), tax on output of any good, tax on use of any endowment in any industry, tax on use of intermediate input in any industry, tax on private household consumption and government consumption of any good, trade taxes (export and import) on any good, changes in regional terms of trade (ToT) and changes in relative price of savings and investment (Investment-Saving Effect). (Huff & Hertel, 2000). Of course, if one also introduces technology change arising due to productivity improvement as a policy shock, then this that is also another source of welfare change.

Table 6 Sources of Welfare Gains

Variables	Simulation 1		Simulation 2		Simulation 3	
	India	Pakistan	India	Pakistan	India	Pakistan
Equivalent Variation (Millions of US $)	282.85	41.04	1560.48	271.11	6171.59	127.24
Allocative Efficiency Effects	164.59	20.24	304.23	46.39	5721.73	254.64
Terms of Trade Effects	97.09	10.33	108.23	15.23	-526.2	-131.31
Technical Change Effects	0	0	1125.04	187.81	1125.04	187.81
Investment Saving Effect	21.17	10.47	22.98	21.68	-148.98	-183.9
Real return to Factors (%)						
Land	0.03	0.31	0.15	0.27	-0.45	0.65
Unskilled Labor	0.02	0.15	0.12	0.34	0.85	0.65
Skilled Labor	0.02	0.14	0.12	0.35	1	0.65
Capital	0.02	0.13	0.12	0.33	0.92	0.65

Table 6 indicates that welfare is improving in both India and Pakistan under full liberalization scenarios. India's welfare rises by US $ 282 million in simulation 1 whereas Pakistan's welfare increases by US $ 41 million. Note that when we introduce productivity change in modes of transport services engaged in trade between these two countries, both the countries gain significantly in welfare. India's welfare rises to US $ 1.5 billion whereas that of Pakistan goes up to US $ 271 million from US $ 41. Note that, when we consider the effect of FTA in force signed by India and Pakistan as in simulation 3, India welfare increases by 4 times over simulation 2. However, Pakistan's welfare falls relative to simulation 2. As we see below, fall in terms of trade is the main reason for this trend.

The principal sources of welfare gains are shown in Table 6. As this tables shows, gains from allocative efficiency effects is principal source of gain in simulation 1 followed by gains from terms of trade effect. This holds for both India and Pakistan. However, technical change emerges to be the principal source of gain in simulation 2 in both these countries. The other predominant sources of gains are allocative efficiency effects and terms of trade effect. It should be noted that terms of trade deteriorates both in India and Pakistan under simulation 3.Investment saving effects turns out to be negative in this simulation. However, both these countries register positive welfare gain due to significant allocative efficiency effects and technical change effects.

With regards to returns to factors of production, we find that same registers positive returns

baring land in India in simulation 3.

4.2 Impact on Selected Trade and Other Variables of India and Sri Lanka

Table 7 indicates that GDP is improving in all the above simulations. India's volume of export rises by 0.13% in simulation 1, 0.23% in simulation 2 and 3.46% in simulation 3. By contrast, Pakistan's export increases by 1.1% in simulation 1, 1.3% in simulation 2 and 7.276% in simulation 3. On the import front, India (Pakistan) registers rise by 0.27% (1.19$) in simulation 2 and 3.46% (7.27%) in simulation 3. Trade balance declines in both these countries under all three simulations. Expectedly, the decline is sharpest in simulation 3 in both these countries.

Bilateral trade liberalization fosters bilateral export's growth in respective countries. Pakistan's export to India surges by 89% in simulation 1 to 110% in simulation 2 and further to 105% in simulation 3. On the other hand, India's export to Pakistan rises by 42% in simulation 2 and about 100% in simulation 2/3. It must be noted that export's increase in percentage term is large due to small exports in base years which is discussed in the next table.

Table 7 Changes in Macroeconomic Variables

Variables	Simulation 1		Simulation 2		Simulation 3	
	India	Pakistan	India	Pakistan	India	Pakistan
Change in GDP (%)	0.010	0.010	0.110	0.120	0.550	0.270
Change in Volume of Exports (%)	0.13	1.1	0.23	1.3	3.46	7.27
Change in Volume of Imports (%)	0.15	0.75	0.27	1.19	2.87	3.99
Change in Trade Balance (Millions of US $)	-36.85	-66.3	-115.6	-144.74	-819.54	-192.11
Change in terms of Trade	0.04	0.05	0.05	0.22	-0.22	-0.49
Increase in Pakistan's Export to India (%)	89%		110%		105%	
Increase in India's Exports to Pakistan (%)		42.0%		58.2%		52.9%

What are the sectors that gain in exports? The data are shown in Table 8. We focus on simulation 2 and simulation 3 only since simulation 1 results mimics simulation 2 with additional magnification effect. As this table shows, the largest export's growth from India to Pakistan in percentage terms occur in sectors like motor vehicles and parts, leather products, wearing apparels, transport equipments in simulation 2. However, some of the sectors exhibit large export increase due to small base problem. As this table shows, the large increase in exports in absolute terms occurs in following sectors namely heavy machinery, chemicals etc and grains and crops. When both these

countries remove their barrier with other countries as in simulation 3, we find that these three sectors do well in India's export front.

Coming to Pakistan's export to India, maximum increase in sectoral exports in simulation 2 is registered in sectors such as extraction, grains and crops, transport equipments, light manufacture , wearing apparel. However, significant gaining sectors in absolute terms are grains and crops, heavy machinery and textiles. This is true also in simulation 3.

Table 8 Sectoral Export's Growth (%)

Sectors	Exports: India to Pakistan				Exports: Pakistan to India			
	Simulation 2		Simulation 3		Simulation 2		Simulation 3	
	%	US $ Mill	%	US $ Mill	%	US $ Mill	%	US $ Mill
Grains & Crops	43.5	178	44.8	183.5	188.5	124	181.8	119.42
Meat products & Livestock	53.7	12	55.0	12.0	98.24	1	98.6	1.09
Extraction	149.1	96	149.6	95.9	247.2	12	244.5	12.22
Processed Food	56.1	95	36.8	62.6	141.3	8	59.2	3.25
Textiles	105.8	30	77.0	22.1	118	68	117.1	67.81
Wearing Apparel	146.5	0	78.9	0.2	107.9	1	110.4	1.43
Leather Products	160.0	13	128.6	10.2	87.4	12	86.9	12.17
Light Manufacture	117.0	34	95.3	27.7	138.6	3	137.3	2.75
Heavy Manufacture	78.9	286	77.0	279.2	91.32	80	86.6	76.23
Chemicals, Rubber etc	53.7	322	46.5	278.6	101.9	15	94.2	13.94
Mineral Products	129.3	6	102.9	5.1	146.2	17	143.2	16.75
Motor Vechiles & parts	177.3	1	165.5	0.7	84.29	0	67.5	0.27
Transport Equipments	134.8	2	126.7	1.5	153.9	0	157.0	0.00
Electronic Equipments	68.8	0	50.5	0.2	-0.06	0	2.1	0.00
Machinery	78.0	23	62.6	18.4	109.4	6	104.6	5.65
Trade & Communication	0.4	0	-0.3	0.0	-0.83	0	1.0	0.02
Sea Transport	0.3	0	0.0	0.0	-0.62	0	1.1	0.04
Air Transport	0.1	0	-0.2	0.0	0.03	0	2.0	0.25
Other Transport	0.0	0	-0.5	-0.1	0.2	0	2.2	0.04
Other Services	0.3	0	-0.7	-0.9	-0.5	0	1.6	0.37

In the aftermath of tariff liberalization, economies are expected to align along the line of comparative advantage. However, since India and Pakistan are weakly linked in our base year (weak trade partnership between them), not much is expected as part of sectoral output changes in simulation 2. The effect would be more pronounced in simulation 3 as we are able to capture important partners of India and Pakistan in this simulation 3. The relevant data are shown in Table 9. As this table shows, contracting sectors in simulation 2 for India are textiles, wearing apparel, leather products, electronic equipment and sea transport service. The rest of the sectors are expanding. The

largest increases are in sectors which are registering large export increase namely, chemicals, processed food, and heavy manufacture. On the Pakistan side, large increase in output occurs in sector like textiles, machinery. However, the following sectors seem to contract in Pakistan: extraction, processed food, leather products, light manufacture and chemical, rubber etc. The later also exhibits largest fall in output, namely 1.53%.

In simulation 3, sectoral effects are marginally different for both India and Pakistan. In this simulation, grain & crops contract in India but the same expands in Pakistan. Textiles, wearing apparel, and leather products register significant rise in output in Pakistan as well as in India. Processed food sectors contract in both these countries. Chemicals, rubber sector expand marginally in India whereas the same contract in a big way in Pakistan. Machinery sector seem to expand in significantly Pakistan in this simulation. Motor vehicle seems to contract in both countries. However, transport sector seem to expand in India in this simulation.

Table 9 Sectoral Output's Growth (%)

Sectors	India		Pakistan	
	Simulation 2	Simulation 3	Simulation 2	Simulation 3
Grains & Crops	0.11	-0.36	0.12	0.41
Meat products & Livestock	0.12	0.43	0.13	0.01
Extraction	0.04	-0.09	-0.41	-0.28
Processed Food	0.16	-4.31	-0.16	-1.96
Textiles	-0.04	0.94	0.33	2.61
Wearing Apparel	-0.11	1.61	-0.3	2.58
Leather Products	-0.01	1.91	-0.04	2.35
Light Manufacture	0.04	0.26	-0.51	-3.74
Heavy Manufacture	0.17	0.52	0.11	-0.39
Chemicals, Rubber etc	0.31	0.07	-1.53	-3.22
Mineral Products	0.04	0.21	0.25	-1.07
Motor Vechiles & parts	0.06	-1.14	0.33	-2.2
Transport Equipments	0	0.94	0.33	-0.54
Electronic Equipments	-0.01	0.52	0.1	-4.21
Machinery	0.04	-1.01	0.89	6.34
Trade & Communication	0.12	0.2	0.08	-0.09
Sea Transport	-0.02	0.4	-0.19	0.44
Air Transport	0.03	0.37	0.08	0.73
Other Transport	0.1	0.28	0.19	0.19
Other Services	0.1	0.31	0.13	0.22

What would be the impact on other countries as a result of the policy shocks? Generally, in a global CGE model, the countries which do not reduce in tariff cuts, loses welfare. The same happen in our model also. However, several countries, which reduces tariff in simulation 3, gain in welfare (Table 10). As Table 10 indicates, rest of South Asia or Sri Lanka does not suffer significantly due to India/Pakistan trade liberalization. On the other hand, ASEAN members gain significantly in this simulation.

Table 10. Welfare Gains for Other Countries in Simulation 3

Country	Nepal	Sri Lanka	Rest of SA	Malaysia	Singapore	Rest of ASEAN	China	EU_25	Japan	NAFTA
Welfare (US $ Million)	150	-4	-28	708	347	984	80	-73	861	-245

5. Concluding Remarks

Our results indicate that there exist significant gains from India, Pakistan mutual trade liberalization. However, these gains are realized only when productivity gain occur in the modes of transport service engaged in trade between these two countries. This is expected given the logistics problems in trade between India and Pakistan.

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