

Analysis Of Agricultural Productivity And Growth On Safta (South Asian Free Trade Agreement) And Its Impact On Economy Of Pakistan By Using CGE Model

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Autorii prezintă date și informații cu privire la costurile și beneficiile comerțului - în principal pentru orez, piele și confecții de bumbac - între Pakistan și India. După cercetarea statistică efectuată, din rezultatele analizei s-a ajuns la concluzia că au fost create oportunități pentru ambele țări în vederea creșterii exporturilor prin zona de comerț liber din Asia de Sud (SAFTA).

Abstract

This research explore the opportunities and analyzing the cost and benefit on Pak-India trade on South Asian Free Trade Agreement (SAFTA) and its possible impact on the welfare of both countries. Pak-India trade on SAFTA create opportunities for the both countries in export Laid growth. In First Scenario when normal trading relation will be restores and given MFN(Most Favored Nations) status given to each other to attack the trade between two countries. The Global trade analysis GTAP model is used to analyze the possible impact of SAFTA on Pakistan in a multi country, multi sector applied General equilibrium frame work. After employing the

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simplified static analysis framework, the analysis based on simulations reveals that current demand for Pakistani Basmati Rice and other consumer items like leather and cotton-made garments will expand after the FTA and consumer surplus will increase. The export of Rice, leather and cotton-made garments may be conducted by two scenarios, i.e. when normal trading relations between Pakistan and India will be restored and when there will be a free trade between Pakistan and India in the presence of South Asian Free Trade Agreement (SAFTA). Results based on this research reveal that on SAFTA, grounds, there will be net export benefits in Pakistan's economy.

Key words: Agriculture, Trade liberalization, FTA, SAFTA, Welfare gain, Economy.

This paper begins with a review of Pakistan's economic reforms and their coverage. Section II discusses the methodology, offering a brief description of CGE Modeling including the GTAP. The experimental designs are discussed in Sections III. Apart from unilateral and regional trade liberalization, as a founding member of the WTO, Pakistan remained firmly committed to the multilateral trading system and has already established a large number of reforms in keeping with the GATT/WTO principles. However, the paper does not review the outcome of multilateral trade Liberalization. In Section IV, GTAP model simulation results are analyzed. Section V concludes.4 **Section I** Until the late 1970s, Pakistan's economic development centered on an inward-oriented development strategy based on import substitution industrialization performed mainly by state owned firms. Both tariff and non-tariff barriers were widely used to protect domestic economic activities. Trade restrictive policies were accompanied by other regulatory policies such as control on foreign exchange, finance and foreign direct investment. These restrictive economic policies had severe adverse implications on overall economic growth, in particular growth of exports. Pakistan introduced extensive economic reforms in 1971-72 becoming the first country in the South Asian region to do so. The economy was freed from the inward-oriented strategy, and adopted an outward-oriented export-led development strategy, which was followed by many East Asian countries at that time. Trade liberalization was the key element of this new policy package and it entailed reliance on tariffs, replacement of quantitative restrictions including import licensing by a revised system of tariffs as well as the relaxation of other controls on trade. In order to encourage both domestic and foreign investment, the Government offered a series of incentives, while attempting to create an environment conducive to investment. In recent years, however, the focus of Pakistan's trade policy has

seemingly shifted towards regionalism, which Pakistan considers a springboard for broader trade liberalization. The rationale for regional cooperation is based on a number of factors, not all of which are necessarily economic in nature. The formation of **EU, NAFTA, MERCOSUR and ASEAN**, and the recent emergence of other regional trading blocs may have given rise to a revival of interest in regionalism in Pakistan. This also explains the country's desire to avoid marginalization as more and more countries become members of various RTAs (Baldwin, 1993). Further, an RTA facilitates the choice of a selective liberalization policy as mutually agreed by all member economies, keeping them protected from global competition. Thus, Pakistan continued to promote international trade through active participation in several regional trading agreements such as South Asian Preferential Trading Agreement (SAPTA),⁷ India-Sri-Lanka Free Trade Agreement (ILFTA),⁸ Bangkok Agreement (BA)⁹, the Bay of Bengal Initiative for Multi sectoral Technical and Economic Cooperation (BIMST-EC)¹⁰ comprising Bangladesh, India, Myanmar, Pakistan and Thailand and Indian Ocean Rim Association for Regional Cooperation (IORARC). The Free Trade Agreement (FTA) between Pakistan and Pakistan (PLFTA) became operational from June 2005.¹² SAFTA was the first major step in moving towards a free trade area and higher forms of regional economic integration among the member states of the South Asian Association for Regional Cooperation (SAARC). SAARC was established in 1985 by member countries consisting of Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan and Pakistan. The population of SAARC countries accounts for one fifth of the world population and almost half of the world's poor. The original rationale for preferential trading among SAARC countries stems from the conviction that these countries needed to pursue a policy of rapid industrialization in order to overcome their economic backwardness. Both industrial and agricultural sectors of the SAARC countries need vast technological improvements to take advantage of the global market. It is also expected that regional co-operation in South Asia will become an important means of accelerating trade and investment in the region. The agreement on SAFTA was signed in Dhaka in April 1993 by the SAAC members, providing a legal framework for trade liberalization and strengthening intra-regional economic cooperation. In 1995, SAFTA had been ratified by all contracting states and in accordance with Article 22 of the agreement SAFTA became operational on 7th December 1995. SAFTA followed a positive list approach, including flexible provisions for least developed countries (LDCs). At the Ninth SAARC Summit held in Male in 1997, the Heads of Governments decided to accelerate the pace of transition of SAFTA to South Asian Free Trade Agreement (SAFTA) by the year 2001 or Consumption is also quite

high during Christmas. Similarly, the fruit enjoys enormous significance on the occasion of Dial and such festivals another religion. In Europe and North America, the fruit is particularly preferred during the dark winter month. Usual sales of dates are spread to a period from October to April.

Methodology

It is widely acknowledged that applied general equilibrium (AGE) or computable general

Equilibrium (CGE) modeling has become the tool of choice for analysis of a wide range of trade policy issues such as tariffs and non-tariff barriers (NTBs) in both developed and developing countries in a variety of settings. In particular, AGE modeling is useful for analyzing the welfare effect of trade policy that needs to address second-best issues, where there are significant interactions between policy measures for one sector and distortions elsewhere in the economy. Such models have two distinctive features: they incorporate a number of distinct sectors, and the behavioral equations of the model deal with the response of industries and consumers to changes in relative prices (Adams et al., 1998). This development is explained by the capability of CGE models to provide an elaborate and realistic representation of the economy, including the linkages between all agents, sectors and other economies (Brockmeier, 1996) AGE analysis also provides a valuable tool for putting things in an economy-wide perspective (Hertel, 1999).

Limitations Of the Cge Model

Despite the importance of CGE modeling in policy analysis, a series of questions have been raised about the empirical validity of these models. The core of the critique is focused on unsound parameter selection criteria, because the choice of elasticity values critically affects the results of policy simulations generated by these models. In the calibration method, some parameters are determined on the basis of a survey of empirical literature, some chosen arbitrarily, and the remainders are set at values, which force the model to replicate the data of a chosen benchmark year (Shoven and Whalley, 1992). Most often the estimated elasticities for commodity and/or industry classifications are based on econometric studies, which are not totally consistent with the countries represented in the model or they may even be “guesstimates” when no published figures are available.

THE GTAP Model

In this study, the widely used Global Trade Analysis Project (GTAP), a multi-country, multisector AGE model (Hertel, 1997) 14 has been employed to empirically assess the impact of trade liberalization reforms in Pakistan. Multi-country, economy-wide CGE models are designed to work out the relative prices of various inputs and outputs mixes of the economies of interest as well as indicating the global changes in world trade patterns. Thus, the strength of a global AGE model lies in its ability to help us understand the linkages between sectors, countries and factors on a global scale. The general equilibrium structure recognizes that all parts of the world economy hinge together in a network of direct and indirect linkages. This means that any change in any part of the system will, in principle, have repercussions throughout the entire world. As McDougall (1995, p. 88) clearly points out “its characteristics are that it is economy-wide, it is multi-sectoral, and it gives a central role to the price mechanism. These characteristics differentiate it from partial equilibrium modeling (not economy-wide), macroeconomic modeling (not multi-sectoral), and input-output modeling (agents don’t respond to price signals).”The GTAP model was designed for comparative–static analysis of trade policy issues in an economy-wide framework. Since the changes in trade policies and production levels in any of the regions and sectors will have impacts on other regions and sectors, even though my main focus of this study is on results for Pakistan, it is possible to incorporate the policy changes of other countries within a global CGE modeling framework.

Key Economic Indicators data for SAARC countries-2005-06

TABLE 1

Country	Mid Year Population	Population in Growth rate	GDP US\$ Mn	GNP Per capita US\$	Literacy rate	Life expectancy	Crude birth rate per (000)	Crude death rate exports	Exports US\$ Mn	Imports US\$
Pakistan	148.8	1.92	93,908	600	48.7	63	36	36	13,375	17,954
Bhutan	0.8	2.5	657	760	47.0	63	35	9	n.a	n.a
Bangladesh	135.2	1.3	585,68	440	41.1	63	29	8	6,608	11,276
India	1,086.0	1.6	686,08	620	61.0	63	24	8	71,763	94051
Maldev	0.3	1.5	719	24,10	97.2	67	36	6	122	
Nepal	24.7	2.2	6,685	250	48.6	62	33	10	756	1,869
Sri lanaka	19.5	1.1	19,224	1,010	92.1	74	16	7	5,757	8000

Note: ADB key economic indicators -2005-06

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Gross National Product of Pakistan

Rs.Million

Table 2

S.No	Sectors/Sub-sectors	1999-00	2000-01	2001-2002	2002-03	2003-04	2004-05	2005-06	2006-07
A.	Agricultural sector	923609	945301	968291	1059316	1164751	1314234	1382660	1608522
	1.Crops	467879	456258	449993	500370117	538208	651774	666727	1608522
	1.1.Major crops	342200	325579	316857	370117	411836	497556	496841	579996
	1.2.Minor crops	125679	130679	133136	130450	126372	154218	169886	191835
	2.Livestock	417120	446058	476310	512976	578218	621170	678033	794987
	3.Fishries	15163	16546	16377	16625	16728	17490	22230	243559
	4. Forestry	23447	26439	25611	29148	31597	23800	15670	17345
B.	Industrial Sector	830865	942263	989349	1083914	1416986	1659285	1939160	2203490
A+B	Commodity producing Sectors	1754474	1887564	1957640	2143230	2581737	2973519	3321820	3812012
C	Services Sector	1807546	2035680	2188527	2390988	2668790	3149049	3807356	4414507
D	Gross Domestic Product (GDP)	3562020	3923244	4146167	4534218	5250527	6122568	7129176	8226519
E.	Net Factor Income from Abroad	-47956	-54482	23665	151812	124478	134461	149901	160738
F.	Gross National Product(GNP)	3514064	3868762	4169832	4686030	5375005	6257029	7279077	8387257
G.	Population in Million	137.53	140.36	143.17	146.75	149.65	152.53	155.37	158.17
H.	Per capita Income (Rs.)	25551	27563	29125	31933	35917	41022	46850	53027

Source: http://www.statpak.gov.pk/depts/fbs/statistics/national_accounts/table12.pdf

**Experiment-1 15% uniform Import Tariffs
Estimated Welfare Trade Effect**

Table 3

Region	EV- US\$Mil.	%GDP	Of QGDP	TOT	Volume of Exports	Volume of Imports	Of Export Price	Import Price	DTBAL US\$mil.
ASEAN	4.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.78
EU	-88	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.0
IND	-0.76	0.00	0.00	0.00	0.00	0.00	0.00	0.00	10.6
JPN	12.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	18.0
PAK	231.87	1.44	0.84	1.50	0.76	1.60	1.08	0.01	-123.90
LKA	13.67	0.00	0.00	0.00	0.00	0.00	0.00	0.00	-6.90
MIE	11.7	0.00	0.00	0.01	0.02	0.00	0.00	0.00	-3.89
NAFTA	-33.20	0.00	0.00	0.00	0.00	0.00	0.00	0.00	29.90
ROW	-45.7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	34.54

Experiment-1 15% uniform Import Tariffs. Estimated Percentage Changes in Regional Out put in agricultural trade liberalization

Table 4

SECTORS (A)Industry Out Put	ASEAN	EU	IND	JPN	PAK	LKA	NAFTA	ROW
AGRI	-0.00	0.02	0.02	0.002	-9.0	0.00	0.01	0.00
MINQ	-0.02	0.01	0.02	0.00	-8.90	0.00	0.01	0.00
PROF	0.02	0.01	0.01	0.02	-7.65	0.00	0.02	0.01
TEXT	-0.06	0.01	0.00	0.00	-9.10	0.03	0.02	0.02
PECP	-0.12	0.02	-0.10	0.00	30.2	-0.09	-0.07	0.06
MAEQ	0.02	0.00	0.00	0.01	-13.90	0.00	0.00	0.00
OTHM	0.01	0.00	0.01	0.00	-5.90	00	00	0.00
SERC	-0.00	0.00	-0.00	0.00	0.80	0.00	-0.00	0.00
B-Aggregate Exports								
AGRI	-0.00	0.02	0.02	0.002	-8.90	0.00	0.01	0.00
MINQ	-0.02	0.01	0.02	0.00	-8.54	0.00	0.01	0.00
PROF	0.02	0.01	0.01	0.02	-17.90	0.00	0.02	0.01
TEXT	-0.06	0.01	0.00	0.00	-6.78	0.03	0.02	0.02
PECP	-0.12	0.02	-0.10	0.00	34.20	-0.09	-0.07	0.06
MAEQ	0.02	0.00	0.00	0.01	13.8	0.00	0.00	0.00
OTHM	0.01	0.00	0.01	0.00	-11.75	00	00	0.00
SERC	-0.00	0.00	-0.00	0.00	-15.0	0.00	-0.00	0.00

Sensitivity Analysis, Estimated percentage change in Pakistan's output and Trade

15% Uniform Import Tariff SAFTA SAFTA cum 15% Uniform Tariff
(b) Aggregate Exports

Table 5

	Central Scenario	50% Increase In ESUBM	100% Increase In ESUBM	Central Scenario	50% Increase In ESUBM	100% Increase In ESUBM	Central Scenario	50% Increase In ESUBM	100% Increase In ESUBM
AGRI	-7.9	-11.23	-12.41	33.12	-54.12	67.89	22.5	54.0	50.89
MINQ	-8.53	-12.34	-14.45	-9.89	-17.03	-23.54	-18.45	-26.56	-45.78
PROF	-17.45	-23.56	-28.97	8.89	25.27	71.4	-5.78	2.56	29.63
TEXT	-6.79	-10.78	-14.67	-14.78	23.44	27.05	6.4	12.43	16.67
PECP	23.56	43.56	56.6	-0.76	-1.65	-2.3	22.4	41.90	68.90
MAEQ	-17.09	-27.78	-34.6	-26.78	70.1	12.50	56.9	67.2	43.8
TREQ	-18.9	-27.8	-34.7	65.6	67.9	78.6	52.6	71.0	65.0

© Aggregate Imports

AGRI	-7.89	-9.8	-6.78	32.7	-49.0	-71.0	20.9	37.9	58.7
MINQ	-1.56	-3.78	-3.54	2.34	6.54	8.76	-0.67	2.89	6.43
PROF	23.6	27.90	34.5	41.0	31.0	19.11	31.8	40.8	50.89
TEXT	30.8	23.6	30.1	-3.03	-12.5	-14.98	12.6	2.6	4.12
PECP	-5.18	-7.56	-8.67	0.78	0.88	0.65	-4.78	8.8	11.3
MAEQ	3.04	4.64	5.78	7.90	8.89	7.14	7.98	8.66	11.3
TREQ	4.69	5.45	6.00	12.66	17.10	23.90	22.0	16.8	18.04

Sensitivity Analysis

Sensitivity analysis for AGE models is critical for establishing the robustness and obtaining the acceptance of model results. Although AGE models have become important tools of analysis in the quantitative evaluation of trade policy, the solutions obtained from these models are conditional on many assumptions. Among many assumptions, one set of assumptions—the values of model parameters such as elasticities—are amenable to “sensitivity analysis.” Evaluation of the robustness of the model results can also help to increase the credibility of the conclusions of the study. In the GTAP model, the substitutability among imported commodities from different sources is determined by the Armington elasticity of substitution parameter called ESUBM. According to the Armington assumption, each country has some degree of market power over its products and can influence its terms of trade because that goods from different sources are treated as imperfect substitutes. Hence, to reduce Pakistan’s market power, it is necessary to increase the substitutability among imports from different origins because the terms trade effects largely depend on the import-import substitution elasticities (McDougall et al., 1998). This kind of experiment could also be interpreted as a form of conditional systematic sensitivity analysis (CSSA). Under the CSSA; each parameter is separately perturbed from its central value conditional on all the other parameters remaining at their central values. The robustness of the model results is then revealed by comparison of the simulation results with the central case. Thus, three additional experiments are undertaken under the sensitivity analysis to reduce Pakistan’s market power by increasing the values of ESUBM to capture the effect of possibly different adjustment capacities as a small country. Though this will affect all countries/regions’ market power in the model, it will have most effect on the small countries like Pakistan.

Simulation Results

The first experiment considered the Pakistan’s reduction of import tariffs to 15 percent under the unilateral trade liberalization. The impact of this scenario on regional welfare and the resulting percentage changes in sectoral output and trade are reported in Table 9 and 10 respectively. Accordingly, if Pakistan (LKA) reduces its import tariffs to 15 percent unilaterally on a global basis to maintain a uniform external tariff rate, Pakistan experiences a welfare gain around US\$ 20 201 million (1.53 percent of the GDP). Under this scenario, Pakistan’s volume of imports rises by 3.3 percent while its volume of exports falls slightly by 0.3 percent reflecting the fact that the pressure to increase imports is stronger than the increase in demand for Pakistan’s exports

by unilateral liberalization. However, as a result of the composite export price increase by 1.1 percent, Pakistan experiences a small improvement in the terms-of-trade of 1.5 percent and the real GDP by 0.8 percent. The welfare gains or losses for other regions are quite varied under this simulation. However, since Pakistan is a small country, the impact of Pakistan's unilateral reduction of import tariffs to 15 percent will not affect other region's real GDP or terms-of-trade significantly. As shown in Table 9, the 15 percent uniform tariff will adversely affect most of the sectoral output in Pakistan because of the increased competition for import competing industries. As shown in panel (a) of **Experiment-2: South**

This experiment considered the impact of combined trade policy of unilateral cum regional trade liberalization on Pakistan's welfare and trade. As shown in Table 12, the simulation results indicate a considerable increase in welfare for Pakistan, around US\$442 million (3.35 percent of the GDP) under this scenario, reflecting that both consumers and producers are able to benefit from the removal of trade barriers. Indeed, this simulation represents the highest welfare gain for Pakistan among the three trade liberalization experiments presented. Apparently, there are two trade-creation effects from this scenario. First, trade creation that results from Pakistan's own trade liberalization, and second, that which results from the regional liberalization under the SAFTA. Pakistan also experiences the highest terms-of-trade improvement of 5.2 percent under this policy reform, as the economy would be expected to gain from the increased composite exports price of 5.4 percent, relative to a small increase in the price of imports of 0.3 percent. As might be expected, Pakistan's volume of imports increases significantly by 9.0 percent, but the volume of exports decreases slightly by 0.3 percent. As a result, there is only a marginal improvement in the real GDP by 0.98 percent. Not surprisingly, India, as Pakistan's major import source, would also gain considerably under this policy reform by around US\$4398 million (1.34 percent of the GDP).

Conclusions

The simulation results presented and analyzed here demonstrate the importance of experimental designs, and the usefulness of the global CGE modeling framework for examining the impacts of the different types of trade policy reforms for Pakistan. Although, the GTAP model cannot capture the dynamic effects of trade liberalization, it is a useful tool for generating comparative static results for a variety of trade reform scenarios. It also identifies the industries that will expand, and those that will contract, and the size of these changes as a result of various trade liberalization scenarios. The results suggest that Pakistan would experience the highest welfare gain under the combined

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policy reform of the SAFTA cum 15 percent uniform external tariffs while the SAFTA on its own gives the second highest welfare gains. SAFTA allows the participating countries to achieve larger economies of scale in production, attain specialization, increase competitiveness and diversify their export basket, thus assisting domestic economic reform. Therefore, harmonizing economic policies among neighboring countries must receive higher priority in the policy making process. Although, simulation results are highly sensitive to the underlying data and assumptions regarding the reference scenarios, the results clearly provide an assessment of the implications of SAFTA.

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