Potential economic impact of India-Sri Lanka bilateral trade liberalization

Abstract

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India and Sri Lanka accounts for the largest bilateral trade flow in the SAARC region. Following the liberalization of the Indian economy in the early nineties this bilateral trade grew by 10% per annum during 1993-99. Thereafter the Free Trade in Goods Agreement (ISFTA) which was signed by the two countries in December 1998 and operationalized in March 2000 accelerated the bilateral trade flows further and it grew by over 27% from 2000 to 2006. India is now Sri Lanka's largest importer and among the top five destinations for Sri Lankan exports. The two countries have now moved towards negotiations on Comprehensive Economic Partnership Agreement (CEPA) with the aim of providing additional market access to each other. Given the growing importance of India- Sri Lanka bilateral trade, the present paper attempts to study the likely impact of bilateral trade liberalization between the two countries.

Using the GTAP 7 database the study conducts simulations involving the scenario of the bilateral trade liberalization between India and Sri Lanka and assesses the potential economic impact of this liberalization on both the economies. The welfare implications of the trade liberalization for the countries are also studied. The India Sri Lanka FTA was formulated on the negative list approach whereby each country extended concessions/preferences to all commodities except those included in its negative list. The two countries mutually agreed on the products to be included in the negative lists and the zero duty lists. At present the negotiations on CEPA between the two countries aim at widening and deepening the FTA by the way of reducing the number of products in the negative list of each country and seeks to liberalize the bilateral service trade as well. The simulations have been conducted taking into account all these scenarios related to liberalization of trade in goods and services between the economies. The paper also incorporates features of imperfect competition and scale economies for select manufacturing sectors in India and seeks to understand the welfare implications of the same.

Since 2003, most of the goods from Sri Lanka have been entering India duty free under the FTA arrangement, yet a large number of Indian exporters rather than using this preferential route to import Sri Lankan goods have been using the duty drawback scheme extensively to import various inputs at world prices from Sri Lanka to be used in production of processed goods which then are exported. The present paper uses the GTAP-DD model, an extension of the standard GTAP model to study the implications of this feature of India-Sri Lanka bilateral trade and contrasts and compares the results with those under the FTA.

The simulation results show that post the FTA there is a significant increase in the volume of bilateral trade flows between the two countries. Particularly, noteworthy is the increase in exports from Sri Lanka to India.

Post the FTA, Sri Lanka exports large quantities of vegetable & fruits, crops, vegetable oil & fat, metals and machinery equipment to India while goods like food products, petroleum products, chemicals, motor vehicles, transport equipment, manufacturing are the main products featuring in India's bilateral export list to Sri Lanka. Both countries stand to gain from this preferential trading arrangement. But India's gains are very small as compared to that enjoyed by Sri Lanka. Sri Lanka gains both on account of increased allocative efficiency and improved terms of trade but India's gains are limited to improved terms of trade only. However, gains accruing to India improve when scale economies prevailing in some of the Indian industries are taken into account.

Welfare gains position is almost reversed when duty drawback being used extensively by India in some of its sectors are factored in. India gains relatively more as compared to Sri Lanka from the FTA in this case. India reaps positive gains on account of both increased allocative efficiency and positive terms of trade. Sri Lanka now loses due to loss in allocative efficiency. Thus, greater market access into India through the preferential route seems to be a more profitable proposition for Sri Lanka.

Post the trade liberalization productive activity registers an overall increase in both India and Sri Lanka. This results in increased employment of all factors of production in Sri Lanka. But in India the employments of skilled labour and capital fall. Thus, the economic impact of the FTA is remarkably in favour of Sri Lanka. Hence, an FTA and its eventual graduation towards a CEPA between the two countries seem to have very good prospects for both the countries, particularly Sri Lanka.

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Introduction

Among the seven member countries of the South Asian Association of Regional Cooperation (SAARC), India and Sri Lanka accounts for the largest bilateral trade flow in the region. Thanks to the India- Sri Lanka Free Trade Agreement (ISFTA) that was signed between the two countries in December 1998 and operationalized in March 2000. The idea of strengthening the bilateral trade ties between Indian and Sri Lanka has been discussed as early as 1990 in the writings of various researchers (Panchmukhi et al 1993; Jayawardena, Ali and Hulugalle, 1993). However, almost at the same time in 1993 the agreement on South Asian Preferential Trading Arrangement (SAPTA) was signed among the seven member countries of SAARC. The objective was to promote and sustain trade and economic cooperation within the SAARC region through the exchange of concessions. This pushed the agenda for promoting bilateral trade between India and Sri Lanka to the background. However, the negotiations under SAPTA progressed at a very slow pace and became a time consuming process. The failure of SAPTA brought about the desire for a free trade agreement with India to the forefront from the Sri Lankan side. It was felt that such an agreement would give the much needed market access to the exporters from Sri Lanka. India was also keen to acquire the South Asian markets and expressed its willingness to consider bilateral free trade agreements with its South Asian neighbours. Accordingly, the India-Sri Lanka Free Trade Agreement (ISFTA) was signed between the two countries on 28 December, 1998 in New Delhi, India and came into operation on 1 March, 2000.

The ISFTA was formulated on the negative list approach whereby each country extended concessions/preferences to all commodities except those included in its negative list. The two countries mutually agreed on the products to be included in the negative lists, phasing out lists and the zero duty lists. At 6 digit HS code the two countries agreed on 5112 tariff lines. Sri Lanka's commitments were- immediate 100% tariff cut for 319 items (6-digit HS code) by March 2000, 50% preferential duty on 889 items (6-digit HS code) and a negative list comprising of 1180 items (6-digit HS code). The respective figures for India were 1351, 2799 and 196. As par the agreement India granted 50% concessions to exports from Sri Lanka and had a tariff reduction period of three years from 2000 to 2003. On the other hand, Sri Lanka granted only 35% duty concessions to most of the exports from India but had a longer tariff reduction period of eight years from 2000 to 2008. However, limited concessions were given for items important for both the economies.

For the eight years from 2000 to 2008 both the countries have introduced various relaxations as also restrictions to the products mentioned above. Except products included in the negative list of India,

textiles and tea (962 products at six digit HS classification of 1996) all other products of Sri Lanka now enter India duty free. Similarly, except the products listed in the negative list of Sri Lanka (1180 products) all other products from India too enjoy duty free entry to Sri Lanka by now.

2. India's trade with Sri Lanka

In 1977 Sri Lanka embarked on a path of comprehensive economic policy reforms becoming the first country in South Asia to adopt the export-driven growth strategies similar to those of the newly industrialized economies of East Asia. In the 1980's the Indian economy also went in for partial liberalization and following its macroeconomic crisis in 1991 the economy witnessed long term structural reforms in the industrial, trade and financial sector of the economy. The trade policy reforms during this phase were mainly focused on- liberalization, openness, transparency and globalization.

As a consequence of this gradual opening up of both the economies, trade between India and Sri Lanka picked up significantly (Table 1). India's exports rose from US $ 277 millions in 1992 to US $ 502 in 1999 while total trade rose from US $ 291 millions to US $ 546 millions. Thus, the total trade taking place between the two economies nearly doubled during this time. Particularly, the export figures revealed that immediately in the post reform period when the Indian economy opened up significantly the exports of goods from India to Sri Lanka increased at a rate of 13% per annum between 1992 to 1997. By 1995 India became the largest source of imports for Sri Lanka, accounting for 8%-9% of its total imports. Thus, Sri Lanka's trade with the SAARC region virtually amounted to trade with India.

Further, with the FTA becoming operational in March 2000, trade has grown rapidly between India and Sri Lanka (figure 1). The bilateral trade figures rose from US $ 706 million in 2001 to US $ 1.7 billion in 2004 and stood at US $ 3.4 billion in 2008. Thus, post the operationalization of free trade agreement, bilateral trade between the two economies increased at the rate of 47% per annum during 2001-2008. Exports from India to Sri Lanka increased from US $ 638 million in 2001 to US $ 2838 million in 2008, while exports from Sri Lanka to India during the same period increased from US $ 68 million to US $ 548 million.

Table 1

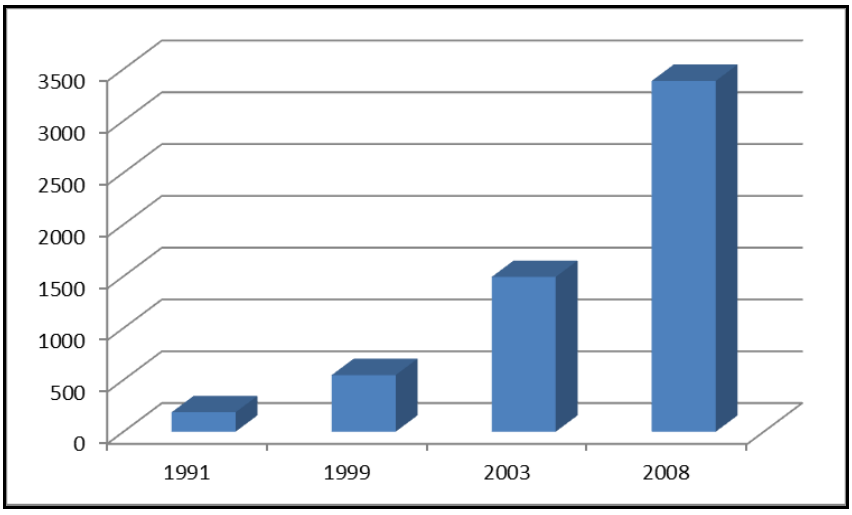
India's trade with Sri Lanka (1991-2008) (US $ million)

Year	Exports	Imports	Trade Balance	Total Trade
1991	175	12	163	187
1992	277	14	263	291
1993	288	39	249	327
1994	367	31	336	398
1995	400	39	361	439
1996	477	35	442	512
1997	489	42	447	531
1998	437	38	399	475
1999	502	44	458	546
2000	650	46	604	696
2001	638	68	570	706
2002	916	90	826	1006
2003	1302	192	1110	1494
2004	1400	333	1067	1733
2005	1939	568	1371	2507
2006	2105	505	1600	2610
2007	2594	441	2153	3035
2008	2838	548	2290	3386
2009	1724	328	1396	2052

Source: Trademaps

Figure 1

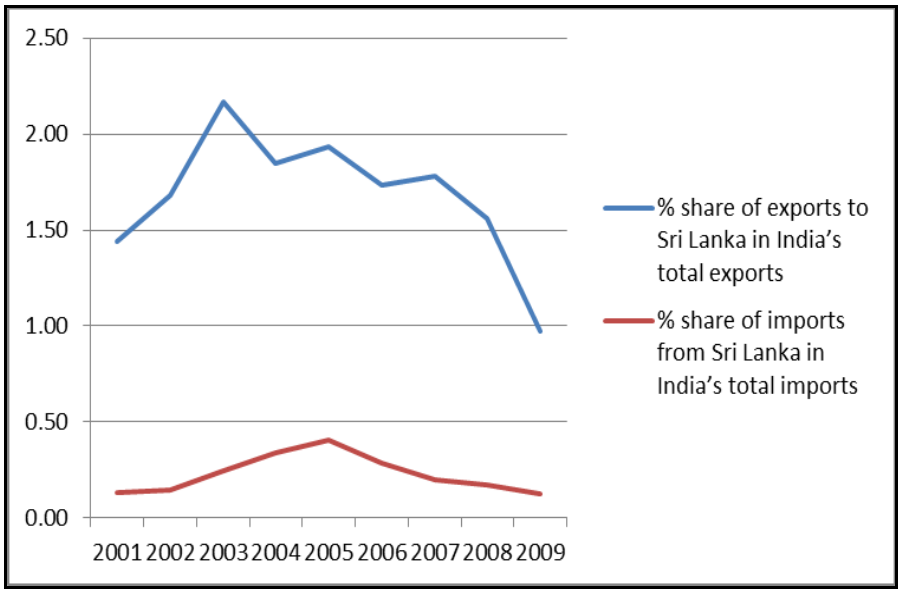
Total Bilateral Trade between India and Sri Lanka for select years prior to FTA and after FTA (US $ million)



Source: based on data from UN comtrade

Figure 2a

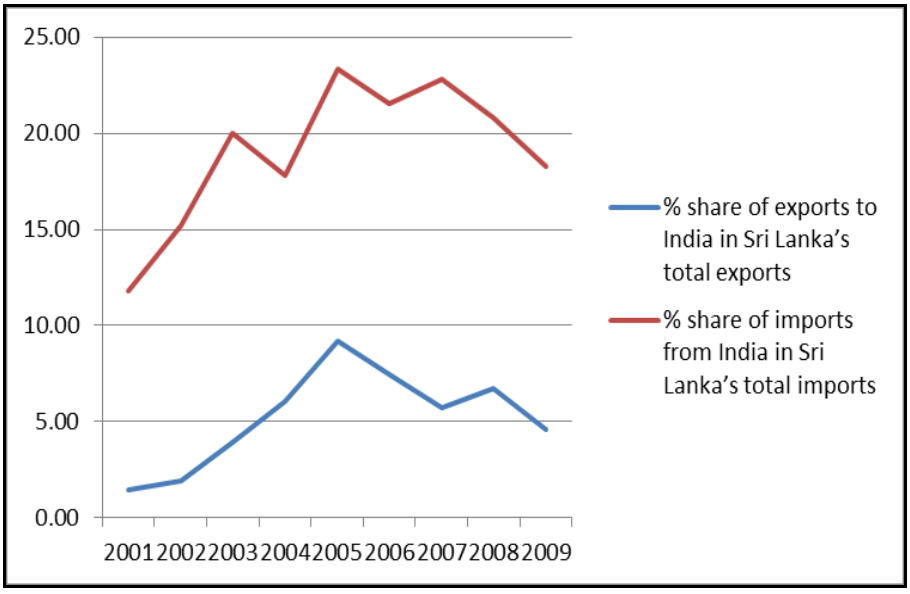
Shares (%) of India's exports reaching Sri Lanka & imports sourced from Sri Lanka (2001-2009)



Source: based on data from trademaps

Figure 2b

Shares (%) of Sri Lanka's exports reaching India & imports sourced from India (2001-2009)



Source: based on data from trademaps

The product categories which are among the top exports of Sri Lanka to India in the recent years are Articles of apparel & accessories, Coffee, tea, mate & spices, Rubber & rubber articles, Pearls, precious stones, metals and coins, Fish, crustaceans, molluscs, aquatic invertebrates, Electrical & electronic equipment, Nuclear reactors, boilers & machinery , Copper and copper articles, Plastics and plastic products, Edible Fruits, nuts, peel of citrus fruit & melons, Ceramic products, Other made textile articles, sets, worn clothing etc, Toys, games, sports requisites, Vegetable textile fibres, paper yarn, woven fabric, Tobacco and manufactured tobacco substitutes and Animal, vegetable fats and oils, cleavage products etc.

The top exports from India to Sri Lanka in the last couple of years are - Mineral Fuels, oils, distillations products, Vehicles other than railway, tramway, Iron & Steel, Cotton, Pharmaceutical products, Machinery, Articles of Iron & Steel, Paper and paper board, articles of pulp, paper & board, Manmade filaments, Articles of apparel, & accessories which are mostly not knit or crocheted, Salt, sulphur, earth, stone, plaster, lime & cement, Sugars and sugar confectionary, Cereals and Inorganic chemicals, precious metal compound, isotopes.

Post the implementation of the FTA the India-Sri Lanka bilateral trade grew by over 47% from 2001 to 2008 in contrast to the pre-FTA rate of 14% per annum during 1993-2000. India is now Sri Lanka's largest importer and among the top five destinations for Sri Lankan exports. The two countries have now moved towards negotiations on Comprehensive Economic Partnership Agreement (CEPA) with the aim of providing additional market access to each other. The CEPA negotiation has been initiated in 2005 and concluded in July 2008, after thirteen rounds of negotiations. CEPA comprises of four objectives; widening and deepening of the existing FTA, establishing an agreement on trade in services, including measures for promotion of investment in each other's countries and enhancing economic cooperation. Both sides had decided to sign the CEPA during the 15th SAARC Summit held in Colombo in 2008 but due to certain reservations expressed by the Government of Sri Lanka, the agreement has not yet been signed.

Against this backdrop, the present paper attempts to study the impact of bilateral trade liberalization between India and Sri Lanka under ISFTA and the likely impact of the proposed CEPA between the countries.

3. Objective of the Study

The present study seeks to assess the impact of the already implemented ISFTA on India and Sri Lanka and the likely impact of the CEPA which is under negotiation. The study uses the Global Trade Analysis Project (GTAP) for this purpose. The GTAP model is a comparative, static, multiregional

Computable General Equilibrium (CGE) model which uses a common global database. This is an analytical tool which helps to understand the dynamics of major economic variables in a simulated environment. Using this database the study conducts a number of simulations involving the different scenarios of India's trade liberalization with respect to Sri Lanka. The results of these simulations are then used to assess the impact of this liberalization on India and Sri Lanka. The welfare implications of the FTA on the two countries are also studied both when some of Indian manufacturing sectors are characterized by perfect competition and constant returns to scale and imperfect competition and increasing returns to scale. Hence, the study discusses the welfare and other macroeconomic implication of India-Sri Lanka FTA and the proposed CEPA. Additionally, the paper also incorporates the feature of duty drawback which is extensively used by Indian importers to obtain goods from Sri Lanka to be used as intermediate inputs in the production of processed exports in the country. Given that import of intermediate inputs accounts for a large share of India's total import from Sri Lanka (around 46%), extensive usage of this parallel route (to ISFTA) to obtain imports from Sri Lanka at zero tariff is expected to have significant implications on the macroeconomic and trade variables and the welfare of either country. Thus, the present paper also extends the basic GTAP modeling framework to account for this particular trade route and notes its implications for the economies. All these simulations conducted in the paper will help in providing essential inputs to policy makers towards understanding the ground reality which is an essential pre-requisite for sound policy formulation.

4. Literature Review

Bilateral trade between India and Sri Lanka has been extensively discussed by contemporary researchers. They have shown much interest in analyzing the pattern of bilateral trade and discussing the benefits and pitfalls as also the success and prospects of the free trade agreement between these two South Asian economies. This interest has led to a substantial volume of literature on this topic in recent years. To name a few of these researchers are- Jayawardena *et al* 1993; Kelegama 1999; Weerakoon 2001; Mukherjee *et al* 2002; Taneja *et al* 2004; Thenuwara 2005; Kelegama *et al* 2007. Though these works discuss bilateral free trade between India and Sri Lanka with emphasis on the various aspects of trade like pattern of trade, time frame for tariff liberalization, negative list, rules of origin, the positive and the negative outcomes of the free trade agreement, yet none of these work are based on a theoretical model building that help to analyze trade between the two economies post the FTA or measures the gains to the economies following such trade. In this connection the studies done by Sikdar 2010 and Perera 2008 are worth mentioning. Sikdar 2010 uses a general equilibrium approach to understand the pattern of comparative advantages of the two countries if there is complete free trade between the countries. The determinants of the comparative advantages for each of these

countries are identified and the gains accruing to each of them are assessed. However, this study considers a situation of complete free trade with all bilateral tariffs between India and Sri Lanka eliminated and it does not take into account the final tariff schedule as agreed by India and ASEAN members. Also, the study does not do an overall impact analysis of the ISFTA. Besides, it discusses only goods trade between the countries as is the scope of the ISFTA and does not throw any light on service trade between them. The study done by Perera 2008 is more in line with the approach and framework that the present study uses. Perera does a CGE analysis of the impact of the ISFTA. He uses the GTAP 6 database and performs a number of simulations to quantify the impact of the liberalized trade between Sri Lanka and India. The results from the study indicate that both countries have positive welfare gain from ISFTA. Particularly, welfare gains are higher for both countries under full liberalization than with negative lists included for both countries. The study also checks for the trade diversion effect of the FTA and finds it to be not much significant. Thus, this study does a comprehensive analysis of the likely impact of ISFTA, but it does not discuss the likely implications of a CEPA between the countries. But given the proposed CEPA between the two countries a discussion of its potential impact seems quite a need of the hour. The present study seeks to fulfill these gaps by using a general equilibrium methodology that will help to assess the impact of the ISFTA and likely impact of a CEPA on India and Sri Lanka. In particular, the study does simulations with both CRS and perfect competition as also IRS and imperfect competition characterizing Indian production structure. This would be done while taking into account the actual tariff commitments of the two countries under the free trade agreement and using the latest updated GTAP 7 database. Besides, the paper also extends the basic GTAP modeling framework to incorporate duty draw which is used often extensively as a policy tool by India.

The rest of the paper is organized as follows: Section 5 highlights the methodology used to do an impact analysis of the trade and partnership arrangements between India and Sri Lanka. Section 6 discusses the data. Section 7 presents and discusses the results of the simulations. Section 8 presents an extension of the basic modeling framework to incorporate the feature of duty drawback scheme used by Indian importers to import goods from Sri Lanka and compares the results with the results of the simulation done in section 7. The paper finally concludes with a summary of the findings and their policy implications.

5. Methodology

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 present paper uses version 7 of the GTAP database and the GTAP modeling framework to study the impact of the India-Sri Lanka trade liberalization on important macroeconomic variables such as output, employment, wages, prices and welfare of the Indian and the Sri Lankan economy. The impact of the trade liberalization on trade structure and bilateral trade between India and Sri Lanka is also studied. The study further incorporates features of imperfect competition and scale economies for select Indian manufacturing sectors and studies the changes in the implications of the FTA. The simulations are done so as to capture broadly two scenarios:

- the current scenario when the ISFTA has been fully implemented by both India and Sri Lanka i.e. tariff has been eliminated by both sides for all products excepting those in the negative lists of the respective countries.
- the scenario when the trade liberalization further deepens as the number of items in the negative lists of the two countries are eliminated.

These simulations are done both when CRS and perfect competition characterizes production structures in both economies and also when IRS and imperfect competition exists in some select Indian industries while CRS and perfect competition continues to prevail in rest of the Indian industries and in Sri Lanka. Additionally, the current scenario (with CRS and perfect competition) simulation is reworked with the feature of duty drawback included so as to assess the impact of this parallel route of obtaining imports from Sri Lanka other than the ISFTA.

6. The Data

6.1 The GTAP database

The database used for the study is taken from Global Trade Analysis Project (GTAP) as compiled by the Centre for Global Trade Analysis, Purdue University, USA. The database used here is the version 7 of the GTAP database. The reference year for this database corresponds to the global economy in 2004. This database is compiled for bilateral exports and imports and tariffs inclusive of other flows for 113 regions across the world and for 57 tradable commodities of the World. Of the total of 113 regions, 94 are primary regions that are developed from contributed I-O tables of the respective countries; the remaining 19 are composite regions. All the trade flows across 57 commodities are distinguished by their regions of origin and destination and also, on the basis of agents like intermediate demand,

final demand by private households, government and investment. It provides a method for allowing for varying import intensities by different economic agents within a region. The tariff data is mainly in the form of applied ad valorem rates.

6.2 Regional and Sectoral aggregation used in the study

The 113 regions of the World as in GTAP database are aggregated into ten regions for the purpose of this study. They are - India, Sri Lanka, ASEAN, USA, EU, China, Bangladesh, Pakistan, Rest of South Asia and Rest of the World. The other countries of the world have been classified keeping in mind the main trading partners and the neighbouring countries of India so that the impact of the free trade agreement between India and Sri Lanka on these countries may be examined.

Similarly, the 57 sectors of the GTAP model have been aggregated into 46 sectors, namely, Wheat, Rice, Other cereals, Vegetable & fruits, Oilseeds, Other crops, Meat & meat products, Milk, Dairy products, Other animal products, Forestry, Fishing, Coal, Oil & gas, Minerals, Vegetable oil & fat, Sugar, Food products, Beverages & tobacco, Textiles, Wearing apparels, Leather & leather products, Wood & wood products, Paper & paper products, Petroleum products, Chemical, rubber & plastic, Ferrous metals, Other metals, Mineral products, Motor vehicles, Transport equipment, Electrical equipment, Machinery equipment, Other manufacturing, Sea transport, Air transport, Other transport, Communication, Construction, Trade, Financial, Insurance, Business services, Other recreations, Public, defence, health and education and Dwellings.

6.3 Tariff commitments for product categories by India and Sri Lanka under the FTA

To assess the impact of the FTA, the tariff commitments of the two countries have to be taken into account. The detailed schedule of tariff commitments of each of the countries of the agreement is available. But the commitments are not corresponding to product categories. They are corresponding to specific tariff lines at six, eight or ten digit tariff classification of HS code. The tariff lines belong to the different tracks (normal track comprising of goods on which tariff concessions are provided and negative track on which no tariff concessions are given) of tariff commitments. The tariff lines under same product category are often found to belong to different tracks. After having scrutinized the schedules for each country the categories of tariff commitments have been worked out for the categories of commodities as aggregated for the present study. A further disaggregation would have definitely helped to get more accurate consequences of the tariff reductions and eliminations by the respective countries as worked in the different simulations. But given the level of commodity

classification in the GTAP 7 database the best that could have been worked out to be used in the simulations is as presented in table A1 in Appendix A1.

6.4 *Additional data for existence of scale economies and imperfect competition in India*

Out of the thirty five sectors considered in this study, twelve sectors, namely, Textiles, Wearing apparels, Petroleum products, Chemicals, rubber & plastic, Ferrous metals, Other metals, Mineral products, Motor vehicles, Transport equipment, Electrical equipment, Machinery equipment and Other manufactured goods are considered to be oligopolistic in nature with presence of scale economies for the Indian economy. The calibration of the oligopoly model and scale economies for these twelve manufacturing sectors has been based on the data obtained from Indian database[1].

7. Results of the Simulations

This section discusses and compares the results of the two basic simulations:

- **Liberalization as per tariff commitments** of the countries (i.e. there is no tariff reduction for items in the negative lists). This is referred to as current scenario henceforth in the present study.
- **Full liberalization** of bilateral trade between India and Sri Lanka such that there are no negative lists of the two countries (with CEPA the countries are expected to reduce the sizes of their respective negative lists as much as possible). This is referred to as full liberalization scenario.

As mentioned earlier both these scenarios are simulated with assumption of perfect competition in product and factor markets and production function exhibiting constant returns to scale in either country and also with imperfect competition and increasing returns to scale for select Indian manufacturing sectors.

7.1 Impact on select macroeconomic and trade variables of India and Sri Lanka

A scenario of trade liberalization involving trade between the countries as per their tariff commitments under ISFTA shows that Sri Lanka registers a much higher rise in GDP as compared to India. But the GDP price index also rises much higher in Sri Lanka compared to India. Sri Lanka's

[1] The firm level data for Indian corporate sector is available in Prowess database (of Centre for Monitoring Indian Economy (CMIE)) which have been used to calculate various cost related variables used in the model.

increase in employment post the FTA is phenomenal. This is mainly contributed by the sectors of Vegetable oil & fat, metals, ferrous metals, oilseeds, wood products and machinery equipment. India on the other hand, experiences a slight fall in its employment position. This is mainly due to fall in employment of unskilled labour and incidentally in sectors like vegetable oil & fat, metals, meat. These are true both under assumptions of CRS and perfect competition and also for IRS and imperfect competition for select Indian industries. With CRS characterizing production structure in India skilled labour employment rises slightly by around 0.11% in the country. But with IRS prevailing in select Indian industries, the employment of skilled labour also falls by 0.50%. But unskilled labour unemployment still dominates the overall unemployment situation in India.

Under a situation of full liberalization, India's macroeconomic position improves (both when CRS or IRS characterizes the production structure in India) marginally as is indicated by the slight improvement in its nominal GDP position and unemployment position. For Sri Lanka there is a marginal deterioration in its GDP and average price as compared to current situation. However, its employment position improves further and the same sectors as in current scenario continue to contribute to this improvement.

Thus, in terms of select macroeconomic indicators of table 2, Sri Lanka is much better off in absolute sense in both the scenarios of current trade liberalization as under ISFTA and full trade liberalization as is likely under CEPA. It has relatively better impact under the current scenario. India also registers improvements but much less compared to Sri Lanka. There is marginal improvement in India's position when scale economies are present in some select Indian industries.

Table 2
Change in select macroeconomic variables (%)

Macroeconomic variables	**India**				**Sri Lanka**			
	Current scenario		**Full liberalization**		**Current scenario**		**Full liberalization**	
	CRS	**IRS**	**CRS**	**IRS**	**CRS**	**IRS**	**CRS**	**IRS**
Change in GDP	0.04	0.07	0.06	0.09	3.02	3.03	2.67	2.67
Change in employment	-0.3	-1.4	-0.17	-1.1	860.06	860.1	865.7	859.72
Change in GDP price index	0.04	0.06	0.06	0.08	2.86	2.86	2.51	2.51

Source: Based on simulation results

*Current scenario takes into account the different tariff commitments by the countries

[@]CRS refers to CRS and perfect competition characterizing the production structures in both countries while IRS refers to IRS and imperfect competition characterizing some select industries in India while Sri Lanka continues to have CRS and perfect competition.

The corresponding changes in trade related variables for the countries under the different scenarios are discussed in table 3. Both the countries experience increase in volume of exports and imports in all possible combinations of trade liberalization and production structures mentioned in the table. Sri Lanka, as in case of macroeconomic indicators, registers much higher increase in both its total exports and total imports as compared to India. In particular the country shows a much higher increase in its total trade under full liberalization as compared to the increase in the current situation. For both countries the trade deficit aggravates under both the trade liberalization scenarios. For India, the balance of trade worsens slightly with IRS existing in select manufacturing sectors. But yet under all circumstances the deficit is greater for Sri Lanka. The terms of trade, post the trade liberalization, improve for both countries. Like other trade variables, the terms of trade also improves much more for Sri Lanka than for India.

Table 3
Change in trade variables

Macroeconomic variables	**India**				**Sri Lanka**			
	Current scenario		**Full liberalization**		**Current scenario**		**Full liberalization**	
	CRS	**IRS**	**CRS**	**IRS**	**CRS**	**IRS**	**CRS**	**IRS**
Change in volume of exports (%)	0.33	0.28	0.35	0.30	1.9	1.9	2.6	2.6
Change in volume of imports (%)	0.38	0.36	0.4	0.38	4.82	4.82	5.36	5.36
Change in trade balance (US $ million)	-114.12	-129.51	-109.96	-127.63	-182.87	-182.87	-189.16	-189.16
Change in terms of trade	0.03	0.04	0.04	0.05	1.97	1.97	1.87	1.87

Source: Based on simulation results
*Current scenario takes into account the different tariff commitments by the countries
[@]CRS refers to CRS and perfect competition characterizing the production structures in both countries while IRS refers to IRS and imperfect competition characterizing some select industries in India while Sri Lanka continues to have CRS and perfect competition.

To sum up, it may be said that both in terms of macroeconomic as well as trade indicators, impact on the Sri Lankan economy is much more than it is for India. In fact, apart from the trade deficit deepening the impact is by and large positive on the economy. Particularly, worth noting is the extent of increase in its level of employment. For India, though the impact is not very large, but it is positive except that the trade deficit widens. Existence of scale economies in a number of Indian industries

contributes to improve the consequences of the FTA for the Indian economy to some extent. But the trade deficit would still be wider.

Having discussed the macroeconomic and the trade situations of India and Sri Lanka under the alternate liberalization scenarios, the welfare position and its decomposition for each of these countries is discussed in the following section.

7.2 Welfare Implications of the FTA on India and Sri Lanka

In GTAP modeling framework, 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 standard 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 components that result in changes in real income arising due to the policy simulation under study are – 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 (Inv-Sav). (Huff & Hertel, 2000).

Intuitively, it is welfare improving to increase the level of a relatively taxed activity since this involves the reallocation of a commodity or endowment from a low value use to a relatively high social marginal usage. Conversely, reducing the level of a subsidized activity will tend to benefit the particular economy as this involves reallocation of resources away from low social marginal value product use. The same is true for endowments and for goods traded. Any good that yields trade tax to the economy benefits the economy. The terms-of-trade for a region which is defined as the ratio of export price index of the region to its import price index contributes positively to the society if export prices post simulation rises more than import prices. Saving-investment term does not contribute to welfare changes but both investment and savings appear in welfare decomposition. This is because

investment sales generate income but do not enter into regional utility while savings enter regional utility but does not generate current income.

As observed from table 4, the total welfare is positive for both India and Sri Lanka and under both the liberalization scenarios but Sri Lanka's welfare gains are significantly large. India's gain is substantially small as compared to Sri Lanka when CRS and perfect competition characterizes production structures. But as we assume IRS in some manufacturing sectors in India the country's welfare position improves markedly under both forms of liberalizations. For Sri Lanka the welfare gain is due to positive allocative efficiency as also positive terms of trade. But the contribution of positive terms of trade is much larger. The welfare gain for the country in case of full liberalization comes down slightly due to lesser gain in terms of trade as compared to current scenario. India also shows positive terms of trade in all the scenarios but due to almost equivalent loss in allocative efficiency its total welfare gain is very small.

Gain in allocative efficiency by Sri Lanka under all scenarios is mainly contributed by sectors producing food products, metals, machinery equipment, other manufacturing and trade. Food products lead to increased allocative efficiency by contributing large import tax while metals and machinery equipment lead to increase in consumption tax and as such add to allocative efficiency. Other manufacturing and trade contribute by the way of increased production tax to the country. Post the FTA both of these heavily taxed sectors register increase in output and as such contributes large sums of output tax. In India the loss in allocative efficiency in all the situations are mainly on account of sectors producing vegetable oil & fat and metals. Both the sectors account for large import tax loss to the country thereby leading to negative allocative efficiency. The loss of import tax for vegetable oil and fat is owing to less import from ASEAN while loss of import tax for metals is the result of fall in import of the product from Rest of the World.

The terms of trade gain accruing to each country is due to the relatively larger fall in prices of their import items relative to their exports post the tariff concessions given by the other country. Sri Lanka's largest gain on account of improved terms of trade (US $ 149.7 million) is under current scenario with assumption of CRS while in the same scenario India's gain is only US $ 26.69 million. This indicates that for Sri Lanka, the goods coming from India show substantial fall in import prices than India experiences for goods imported from Sri Lanka. For India this figure improves slightly while that for Sri Lanka comes down a little under full liberalization (with CRS) showing that with concessions allowed on products in the negative list India's import prices fall further and relatively more compared to its export prices and for Sri Lanka this is just the reverse.

With IRS introduced in few select industries of India, the country's ToT shows further improvement and also a large positive scale effect help the economy to get boost in production efficiency and increase overall welfare. The output per firm of many of the oligopolistic sectors like, petroleum products, chemicals, mineral products, motor vehicles, transport equipment, electrical equipment and machinery equipment increase and fetch significant positive scale economies for the country. The increases in output by all these sectors are attributable to increased export demand. Many of these firms now source cheaper raw materials and inputs, particularly products like metals, ferrous metals, mineral products and machinery equipment from the Sri Lanka and produce efficiently. In fact, 46% of the increase in total import demand for all goods in India is due to increase in input demand by the domestic firms. 31.4% of this increase is accounted for by the Indian firms showing IRS.

Table 4
Total welfare and its decomposition (US $ Million)

Macroeconomic variables	**India**				**Sri Lanka**			
	Current scenario		**Full liberalization**		**Current scenario**		**Full liberalization**	
	CRS	**IRS**	**CRS**	**IRS**	**CRS**	**IRS**	**CRS**	**IRS**
Allocative efficiency effect	-26.96	-25.35	-27.87	-25.7	31.68	31.68	30.97	30.99
Scale Economies	-	84.9	-	61.1	-	-	-	-
Terms of trade effect	26.69	37.7	39.44	50.08	149.71	149.8	142.61	142.7
Investment-Savings Effect	7.47	10.8	9.24	12.4	38.15	38.19	37.41	37.5
Total welfare	7.2	108.05	20.82	97.9	219.53	219.7	210.99	211.16
Change in welfare as % of GDP	0.001	0.02	0.003	0.02	1.06	1.06	1.02	1.02

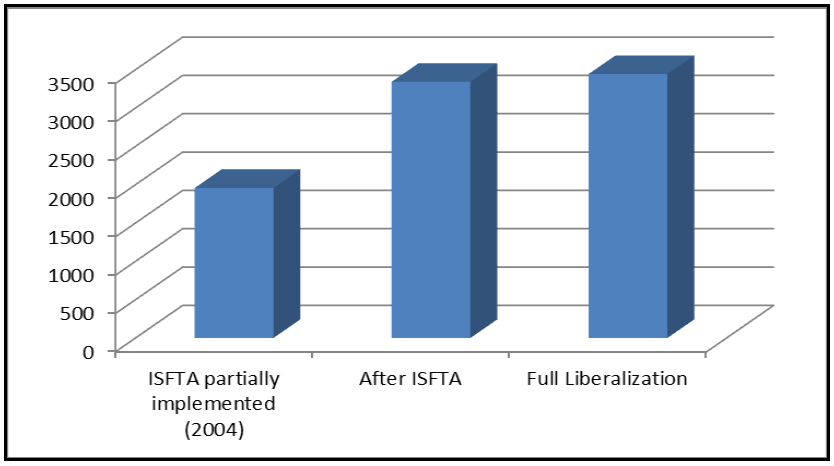
Source: Based on simulation results
*Current scenario takes into account the different tariff commitments by the countries
[@]CRS refers to CRS and perfect competition characterizing the production structures in both countries while IRS refers to IRS and imperfect competition characterizing some select industries in India while Sri Lanka continues to have CRS and perfect competition.

Thus, both in the current phase of the FTA implementation as also in a scenario of full liberalization Sri Lanka's gain from ISFTA is enormous while that of India is moderate. India is slightly better off when there is full liberalization. India can raise its gains substantially if it goes in for investing more in technology and improving production efficiency. Through this, it can arrest the fall in its export prices and thereby control some of the fall in its terms of trade.

7.3 Impact on Bilateral trade between India and Sri Lanka

Section 7.1 earlier has indicated that total trade increase both in India as also in Sri Lanka post the FTA implementation whether it is in the form of full trade liberalization or liberalization taking into account the tariff commitments of the countries both when production structure is characterized by CRS or if IRS is present in some of the manufacturing sectors in India. This section takes a closer look at the bilateral trade between the two partners. Figure 1 point out that the bilateral trade increased manifold during the period ISFTA was fully implemented (about 71% from 2004 when India's implementation has been completed till it has been implemented by Sri Lanka also). It is likely to increase further if tariffs on bilateral imports between the two countries are further reduced and eventually eliminated for products which are currently in the negative lists of the countries. However, this increase is not very big (only about 3%) as the number of items in India's negative list as of now is hardly any. Sri Lanka too has reduced the size of its negative list substantially over the years. This increase in bilateral trade is irrespective of the assumption of CRS or IRS.

Figure 3
Total bilateral trade between India and Sri Lanka under different situations
(US $ million)



Source: Based on calculations from the simulations

Both the countries gain substantial access in each other's markets following the implementation of the FTA. However, the market access gained by Sri Lanka in India is substantially high as compared to India's access in their region. If concessions are also given for products in the negative list then both countries will show further increase in their exports to the other but India will gain slightly a larger share of Sri Lankan market (additional 4%) than will Sri Lanka in India (additional 1.9%). This is due to the relatively larger list of products currently included in Sri Lanka's negative list.

Table 5
Increase in India's and Sri Lanka's bilateral exports under the FTA
(%)

Different trade liberalization scenarios	Increase in India's exports to Sri Lanka		Increase in Sri Lanka's exports to India	
	CRS	IRS	CRS	IRS
Current scenario of ISFTA	37.6	37.6	189.8	189.8
Full Liberalization	43.2	43.1	195.2	195.2

Source: Based on calculations from simulation results

7.3.1 Sectors registering highest export growth

Almost all the sectors in India register increase in export demand. The sectors which in particular register notable increase in exports to Sri Lanka are: Meat & meat products, Oilseeds, Beverages & tobacco, Other crops, Sugar, Food products, Wood & wood products, Leather & leather products, Wearing apparels and other manufacturing. Among services, the sectors which register the maximum increase in exports are Air transport, Trade and Communications. In Sri Lanka all sectors producing goods register increase in exports to India. But all service sectors report decrease in exports to India. The top ten sectors in terms of maximum increase registered in exports to India are: Some of meat products, Vegetable oil & fat, Dairy products, Other crops, Motor vehicles, Vegetable & fruits, Food products, Metals, Machinery equipment, Ferrous metals, Other Metals. With full liberalization India registers manifold increase in Dairy products, Vegetable oil & fat and Metals to Sri Lanka while Sri Lanka shows substantial increase in its exports of Beverages & tobacco to India. These products are otherwise on the exclusion/negative list of either country.

7. 4 Impact of the FTA on other variables of India and Sri Lanka

7.4.1 Import prices

Post the implementation of ISFTA the prices of the imports coming from Sri Lanka to India fall notably. The extent of the fall for the top ten sectors which register the highest increase in imports in India are reported in table 6. For some of the products like beverages, Meat coming from Sri Lanka the extent of the price fall in relation to imports of the same product from other sources is as high as 54%, 35% but on the whole these reductions do not result in pushing down the prices of the total imports of these products in India. This is due to the very small share of Sri Lanka in India's total imports of these goods.

On the other hand, India's share in total imports of many of Sri Lanka's top import items like Oilseeds, Food products, Other crops and Wearing apparels is significantly large. This helps to push down considerably the market price of total imports of most of these products in Sri Lanka (table 7).

Table 6
Market share of Sri Lanka in important imports of India and the relative fall in import prices offered by Sri Lanka

Sectors registering highest increases in imports in India	The % fall in price (relative to average price of import composite) offered by the exporters from Sri Lanka	Fall in prices of import composite available in India (%)	Market share of Sri Lanka in total composite* of the good imported by India (%)
Meat and meat products	35.02	3.4	1
Vegetable oil & fat	26	0.66	0.8
Dairy products	22	0.02	0.03
Other crops	22.3	4.27	6
Motor vehicles	25.7	0.01	0.02
Vegetable & fruits	32.1	1.07	1.4
Food products	28.3	0.46	0.08
Metals	12.3	0.27	1.2
Machinery equipment	12.4	0.10	0.4
Ferrous metals	16.3	0.16	0.5
Beverages & tobacco (in case of full liberalization)	54	0.05	0.03

Source: Based on results of simulations involving assumption of CRS
Note: * refers to bundle comprising of total imports of a product from different sources

Table 7
Market share of India in important imports of Sri Lanka and the relative fall in import prices offered by India

Sectors registering highest increases in imports in Sri Lanka	The % fall in price (relative to average price of import composite) offered by the exporters from India	Fall in prices of import composite available in Sri Lanka (%)	Market share of India in total composite* of the good imported by Sri Lanka (%)
Meat and meat products	18.4	1.2	2.4
Oilseeds	9.7	10.3	38
Beverages & tobacco	45.9	3.5	3.3
Other crops	11.9	7.7	24.6
Sugar	16.7	3.2	9.2
Food products	12.3	11.4	34.6
Wood & wood products	12.2	0.8	3.6
Leather & leather products	9.5	1.3	7.8
Wearing apparels	5.7	1.8	18.7
Other manufacturing	5.3	0.8	10.6
Dairy products (in case of full liberalization)	12.3	0.09	0.4
Vegetable oil & fat (in case of full liberalization)	8.07	3.2	30
Metals (in case of full liberalization)	1.9	0.4	14.7
Air transport	+ 0.06	.001	0.06
Trade	+ 0.08	.004	0.02
Communication	+ 0.08	.002	0.1

Source: Based on results of simulations involving assumption of CRS
Note: * refers to bundle comprising of total imports of a product from different sources

Thus export prices offered to Sri Lanka by India fall more than import prices that India faces. This results in Sri Lanka managing to get relatively higher positive terms of trade gain from the FTA as has been stated in section 7.2 earlier. For the service sectors like air transport, trade and communication the import prices offered by India go up marginally rather than coming down.

7.4.2 Agents contributing to increased import demand in India

The products coming from each country to the other post the ISFTA are likely to be available at a price substantially lower than the average import price at which these goods are available in each country. This results in the notable increase in imports of these products by India from Sri Lanka and vice versa. These imports are used by all agents of the economies.

For products like Other crops, Motor vehicles, Metals, Machinery equipment and Ferrous metals, the bulk of the increase in import demand is due to increased input demand by firms in India (table 8). This indicates that firms are gradually substituting domestic input by foreign inputs and thereby increasing the allocative efficiency in the system. For the other imported products, the private household accounts for a larger share of the increased import demand.

Table 8

Private Households/Firm's share in import demand of different commodities by India

Sectors	Domestic Firms' /Private households share in increased import demand in India (%)	Sectors contributing to increase in demand for these imported inputs (%) in case of higher import demand by firms
Meat and meat products	57- Households	-
Vegetable oil & fat	96.8 - Households	-
Dairy products	82.8 - Households	-
Other crops	52.5 - Firms	Textiles (75)
Motor vehicles	95.8 - Firms	CGDS* (91)
Vegetable & fruits	85.5 – Households	-
Food products	98.1 - Households	-
Metals	100 - Firms	Other manufacturing (36.7), Machinery equipment (29.6), metals (15.5)
Machinery equipment	98.9 - Firms	CGDS (44), Machinery equipment (29.6), Other manufacturing (14.9)
Ferrous metal	100 - Firms	Ferrous metals (47), Other manufacturing (27), Machinery equipment (15)
Beverages	82.6 - Households	-

Source: Based on results of simulations involving assumption of CRS
Note: * refers to capital goods

In Sri Lanka, for most of the sectors which register the highest increase in imports, the larger share of demand is accounted for by households. The sectors for which the increased import demand is due to increased imput demand by firms are Oilseeds, Other crops, Wood, Other manufacturing and Metals. The sectors which are in turn responsible for this increased input demand are reported in table 9. For the service sectors the entire increase in import demand is due to increased household demand.

On the whole out of the total increase in imports in India 46% is due to increased input demand while in Sri Lanka this figure stands at 72%. With full liberalization this share however, comes down and that of households increase in Sri Lanka.

Table 9

Private Households/Firm's share in import demand of different commodities by Sri Lanka

Sectors	Domestic Firms' /Private households share in increased import demand (%)	Sectors contributing to increase in demand for these imported inputs (%) in case of higher import demand by firms
Meat and meat products	66.7- Households	-
Oilseeds	100 - Firms	Vegetable oil & fat (96)
Beverages & tobacco	93.8 - Households	-
Other crops	72.5 - Firms	Food products (32.3), Beverages & tobacco (18), Other crops (11)
Sugar	99 - Households	-
Food products	85.5 – Households	-
Wood & wood products	100 - Firms	Wood & wood products (64.3), CGDS (19)
Leather & leather products	99 - Households	-
Wearing apparels	96.1 - Households	-
Other manufacturing	75 - Firms	CGDS (29), Other manufacturing (24)
Dairy products (in case of full liberalization)	92.7 – Households	-
Vegetable oil & fat (in case of full liberalization)	92.7 – Households	-
Metals (in case of full liberalization)	99.9 - Firms	Metals (27), Other manufacturing (29.6), CGDS (22)
Air transport	100 - Households	-
Trade	100 - Households	-
Communication	100 - Households	-

Source: Based on results of simulations involving assumption of CRS
Note: * refers to capital goods

7.4.3 Effect of increased imports on domestic production in India & Sri Lanka

With import prices of the products coming down and their import demand increasing in either the domestic production of goods are likely to suffer. So we turn to examine the domestic output of the sectors which register highest import growth in the two countries after the tariff liberalization. The results of the simulation show that India's domestic demand falls for all the sectors in which India show increased imports except Dairy products, Motor vehicles and Machinery equipment. The latter two sectors also show increased domestic output as a result. The rest of the sectors register a fall in domestic output due to fall in the domestic demand. Dairy products also show decrease in domestic output due to fall in its export demand. The total domestic output of India for all the sectors taken together registers a fall to the extent of 0.2%

For Sri Lanka many of the sectors show increase in domestic output though their imports increase. This is due to increased domestic demand. Sectors like Crops, sugar, Food products, Leather, Wearing apparel, Air transport report fall in total output. Except for crops, this fall in output is explained by fall

in domestic demand. For crops a fall in export demand is the reason behind the fall in its domestic output. The total domestic output of Sri Lanka rises substantially post the FTA.

7.4.4 Effect on labour demand in the countries

Given that domestic output falls in most of sectors registering import growth in the two countries post the FTA, this section looks at the state of factor demand in the two countries. It has already been reported earlier in table 2 that labour employment falls in India while that rises substantially in Sri Lanka. In India unskilled labour unemployment rises, while employment of skilled labour increases. All the sectors which register fall in domestic output leads to this unemployment of unskilled labour. For most of these sectors the skilled labour employment falls but much less compared to unskilled labour and in some sectors like dairy product the unskilled labour employment does not fall. Thus, on the total, skilled labour employment marginally increases in the country post the FTA. But with existence of scale economies in some of the manufacturing sectors, unskilled labour unemployment not only aggravates, even skilled labour unemployment rises and thereby increases total labour unemployment in India. The sectors characterized by IRS contribute significantly to this increase in unemployment. In Sri Lanka all sectors registering fall in domestic sectors lay off both skilled and unskilled labour. But there are many other sectors which register increase in total output. Besides total domestic output rises in Sri Lanka. Thus, given the mobile nature of these factors, they move to other sectors and on the whole labour employment rises in the country.

7.5. Effect of FTA on trade with other important members of the SAARC region

The India-Sri Lanka FTA results in considerable fall of imports of India and Sri Lanka coming from the other member countries of the SAARC. In India, Bangladesh loses the maximum share of market and in case of Sri Lanka, Rest of South Asia loses the maximum followed by Pakistan. Thus there is a clear indication of trade diversion happening in India and Sri Lanka due to the ISFTA.

Table 10

Loss of market in India & Sri Lanka by other members of SAARC (%)

Countries of the FTA	Bangladesh		Pakistan		Rest of South Asia	
	Current	Full liberalization	Current	Full liberalization	Current	Full liberalization
India	-1.98	-2.04	-0.71	-0.7	-0.82	-0.85
Sri Lanka	-1.92	-1.76	-9.2	-10.2	-13.6	-14.8

Source: Based on simulation results involving assumption of CRS

Thus, the discussions in the preceding sections clearly indicate that the ISFTA leads to much positive impact on both the countries of India and Sri Lanka. Particularly, worth noting is the economic implications for Sri Lanka. In spite of this ISFTA a large volume of trade between India and Sri Lanka happens parallely through the route availing the duty drawback scheme. In particular, given the importance of India as one of the largest importer of Sri Lanka, the existence of this parallel route of doing trade may render meaningless many of the positive consequence of the ISFTA for Sri Lanka as pointed out in the preceding discussion. So the feature of duty drawback is now incorporated in the modeling framework and the same simulations are redone to see what the implications for the economies are with this feature taken into consideration. The duty drawback is assumed to be availed by Indian importers only for five product categories, namely, Vegetable & fruits, Other crops, Vegetable oil & fat, Metals and Machinery equipment. Besides, only the current scenario (with assumption of CRS and perfect competition) is simulated with the features of duty drawback incorporated as it has been observed that India's negative list is very small and there is not much of additional import that happens when the country moves from current scenario to full liberalization.

8. Extension of the original GTAP framework to incorporate the feature of Duty Drawback

Duty drawback schemes typically involve a combination of duty rebates and exemptions allowed to importers in a country. This feature is extensively present in the trade regimes of many countries across the World. They are used normally in highly protected and developing economies as means of providing exporters with imported inputs at world prices thereby increasing their competitiveness and at the same time maintaining the protection on the rest of the economy. In India duty exemptions have been central to the process of trade reform in recent times and this has led to a tremendous increase in processed exports utilizing imported materials. A large number of products from Sri Lanka like spices etc come to India via this duty exemption route rather than the ISFTA route. These are then used by the export oriented units of the country as inputs and eventually exported out of the country as finished products by the time period of 90/120 days as stipulated by the Government of India. Thus, in this case the exporters using these imported inputs do not have to pay the import tariff applied on these products. It is only the final consumers of these products who have to pay the import tariff unless the imports are available through the ISFTA route. For the exporters of the processed products from India, importing the inputs whether through Duty drawback or ISFTA both allows 100% rebate/concessions on the tariff. Hence they are likely to be indifferent between the two routes. In fact, given the various complexities associated with Rules of Origin, they are more likely to be bent on using the latter route. For the final consumers however, the use of the ISFTA route fetches bigger benefits.

Using duty drawback to import intermediate inputs to be used in domestic production has two implications:

i. The industries which obtain these imports to be used as inputs for producing exports are exempted from tariff and hence obtain the imported inputs at world prices
ii. The domestic industries producing competitive goods are protected from competition due to cheap imports

Hence with the Duty drawback (DD) regime existing, a tariff reduction under an FTA has its impact only for those industries/part of industries which import to sell to domestic consumers while those using the imports for export production are not affected. Thus, within the same industry (product category) one can identify three possible situations and accordingly different implications of a tariff reduction taking place under an FTA when DD exists.

Table 11

Trade orientation of a firm and implications of a tariff reduction under FTA

Purpose of import	**Is there any implications of a tariff reduction under an FTA**
To be sold directly to consumers	Yes
To be used as inputs in production of goods and then i. To be sold to domestic consumers ii. To be exported	 Yes No

The GTAP modeling framework used to do the simulations in section 7 does not distinguish between a production for domestic sale and one for exports. Thus it cannot depict the DD regime explicitly. This requires some change in the basic model. To do this the present paper uses the GTAP-DD model of Lips *et al* (2004). This model is an extension of GTAP, in which the effects of policy reform are differentiated based on the trade-orientation of the firms as presented in table 11. The detailed framework is discussed in the Appendix A2.

As is observed from table 12, it is clearly observed that with Indian importers using duty drawback, India is much better off and Sri Lanka is much worse off as compared to the earlier current scenario discussed in section 6 and 7. The GDP and trade variables are by and large the same as in the current scenario, but on the welfare front India shows a marked improvement while Sri Lanka shows deterioration. With duty drawback India shows positive allocative efficiency as compared to negative figures in the current situation. Even its terms of trade effect figures improve. For Sri Lanka the welfare situation is just reversed. It loses its allocative efficiency which now shows negative figures. Its terms of trade effect also deteriorate substantially compared to the situation without duty

drawback. This indicates that with duty drawback, the import prices for India fall further than its export prices to Sri Lanka. The improvement in allocative efficiency of India is now due to additional import tax contributed to it by sectors like Machinery equipment, Motor vehicles, Petroleum products, Vegetable oil and fat. For Sri Lanka the loss in allocative efficiency is also due to loss of import tax primarily due to sectors producing Other crops, Wearing apparels and Chemicals.

Thus, for Sri Lanka the successful operation of the ISFTA route is crucial as this would increase its benefits of trading with India substantially. India too has positive gains form the FTA though the extent of the gain is much smaller as compared to that accruing to Sri Lanka. If the ISFTA route is plagued with problems associated with Rules of origin , Non- tariff barriers etc (as is often reported to be) then large part of Indian imports from Sri Lanka will still come through the DD route (given than intermediate input demand constitutes a large part of India's import demand from Sri Lanka). This will lower much of the potential gains that is likely to accrue to Sri Lanka when it trades with India.

Table 12

Performance of the economies when duty drawback is considered in India

Indicators for performance of the economy	**India**		**Sri Lanka**	
	Without duty drawback[@]	**With duty drawback**	**Without duty drawback[@]**	**With duty drawback**
% change in value GDP	0.04	0.09	3.02	0.05
% change employment (labour)	-0.3	-1.31	860.06	185.4
% change in GDP price index	0.04	0.09	2.86	0.08
% change in volume of exports	0.33	0.10	1.9	1.41
% change in volume of imports	0.38	0.17	4.8	2.09
change in trade balance (US $ million)	-114.12	-50.84	-182.9	-82.38
% change in terms of trade	0.03	0.06	1.97	0.21
Total bilateral exports (US $ million)	1907.88	1842.34	454.1	650.96
Total welfare (US $ million) • Allocative Efficiency • Terms of trade • Investment-Saving	7.2 -26.96 26.69 7.47	89.82 11.63 65.6 12.55	219.5 31.68 149.71 38.15	11.74 -6.50 15.9 2.19
Change in welfare as % change in GDP	.001	0.014	1.06	0.058

Source: Based on simulation results

*Both the simulations of the table involve assumptions of CRS and perfect competition

[@] This refers to the current scenario discussed in section 7

9. Conclusion

The present study provides an analysis of and insight into impact of the India-Sri Lanka FTA on the macroeconomic variables, trade variables and welfare position of India and Sri Lanka. The trade consequences of this FTA on the other SAARC members are also examined.

Three simulations of different scenarios involving the ISFTA (one depicting the current state of the ISFTA, second a full liberalization as is likely under CEPA and a third incorporating features of duty

drawback) are conducted. The first two scenarios are in turn each done for assumption of CRS and perfect competition for both countries and CRS and perfect competition for Sri Lanka and majority of Indian industries while IRS is assumed for some select manufacturing sectors of India The impact of the FTA as summarized from the simulation results may be listed as follows:

A. ***Impact on India and Sri Lanka***

- India's welfare gain is positive due to its positive terms of trade gain. However, it loses out allocative efficiency on account of loss of import taxes. This welfare position of India improves slightly with full liberalization and markedly when scale economies are present in some Indian industries. With the usage of duty drawback also India's welfare position improves significantly Sri Lanka gains welfare on account of both allocative efficiency and positive terms of trade gain with the latter being dominant throughout. However, this welfare situation for Sri Lanka deteriorates enormously when Indian importers parallely use the duty drawback scheme to obtain imports from Sri Lanka.
- The trade between the two countries increase substantially, with Sri Lanka registering a phenomenal increase of 190% and India an increase of 38% (under the current situation). There is a further increase under the full liberalization. However, given Sri Lanak's large negative list India experiences larger rise in exports to Sri Lanka as the countries choose to move from current to a state of full liberalization.
- Both countries register increase in GDP under all circumstances. Sri Lanka shows a larger increase always except when duty drawback is considered. Sri Lanka also records a phenomenal increase in labour employment. In India employment of skilled labour increases marginally but that of unskilled labour employment comes down by 0.43%. But existence of scale economies might worsen this employment situation in India as both forms of labour unemployment is likely to rise with improvement in production efficiency under IRS in the country.

B. Trade impact on other countries of the SAARC

ISFTA results in much trade diversion happening in the India and Sri Lanka from other SAARC countries. The market loss in India is highest for Bangladesh while in Sri Lanka, Pakistan and the other SAARC countries lose substantial share of their market.

Thus, to conclude, it might be said that on the whole, the India- Sri Lanka FTA is likely to fetch much of the desired results for the countries involved: increased trade engagement among them, better market access for each of them in the partner country, trade diversion to a large extent in India and Sri Lanka, GDP growth and improved welfare for both the countries, particularly Sri Lanka. But wide usage of duty drawback in India is likely to lower Sri Lanka's gain from the ISFTA.

The findings of the study clearly indicates that the trade integration between India and Sri Lanka should be deepened further by way of lowering items in the negative list, particularly that of Sri Lanka which make up quite a long list and by doing away with the complexities of rules of origin and non- tariff barriers. The trade integration between these two South Asian economies should be taken to next level by way of CEPA. This would fetch substantial benefits to both countries, especially to Sri Lanka. India's benefit lies in investing largely on technological up gradation and improving upon its production efficiency. Besides, it would also be in India's interest to use a mix of both duty drawback and the preferential route to trade with Sri Lanka. Sectors which import inputs from Sri Lanka for producing processed exports may find it profitable to opt for the former route. This would also increase the overall welfare gain of the country as a whole.

Appendix

A1: Tariff commitments of India and Sri Lanka

Table A1

Tariff Commitments by India and Sri Lanka under ISFTA

Product Category	India	Sri Lanka
Wheat	NT	EL
Rice	NT	EL
Cereals	NT	EL
Vegetable & fruits	NT	EL
Oilseeds	NT	NT
Other crops	NT	NT
Meat & meat product	NT	NT
Milk	NT	EL
Dairy products	NT	EL
Animal products	NT	NT
Forestry	NT	NT
Fishing	NT	NT
Coal	NT	NT
Oil & gas	NT	NT
Minerals	NT	NT
Vegetable oil & fat	NT	EL
Sugar	NT	NT
Food products	NT	NT
Beverage & tobacco	EL	NT
Textiles	25% concession	NT
Wearing apparels	8 million pieces quota	NT
Leather & Leather product	NT	NT
Wood & Wood product	NT	NT
Paper & paper product	NT	NT
Petroleum product	NT	NT
Chmemicals rubber & plastic	NT	NT
Ferrous metal	NT	NT
Metals	NT	EL
Mineral products	NT	NT
Motor vehicle product	NT	NT
Transport equipment	NT	NT
Electrical equipment	NT	NT
Machinery equipment	NT	NT
Other manufacturing	NT	NT
Sea transport	NT	NT

Air transport	NT	NT
Other transport	NT	NT
Communication	NT	NT
Construction	NT	NT
Trade	NT	NT
Financial	NT	NT
Insurance	NT	NT
Other business services	NT	NT
Recreation & other services	NT	NT
Pub admin/Defence/Health/Eductaion	NT	NT
Dwellings	NT	NT

Source: Based on information on tariff lines available at Ministry of Commerce & Industry website, India and Sri Lanka

Note: NT denotes normal track of tariff reduction, EL denotes Exclusion/Negative list of products which are not allowed any tariff concessions

A2: Incorporating Duty Drawback in GTAP modeling framework

The approach of Lips *et al* (2004) is based on the assumption that the DD regime leads to a discrimination of the domestic final consumption. Domestic consumption comprises of private consumers, the government and the agent, who buys investment goods. The DD regime does not directly affect the domestic industry. This is because –

First, imports under the DD regime are exempted from tariffs if the imports are used as inputs for production meant for exports

Second, if imports are used as inputs for production of goods to be sold to domestic final consumers, then the tariff on the imported inputs can be shifted to the consumers

Thus, it is only the domestic final consumers who are affected by a tariff rate cut (under an FTA) of DD goods.

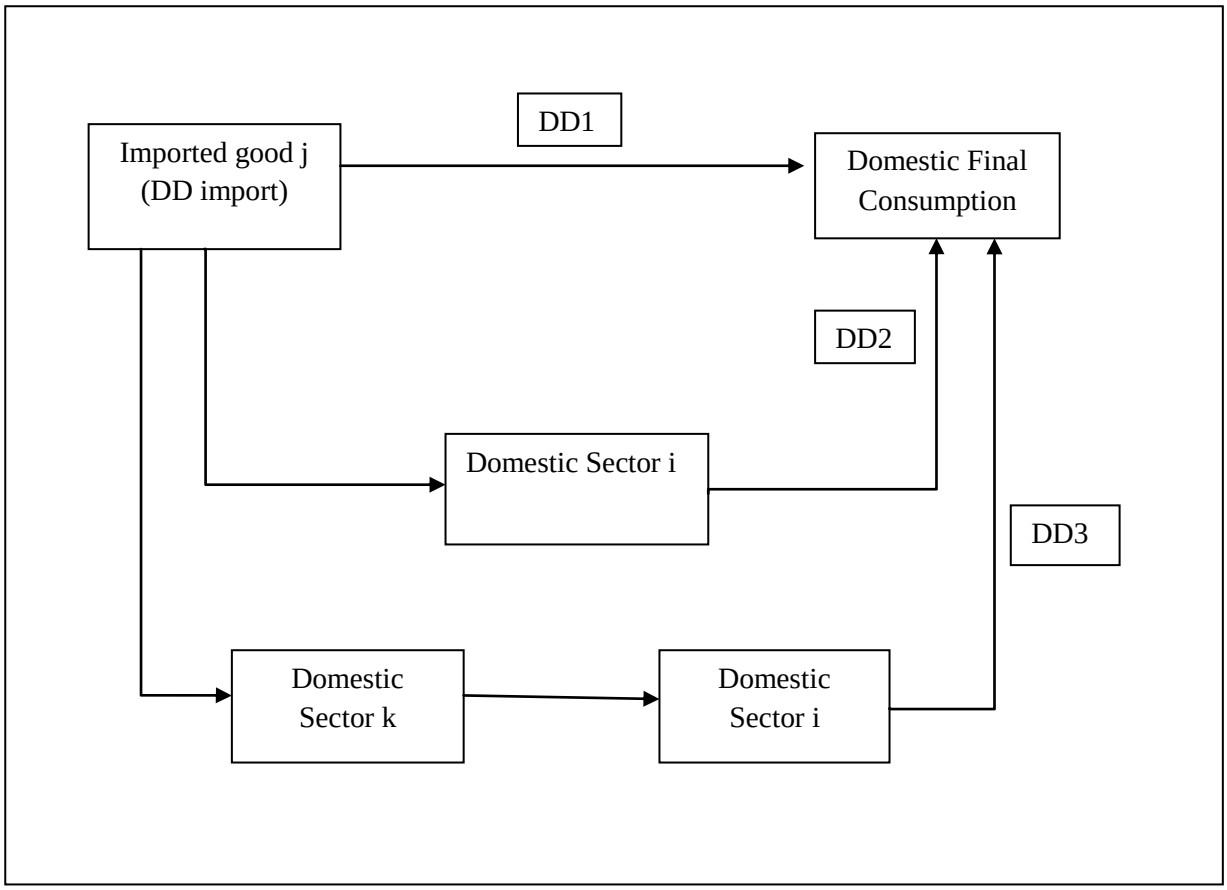
Thus, the effect of tariff reduction under an FTA in such a circumstance may be imitated with a virtual subsidy. Instead of affecting changes in the import tariffs (which would imply a change for all economic agents using the product like consumers, producers producing both for exports and domestic sale), subsidies may be introduced for the domestic final consumption. This leads to a decrease in price facing the domestic final consumer and therefore represents an imitation of a tariff reduction under the DD regime which affects only final consumers. However, the appropriate exogenous changes of the consumer subsidies need to be calculated.

Figure 1 below represents the various possibilities that may be considered while introducing the subsidy for DD goods. DD1, DD2 and DD3 in figure A1 represent the various stages that an imported DD good may pass through before reaching the final consumer. DD1represents the flow when the DD import passes to the final consumers directly; DD2 denotes the flow when the DD imports are used as inputs in a domestic industry for production of a good and DD3 represents the case when the imported inputs pass two domestic industries before being consumed. Theoretically, it would be correct to carry on with corresponding flows DD4 etc. To calculate the changes in consumer subsidies, it is necessary to figure out the consumption which has imported origin for all domestic final consumers.

After values of DD1, DD2, DD3 are calculated, next is calculated the tariff rate on a specific import j.

Figure A1

Consumption of DD imports by Domestic Final Consumption



Source: Lips *et al (2004)*

All tariff revenues of DD sector are assigned to domestic consumption only and an adjusted tariff rate for domestic final consumption is calculated by dividing the sum of the import tariff for good j from all origin region s imported in region r by the total DD imports in region r. Total DD imports in region r is calculated by summing across all DD1, DD2 and DD3 for all of private household, government and investment or capital goods.

A tariff reduction of DD imports are directly (in case of DD1) or eventually (in case of DD2, DD3 etc) transferred into a consumption subsidy on imports. The consumer subsidy shocks differ between the three agents of domestic final consumption and as such they have to be calculated separately given the extent of the tariff reduction under the FTA.

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