IV. European Union-India bilateral free trade agreement: Potential implications for the excluded low-income economies in Asia and Africa

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Introduction

Since the beginning of the 1990s the world has witnessed ambitious multilateral trade negotiations together with a proliferation of regional trading blocs. With the inception of the World Trade Organization (WTO) in 1995 as an institution to oversee the multilateral trading system and promotion of trade, many people thought that multilateralism would eventually reduce the scope of regionalism. Nevertheless, since 1995, the number of regional trade agreements (RTAs) has increased from less than 150 to more than 250. Today, the quantum of global trade conducted through RTAs and preferential trade agreements (PTAs) is more than 50 per cent of total trade flows.

It is somewhat paradoxical that despite the demonstrated benefits of unilateral liberalization in the academic literature, bilateral free trade agreements (FTAs) and RTAs have proliferated. The proponents of regionalism consider RTAs as "building blocks" to multilateralism, while the opponents perceive them as "stumbling blocks" to worldwide free trade. Given that the progress on various multilateral trade negotiations is very slow, the emergence of RTAs has been seen by many as a preferred and feasible route to push an aggressive trade liberalization agenda bypassing WTO. Concerns have also been expressed that rising bilateralism can actually weaken the interest of poor and vulnerable developing countries, as these countries have to make much greater commitments to opening up and implementing reforms under RTAs than under multilateral agreements.

Given the very nature of the bilateral/regional deals, they are discriminatory. Under such arrangements member countries exchange trade concessions to improve their relative competitiveness in their regional market over the rest of the world suppliers. Almost always, the excluded countries that are subject to such discrimination include least developed countries (LDCs) and other low-income developing countries. By undermining competitiveness, discriminatory preferences may cause terms of trade shocks to suppliers from non-member countries, leading to adverse trade and welfare implications. Even when some poorer countries enjoy non-reciprocal trade concessions in the form of reduced tariffs or relaxed quantitative restrictions under various schemes, such as the Generalized System of Preferences, the formation and/or expansion of RTAs involving the preference donor countries will result in loss of preference for the traditionally preference-dependent countries.

From the above perspectives, the ongoing European Union-India FTA negotiations have attracted much attention among trade policymakers. In contrast to most of the developing economies, India is regarded as a country with significant supply side capacity. This means that in response to any meaningful trade concessions resulting from a bilateral deal, Indian suppliers can substantially increase their exports to the European Union, perhaps at the cost of other developing countries and European Union domestic suppliers. In this way, the likely trade diversion in the European Union may result in reduced imports from other developing and least developed countries and increased imports from India. On the other hand, India's tariff protection on a range of products is relatively high. Therefore, taking advantage of exchanged tariff concessions under the FTA, European Union suppliers may replace India's imports from other sources, resulting in trade diversion for India. Consequently, the overall welfare gains for India will depend on the relatively strength of the trade creation and trade diversion impacts.

Turning to its potential implications for other excluded developing countries, since the European Union has been one of the principal export destinations for most LDCs and other low-income African, Caribbean and Pacific (ACP) countries many of which also receive significant trade preferences extension of similar preferences to India might result in their loss of competitiveness. Furthermore, a number of South Asian countries have now negotiated bilateral and regional FTAs with India; for these countries, a European Union-India FTA could very well mean competing with European Union suppliers in India's market. A European Union-India FTA would also have trade consequences for other developing country suppliers in the European Union as well as the Indian market.

Against the above backdrop, this chapter undertakes a comprehensive assessment of the potential implications of the European Union-India FTA for India as well for various other low-income developing countries in Asia and Africa. Such an analysis provides important information on, and insights into bilateral trade patterns of developing countries involving the European Union and India. In fact, it helps in identifying the scope of loss of competitiveness for the excluded developing countries and the countries that are already enjoying trade preferences in the European Union. In addition, the analysis will be useful to policymakers in developing countries by providing them with important information, and by identifying a set of measures that can be of help to those countries.

Section A of this chapter describes the methodology of the research. Section B presents an analysis of the theoretical and empirical perspectives of RTAs. Section C provides a background to the proposed European Union-India FTA while section D presents a summary of the empirical studies on the FTA. Section E analyses the structure of the excluded low-income economies in Asia and Africa and section F compares the trade similarity of those excluded low-income economies with the European Union and India. Section G calculates the margins of preferences in the European Union and Indian markets. Section H contains a brief overview of the GTAP model. Section I presents the simulation results and section J provides the conclusion.

A. Methodology

The study described in this chapter used global databases and a suitable general equilibrium method to meet its specific objectives. Trade issues, by their nature, require an analytical framework that allows a holistic view of world economies. This is not only

because of interlinkages between various sectors in any given economy, but also because of relationships between sectors in one economy with the rest of the world. These national, regional and global linkages may occur either in inputs or products markets or, as is usually the case, in both. Therefore, in order to avoid ignoring these linkages, a general equilibrium methodology such as one using the Global Trade Analysis Project (GTAP) model is one of the analytical instruments used in the study.

The global computable general equilibrium (CGE) modelling framework of the Global Trade Analysis Project (GTAP) is the best possible way for carrying out an ex ante analysis of economic and trade consequences of multilateral or bilateral trade agreements. The GTAP model is a comparative static model and uses a common global database for the CGE analysis. Version 7 of the GTAP database, the base year of which is 2004, was used in the analysis. The GTAP database was updated to 2008 by incorporating different changes in global trade scenarios that occurred during 2004 and 2008.

B. Regional trade agreements: Theoretical and empirical perspectives

Trade theory and evidence suggest that there are several forms of RTAs,[1] which include: (a) the Preferential Trade Area (PTA), where tariffs are lowered among the members but maintained against the outside world; (b) the FTA, where tariffs are removed among members but maintained against the outside world; (c) the Customs Union, where all tariffs among the members are eliminated, while external tariffs are adjusted to a common level; (d) a Common Market, which is a Customs Union plus free movement of factors of production among the member countries; and (e) an Economic Union which is a Customs Union plus common economic laws for the member countries (i.e., the European Union).

In trade theory, the welfare effects of any RTA are analysed, using two concepts: trade creation and trade diversion (see box). The overall welfare effects of economic integration are ambiguous and require a case-by-case judgment. The reason is that integration is both a policy of protection and a move towards free trade. The effect of the protectionist element of integration is called trade diversion, and the effect of the trade liberalisation element is called trade creation. The overall effect of an RTA on welfare for a member country is determined by comparing the trade creation and trade diversion effects. If trade creation dominates, the formation of an RTA will enhance welfare. On the contrary, if the trade diversion effect is greater than the trade creation effect, the RTA will lead to a welfare loss for the country under consideration.[2]

[1] For a general survey of the theory of preferential trading arrangements, see Panagariya, 2000.

[2] If member countries are low-cost producers of the traded good, there will be no trade diversion effect and integration will unambiguously increase welfare.

Trade creation and trade diversion effects of FTAs

	Country A (home country)	Country B (FTA member country)	Country C (rest of the world)
Supply price	50	40	30

- Case α : If A imposes a tariff of 100 per cent on both B and C, only A's own producers will be in A's domestic market.
- Case β : If A imposes a tariff of 50 per cent on both B and C, only C will be the supplying country in A's market.
- Case γ : If A forms a FTA with B, but retains the 50 per cent duty on C, B will be the supplying country in A.

If α was the initial condition, moving to γ will be considered as trade creation, welfare enhancing for A.

If β was the initial condition, moving to γ is an example of trade diversion with adverse consequences on welfare of A.

The fundamental arguments for regionalism rest on the evidence that suggests RTAs are predominantly trade-creating (Rodriguez-Delgado, 2007). Krugman (1991) argued that most RTAs were likely to entail relatively low welfare losses resulting from trade diversion, since the countries involved were often geographical neighbours and hence already engaged in a sizable amount of trade. He also argued that, through RTAs, countries could "lock-in" reform, which was often politically not feasible under multilateralism. Whalley (1996), for example, asserted that a desire for increased credibility of domestic reforms was a central preoccupation behind the Mexican negotiating position on the North American Free Trade Agreement (NAFTA). Also, failure or stalemate of the multilateral trade talks means trade liberalization can only take place through RTAs. Countries can build on the progress of regionalism and can ultimately move toward a freer trade regime on the whole.

There are, however, some critical arguments against formation of any RTA. It is alleged that through an RTA the spirit of multilateralism is undermined. It is argued that the world might be divided into a few protectionist blocs, and protectionists might accept RTAs in order to oppose further multilateral liberalization. Therefore, RTAs might work as a stumbling block rather than building blocks for multilateralism. Also, the "spaghetti bowl" effect can emerge because of many complicated simultaneous RTA negotiations (Bhagawati and Panagariya, 1996). RTAs also discriminate against the non-member countries, and even LDCs could seriously be discriminated against due to the RTAs among the developed and developing countries. NAFTA is a good example in this regard, and it is argued that because of NAFTA, LDCs such as Bangladesh have been discriminated against while Mexico has been favoured in the United States market (Razzaque, 2005). Furthermore, RTAs distort resource allocation, favouring regional producers to the potential detriment of local consumers (Rodriguez-Delgado, 2007). Recent research on RTAs has also emphasized the global consequences of multiple and overlapping RTAs in terms of the transaction costs they impose. It is further suggested that resources in trade ministries are limited. Therefore, too much involvement in RTA negotiations may distract attention from multilateral liberalization.

There are also concerns that through an RTA (reducing tariffs for the member countries) the prices of goods imported from the member countries in the domestic market might not fall as the member countries might see the home country's market as a "captive

market" for their exporters. For example, it is often alleged by the critics of the South Asian Free Trade Agreement (SAFTA) that through this regional trading arrangement, Indian exporters may find a "captive market" for their exporters in Bangladesh (World Bank, 2006). As a result, even though Bangladesh reduces the tariffs for Indian products, the prices of those products may not fall in Bangladesh as the Indian exporters will have the "freedom" to raise prices to the level at which the products from the rest of the world are sold in Bangladesh (with higher tariffs).

In general, there are some agreements among economists about the pre-conditions for home country welfare expansion from an RTA. For example, the home country could gain if: (a) the home country's tariffs are at a high level prior to the agreement; (b) the contemplated partner has a high tariff level; (c) the partner has a high economic size; (d) there is a high share of the partner in providing the home country's imports; (e) there is a low ratio of imports from the rest of the world to the home country's aggregate economic activity; (f) relative prices in the partner's economy are close to those of the rest of the world; and (g) there are similarities in the economic activities of the partner with the rest of the world.

C. Background of the proposed European Union-India FTA

Both the European Union and India have mutual interests in pursuing greater cooperation in trade. The European Commission launched its new trade policy, "Global Europe – Competing in the World" with a view to connecting external trade policies to the European Union's internal trade policies for creating a single market through an agenda of progressive liberalization and deregulation. The failure of multilateral trade talks with the stalemate at WTO actually opened the door for a new generation of bilateral agreements on trade and investments. In order to achieve the objective of "competitiveness of European corporations", the European Union planned to aggressively advance issues that could not be advanced in multilateral talks. The top priority of the plan was to gain a hold in the potential markets and the so-called "new areas of growth". The mandates authorizing the European Commission to negotiate the new FTAs comprise five building blocks:

(a) Market access for European business due to the elimination of tariff and non-tariff barriers;

(b) The so-called Singapore issues (investment, government procurement, competition and trade facilitation), which were rejected at Cancun by governments of the South;

(c) Intellectual property rights (IPR);

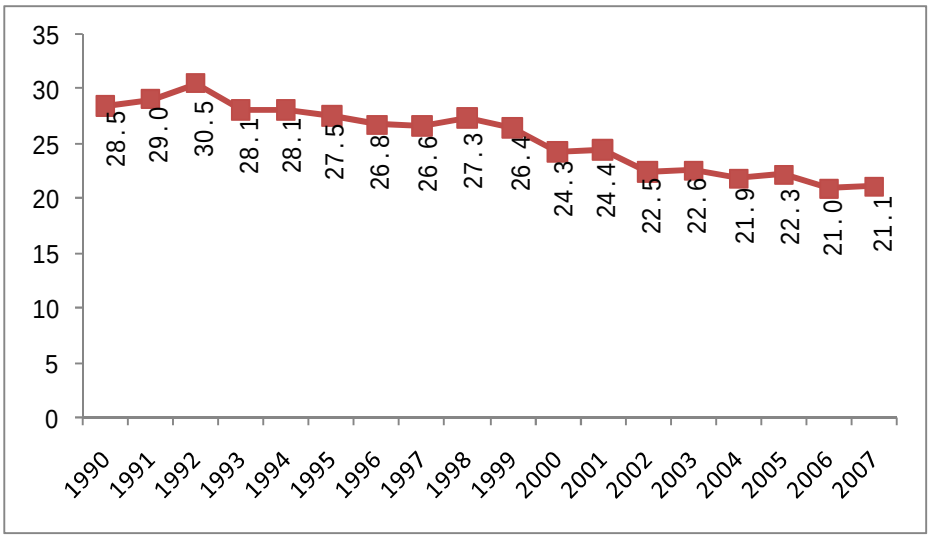
(d) The service sector which is a stronghold of the European Union economy; and

(e) A reference to sustainable development, including rhetoric about social and environmental standards, core labour rights and decent work.

The criteria for the selection of new partners for those competitiveness-driven FTAs are: (a) market potential and size; and (b) a high level of protection against European Union exports and investors. India is considered as a top priority on this list. On the other hand, in line with its new export-oriented development path, India also sees the opening of markets as a mutual interest. It has a keen interest in access to the European Union market, as Europe is India's biggest market, and the top export market for its 10 biggest exports. European Union-India trade rose from € 28 billion in 2003 to € 55 billion in 2007, pushing

the two to start negotiations on a bilateral trade agreement in 2007. Figure 1 suggests that, despite the fact that the share of India's exports to the European Union in its total exports had declined over time, its share remained well above 20 per cent in 2007.

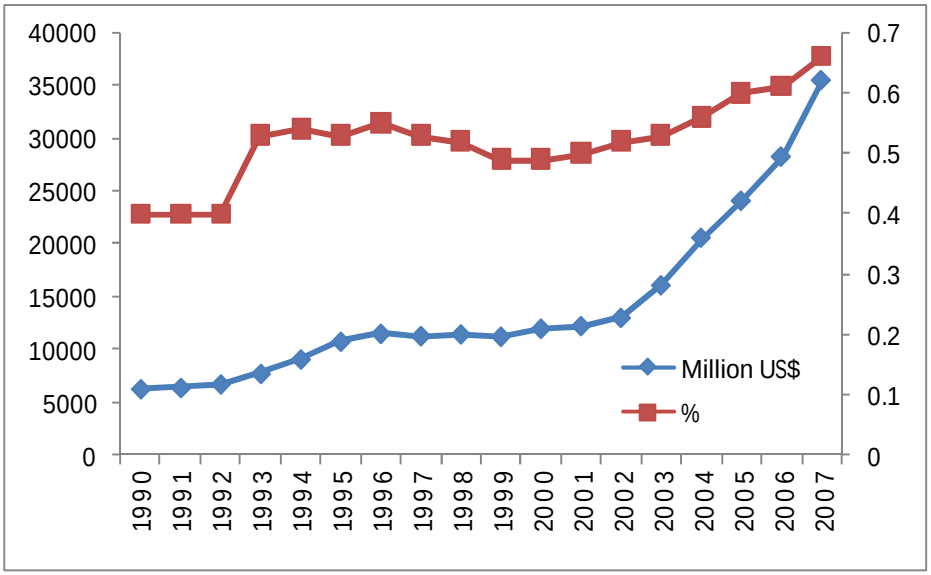
Figure 1. Share of India's exports to the European Union in India's total exports



Source: Calculated based on data accessed from Direction of Trade (CD-ROM), International Monetary Fund, 2008.

However, it appears from figure 2 that exports from India to the European Union increased quite considerably over time. In 1990, the export value increased from US$ 6,252 million in 1990 to US$ 35,517 million in 2007. Also, the share of India's exports to the European Union's total imports increased during this period. In 1990, this share was 0.4 per cent, which increased to 0.66 per cent in 2007.

Figure 2. Share of India's exports to the European Union in total European Union imports

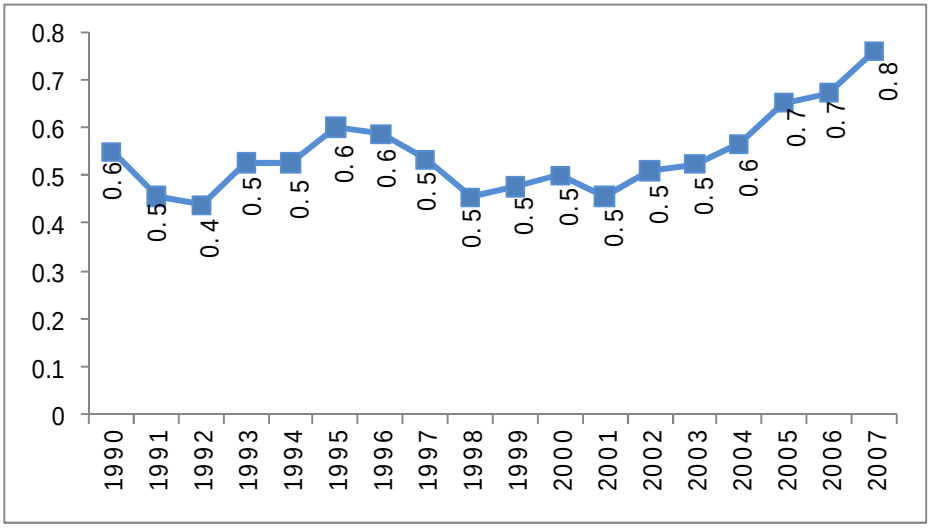


Source: Calculated based on data accessed from Direction of Trade (CD-ROM), International Monetary Fund, 2008.

On the other hand, an increasing trend is observed in figure 3 in the share of European Union exports to India in total European Union exports. In 1990 the share was 0.06 per cent, increasing to 0.08 per cent in 2007.

Figure 3. Share of the European Union exports to India in total European Union exports

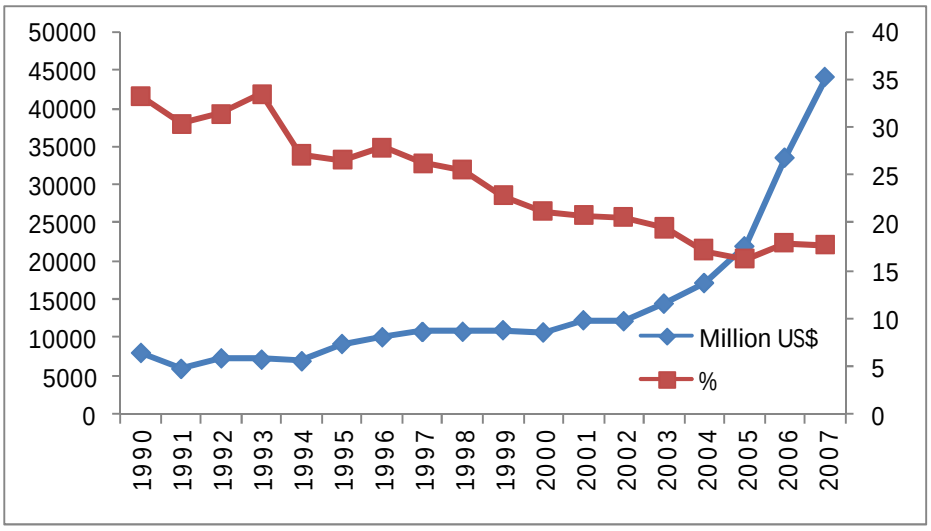
(Unit: Per cent)



Source: Calculated based on data accessed from Direction of Trade (CD-ROM), International Monetary Fund, 2008.

The European Union's exports to India increased substantially during the 2000s. In 2000, they totalled US$ 10,690 million, increasing to US$ 44,020 million in 2007. However, despite the fact that the share of imports from the European Union in India's total imports declined over time, in 2007 the share was still as high as 17.6 per cent.

Figure 4. European Union exports to India and their share in India's total imports



Source: Calculated based on data accessed from Direction of Trade CD-ROM, International Monetary Fund, 2008.

A European Union-India summit held in 2005 generated political commitment to increasing bilateral trade and economic cooperation, and to dealing with barriers to trade

and investment between the two trading partners. A High-Level Trade Group comprising government representatives and business leaders was formed to explore or submit a report on (a) how to widen bilateral trade and investment and (b) the possibility of reaching a bilateral trade and investment agreement. On 13 October 2006, the Group submitted its report, which recommended the elimination of duties on 90 per cent of tariff lines and trade volumes within seven years, and other partial liberalization milestones.

As of 4 February 2009, five rounds of negotiations have been held. Specific areas to be covered by the FTA include trade in goods, trade in services, investments, trade facilitations, public procurement, technical regulations, intellectual property rights and geographical indication, competition policy and dispute settlement.

Market access for goods remains the core component of any FTA. The European Union pushed hard for the elimination of duties on 90 per cent of tariff lines and tariff volume over seven years by both India and the European Union (for India, 90 per cent represents about 4,500 lines out of 5,000). However, India advocated an asymmetrical deal in which the European Union would eliminate 95 per cent of tariffs, leaving India at the 90 per cent level, reflecting the massive difference in the levels of development between the parties. In the initial proposal, the European Union's exclusion list included 226 products, mostly chemicals, petrochemicals, plastics, ceramics and glassware. On the other hand, India proposed an exclusion list of about 150 agricultural goods and 250 manufactured products. The agricultural goods included processed food, dairy products, sugar, fruit and vegetables, meat products including poultry, maize, honey, mushrooms, egg products, saffron, coriander seeds, *vanaspati* and cocoa powder. The manufactured goods included some textiles and clothing (i.e., woollens) textile machinery, rubber, cars, commercial vehicles and two-wheelers, paper and paper board, furniture, chemicals, machinery and appliances, fish and fish products, and wines and spirits (ActionAid, 2008). However, there has not been any further agreement on this issue.

D. Empirical studies of European Union-India FTA

There have been few studies so far on the proposed European Union-India FTA. ActionAid (2008) suggested that India had average applied most-favoured nation tariffs on goods of 16 per cent, with very high tariff peaks (up to 160 per cent) on a relatively small list of goods. This, coupled with the relatively small (25 per cent, excluding petroleum products) and declining European Union market share (from more than 40 per cent in the early 1990s) and the low overlap in production structures between the European Union and India, suggests that there is considerable scope for trade diversion for India. This would imply an increase in India's imports from the European Union, but at the expense of more efficient suppliers from third countries. For the European Union, India's share in imports and exports is around 1.5 per cent with some increase during the past decade. The low share of trade with the European Union, coupled with the low tariffs applied by the European Union on Indian exports (although with a higher incidence of tariff peaks), suggest that there is little scope for trade creation and, again, greater likelihood of trade diversion.

Meincke (2008) indicated that far-reaching tariff elimination and liberalization of government procurement could have negative effects on the most vulnerable and marginalized groups in Indian society, and hamper rather than foster human development.

Achterbosch and others (2008) suggested that India had little to gain and much to lose from a free trade agreement with the European Union if it merely involved tariff reduction in trade with the European Union.

The results from a CGE study done by Polaski and others (2008) suggest that Indian exports would increase by US$ 3.5 billion (5.5 per cent) and India's imports would increase by $2.6 billion (3.4 per cent). Because the overall increase in imports would be less than the increase in exports, India's existing bilateral trade deficit with the European Union would narrow. Overall, India would experience a very small welfare loss (minus US$ 250 million). In contrast, the European Union would benefit unambiguously from the agreement, although to a very modest extent. Exports would increase by US$ 1.3 billion, a gain of 0.05 per cent in the share of total European exports. Imports would increase by US$ 3.2 billion (0.12 per cent). Europe's existing bilateral trade surplus with India would decrease.

In a CGE study by CEPII-CIREM (2007) on a potential European Union-India FTA, two scenarios were simulated. While they are identical with regard to protection in goods (95 per cent of tariffs are removed on both sides), the difference lies in the treatment of services. In the first scenario, protection in services is cut by 10 per cent, while in the second scenario a 25 per cent cut is considered. In both scenarios, the tariff dismantling begins in 2007 and is fully implemented in 2013, with a shorter transition period for the European Union. The impact of trade liberalization on foreign direct investment is taken into account in the simulations. European Union exports to India increase in all services sectors and in both scenarios. Overall, they increase by 5 per cent and 16 per cent in scenarios 1 and 2, respectively (plus US$ 500 million and plus US$ 1.6 billion, respectively). Conversely, India increases its export of services in all sectors, in both scenarios. This emanates from the overall gain in competitiveness of the Indian economy due to depreciation of the real exchange rate. Overall, total Indian exports of services increase by US$ 600 million following scenario 1 and US$ 1.2 billion in scenario 2 (+3.3 per cent and +6.5 per cent, respectively).

The most comprehensive study so far, undertaken by Winters and others (2009), used a "Sussex framework" for the analysis. It concluded that the dissimilarities of composition of export structures between the partners' exports to each other, and excluded countries' exports to them, suggested that the scope for negative effects arising from the European Union-India FTA would be relatively limited. The South Asian Association for Regional Cooperation (SAARC) countries would be by far the most vulnerable to negative impacts from the FTA. Other developing countries such as Brazil and China as well as the Russian Federation would generally experience trade diversion rather than trade reorientation in the European Union market, especially in manufacturing. In the Indian market, such countries would suffer considerable competitive pressures from the improved access for the European Union, but since they trade little with India, it would not be of great significance in aggregate. ACP countries would mainly suffer from trade reorientation as India receives preferences from the European Union as deep as their own. However, the methodology adopted in the study was partial equilibrium in general and hence could not take into consideration the general equilibrium effects of this FTA deal. Also, the study does not attempt to estimate the welfare impacts on those countries.

E. Structure of the excluded low-income economies

This section presents the analysis of the export structure of the countries under consideration, and protection in India and European Union. Understanding these structures is a very important starting point for the examination of the potential implications of the proposed FTA for these countries. The source of information was the GTAP database version 7.

1. Structure of exports

Table 1 presents the figures for the export structure for the low-income countries under consideration. It appears that for most of the African countries, agricultural and agro-processing commodities are the main export items. In many of those countries, industries have low shares in the export earnings. In contrast, most of Asian countries, especially those in South Asia, are the exporters of skilled-labour manufactured products. These features of the export structure of the African and South Asian countries have been well explained by

Table 1. Structure of exports (sectoral shares in total exports)

	BGD	PAK	LKA	XSA	KHM	LAO	NGA	SEN	ETH	MDG	MWI	MUS	MOZ	TZA	UGA	ZMB	BWA
Paddy rice	0.0	0.3	0.0	0.0	0.0	0.3	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Wheat	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0
Cereal grains	0.0	0.0	0.0	0.0	0.1	0.7	0.0	0.1	0.7	0.0	0.3	0.0	0.3	1.4	0.7	1.8	0.1
Vegetables	0.2	1.0	1.1	2.3	0.4	0.8	0.1	1.9	3.3	3.7	2.6	0.1	1.6	5.1	1.7	1.6	0.0
Oil seeds	0.0	0.1	0.2	0.3	0.1	0.2	0.1	0.2	5.5	0.0	0.7	0.0	0.6	1.4	0.3	1.6	0.0
Sugar cane	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5	0.0	0.0	0.0
Plant-based fibres	0.7	0.5	0.4	0.3	0.0	0.2	0.1	1.6	0.7	0.5	3.0	0.0	1.2	3.8	1.6	5.5	0.0
Crops, nec	0.4	0.3	7.9	1.4	0.1	2.6	0.9	0.2	14.6	8.8	39.2	0.1	3.7	10.6	16.6	4.5	0.0
Livestock	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.0	0.4	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Animal products	0.0	0.2	0.0	0.5	0.1	0.4	0.0	0.6	2.5	0.3	0.1	0.6	0.1	1.2	0.7	0.3	0.2
Raw milk	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0
Wool	0.0	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forestry	0.1	0.1	0.2	1.0	0.1	4.9	0.1	0.3	2.0	0.7	0.1	0.0	1.3	2.7	0.2	0.2	0.1
Fisheries	0.3	0.1	0.7	1.0	0.2	0.0	0.0	3.3	0.1	0.4	0.1	0.1	0.1	0.7	0.3	0.0	0.0
Coal	0.0	0.0	0.0	0.1	0.1	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil	0.0	0.0	0.0	11.8	0.9	3.1	80.8	0.0	0.0	21.1	24.6	15.1	0.0	0.0	39.3	0.0	0.0
Gas	0.0	0.0	0.0	0.0	0.0	0.0	5.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals	0.0	0.3	1.0	0.3	0.0	0.8	0.2	2.2	0.3	1.1	0.1	0.1	0.9	6.1	0.1	3.6	65.8
Meat	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.0	1.3	0.0	0.0	0.0	0.0	0.1	0.0	0.0	1.5
Meat products	0.0	0.0	0.0	0.0	0.1	0.2	0.0	0.1	0.0	0.0	0.0	0.1	0.0	0.4	0.0	0.1	0.2
Vegetable oils and fat	0.0	0.4	0.3	0.7	0.0	0.0	0.0	2.1	0.1	0.0	0.5	0.0	0.5	0.3	0.8	0.1	0.0
Dairy products	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.1	0.0	0.0	0.1	0.0	0.1
Processed rice	0.0	3.7	0.1	0.4	0.3	0.8	0.0	0.7	0.0	0.1	0.0	0.0	0.0	0.1	0.1	0.1	0.0
Sugar	0.1	0.8	0.0	0.5	0.0	0.0	0.0	0.1	0.7	0.6	9.4	9.3	1.0	0.8	0.1	1.7	0.0
Food products	4.0	1.6	6.5	3.6	1.4	0.8	0.4	16.1	2.4	12.1	0.3	3.5	5.7	11.9	9.6	0.9	0.7
Beverages and tobacco	0.1	0.4	0.2	0.6	0.1	0.7	0.0	1.4	0.1	0.2	0.2	0.2	0.0	1.4	0.3	0.1	0.2
Textiles	33.0	43.4	9.2	9.5	19.5	9.6	0.2	0.9	1.4	11.8	1.7	15.7	0.3	3.3	1.4	1.7	1.4
Wearing apparel	43.0	14.8	32.1	9.4	48.8	17.7	0.0	0.2	1.1	14.4	6.1	11.0	0.1	2.1	0.3	0.1	1.2
Leather products	3.4	2.5	0.6	0.6	5.0	1.0	0.6	0.5	2.4	0.3	0.0	0.4	0.0	0.4	0.1	0.4	0.1
Wood products	0.1	0.2	0.6	0.4	1.4	18.6	0.1	0.5	0.1	0.8	0.5	0.1	0.3	0.6	0.2	0.2	0.1
Paper products	0.0	0.1	0.5	0.9	0.1	0.0	0.0	0.7	0.1	2.0	1.9	0.7	0.0	0.2	0.2	0.5	0.2
Petroleum products	0.0	1.0	0.1	0.0	0.7	2.3	0.3	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.0
Chemical rubber, plastic	1.4	2.3	7.1	4.2	2.0	0.8	0.3	20.4	0.5	0.5	1.4	2.1	0.5	1.6	1.1	2.0	1.0
Mineral products	0.3	0.5	0.8	0.1	0.0	0.0	0.0	2.1	0.5	0.0	0.1	0.3	0.0	0.8	0.2	0.6	0.0
Ferrous metals	0.2	0.3	0.3	3.2	0.2	0.3	0.0	1.6	0.1	0.2	0.1	0.2	0.5	0.4	0.9	0.3	0.1
Metals	0.1	0.4	2.0	1.3	0.0	0.2	0.2	0.8	5.8	0.1	0.2	0.1	51.9	9.5	5.0	66.4	6.4
Metal products	0.1	0.7	0.5	0.4	0.0	0.4	0.1	0.4	0.1	0.1	0.1	0.4	0.1	0.2	0.2	0.2	0.5
Motor vehicles and parts	0.3	0.2	0.2	0.0	0.4	0.1	0.0	0.8	0.0	0.0	0.2	0.6	0.1	0.1	0.3	0.1	2.7
Transport equipment	0.3	1.9	1.0	0.1	0.2	0.0	0.9	0.7	0.6	0.3	0.1	0.1	0.0	0.1	0.2	0.0	0.3
Electronic equipment	0.1	0.2	0.6	0.1	0.1	0.1	0.0	0.4	0.1	0.1	0.2	1.6	0.1	0.1	0.3	0.1	0.1
Machinery and equipment	0.7	1.7	3.2	0.6	0.2	1.1	0.3	2.1	0.3	0.5	0.5	2.8	0.3	0.6	0.6	1.0	1.1
Other manufactures	0.2	2.6	4.8	0.9	1.0	1.0	0.0	0.6	0.4	0.6	0.2	3.1	0.0	1.1	0.4	0.2	0.7
Services	10.9	17.3	17.8	42.9	16.3	29.6	8.6	34.4	51.6	18.6	5.5	31.5	28.8	30.0	15.9	4.0	15.2
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

Source: Tables 1 and 2 calculated from version 7 of the GTAP Database.

Wood and Mayer (1999), and Mayer and Wood (2000), who argued that the concentration by African countries on exports of unprocessed primary products was caused largely by the region's combination of low levels of education and abundant natural resources. On the other hand, they suggested that the export structure of the South Asian countries was explained by their relative abundance of low-skilled labour.

2. Importance of European Union and Indian markets for exports

Table 2 lists the shares of the countries under consideration in European Union imports of various products in 2004. It appears that Bangladesh, Pakistan and Sri Lanka had notable shares in the European Union's imports of textiles and wearing apparel. For example, Bangladesh had a 2.8 per cent and 2.9 per cent share in European Union imports of textiles and wearing apparel. In contrast, some African countries had reasonable shares in European Union imports of agricultural and agro-processing products. For example, Tanzania had a 12.4 per cent share of European Union imports of sugar. However, for most of the products, these low-income countries had either very low or negligible shares.

Table 2. Shares in total imports by the European Union, 2004

	BGD	PAK	LKA	XSA	KHM	LAO	NGA	SEN	ETH	MDG	MWI	MUS	MOZ	TZA	UGA	ZMB	BWA
Paddy rice	0.2	8.7	0.1	0	0	0.2	0	0	0	0	0	0	0	0.2	0	0	0
Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cereal grains	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0.2	0	0	0
Vegetables	0	0.1	0.1	0	0	0	0	0.1	0.1	0.2	0	0	0	0.1	0	0.1	0
Oil seeds	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0
Sugarcane	0	0	0	0.1	0	0	0	0.4	0.2	0	0	0	0	12.4	0	0	0
Plant-based fibres	0.2	0.2	0.7	0	0	0.1	0	0.2	0	0.4	0	0	0.7	0.7	0.4	0	0
Crops nec	0	0	0.7	0	0	0	1.3	0	0.6	0.3	0.7	0	0.1	0.6	1	0.3	0
Livestock	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Animal products	0	0.3	0	0.1	0	0	0	0	0.3	0	0	0.1	0	0.1	0	0	0
Raw milk	0	0.9	0	0.2	0	0	0	0	0.3	0	0	0	0	0	0.8	0	0
Wool	0	0	0	1.1	0	0	0	0	0	0	0	0	0	0	0	0	0
Forestry	0	0.1	0.1	0.1	0	0	0.2	0.1	0	0.1	0	0	0	0.4	0	0	0
Fisheries	0	0	0.1	0.1	0	0	0	0.9	0	0.1	0	0	0	0.1	0.1	0	0
Coal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil	0	0	0	0.2	0	0	2.4	0	0	0.1	0	0.1	0	0	0.1	0	0
Gas	0	0	0	0	0	0	4.7	0	0	0	0	0	0	0	0	0	0
Minerals	0	0	0.2	0	0	0	0	0.1	0	0	0	0	0	0.1	0	0	6.6
Meat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.4
Meat products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetable oils and fats	0	0	0	0	0	0	0	0.2	0	0	0	0	0	0	0	0	0
Dairy products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Processed rice	0.1	2.1	0.1	0.5	0.6	0.2	0	0.1	0	0.1	0	0	0	0.1	0	0	0
Sugar	0.1	2.3	0	0.3	0	0	0	0	0.2	0.3	0.7	8.6	0.3	0.4	0	0.3	0
Food products	0.2	0.1	0.1	0	0	0	0.1	0.2	0	0.2	0	0.1	0.1	0.2	0.1	0	0
Beverages and tobacco	0	0.1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Textiles	2.8	2.2	0.3	0.1	0.5	0.1	0	0	0	0.1	0	0.5	0	0	0	0	0
Wearing apparel	2.9	1.5	1.1	0	0.4	0.1	0	0	0	0.1	0	0.3	0	0	0	0	0
Leather products	0.4	0.4	0.1	0	0.2	0	0.4	0	0.1	0	0	0	0	0	0	0	0
Wood products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Paper products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Petroleum products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chemical rubber, plastic	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mineral products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Ferrous metals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metals	0	0	0	0	0	0	0	0	0	0	0	0	1.3	0	0	0.1	0
Metal products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Motor vehicles and parts	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Transport equipment	0	0	0.1	0	0	0	0.1	0	0	0	0	0	0	0	0	0	0
Electronic equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Machinery and equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other manufactures	0	0.4	0.3	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0
Services	0	0.1	0.1	0.1	0	0	0.2	0	0	0	0	0.1	0	0	0	0	0

In the Indian market, Sri Lanka and the rest of South Asia had notable shares in India's imports of a number of commodities (table 3). Although Bangladesh had either zero or very low shares in most of the commodities, in the case of fishing it had a 49 per cent share of the total imports. Some African countries had reasonable shares in agricultural, agro-processing and mineral products. For example, Nigeria had a share of more than 28 per cent in India's imports of oil while Tanzania had a share of almost 24 per cent in India's imports of sugar cane. However, for most of the products, these low-income countries had either very low or zero shares.

Table 3. Shares in total imports by India, 2004

	BGD	PAK	LKA	XSA	KHM	LAO	NGA	SEN	ETH	MDG	MWI	MUS	MOZ	TZA	UGA	ZMB	BWA
Paddy rice	0.0	0.0	0.6	3.0	0.6	3.8	0.5	0.4	0.0	0.0	0.0	0.0	0.3	3.4	0.0	0.0	0.1
Wheat	0.0	0.0	0.0	3.2	0.0	0.0	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Cereal grains	0.0	0.0	0.0	7.7	0.0	0.0	0.1	0.3	1.3	0.0	0.2	0.0	0.2	6.1	0.7	0.2	0.3
Vegetables	0.1	3.0	1.2	3.6	0.0	0.0	0.9	0.5	0.2	0.2	0.4	0.0	2.5	7.2	0.0	0.0	0.0
Oil seeds	0.0	0.1	2.2	0.8	0.0	0.0	0.2	0.0	2.0	0.0	0.0	0.0	0.0	2.4	0.0	0.0	0.0
Sugar cane	0.0	0.0	0.0	2.5	0.1	0.1	0.0	0.7	0.3	0.1	0.0	0.0	0.0	23.9	0.0	0.0	0.0
Plant-based fibres	6.3	0.1	0.1	0.0	0.0	0.0	0.4	0.6	0.1	0.3	0.0	0.5	0.3	10.4	1.8	1.0	0.0
Crops nec	0.4	1.9	13.0	9.8	0.0	0.0	0.9	0.0	0.4	0.2	0.5	0.0	0.1	1.5	0.1	0.0	0.0
Livestock	0.1	0.2	0.0	28.4	0.3	0.0	0.0	0.1	0.5	0.9	0.0	0.0	0.0	0.3	0.2	0.0	0.0
Animal products	0.2	0.0	0.1	1.2	0.0	0.0	0.2	0.0	5.9	0.0	0.0	0.0	0.0	0.6	0.4	0.0	0.0
Raw milk	0.0	1.0	0.0	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.9	0.0	0.0
Wool	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Forestry	0.0	0.2	0.2	1.6	0.0	0.0	1.4	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.1	0.0	0.0
Fisheries	49.1	0.2	2.8	0.2	0.2	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.1	0.0
Coal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Oil	0.0	0.0	0.0	0.0	0.0	0.0	28.1	0.0	0.0	0.1	0.0	0.1	0.0	0.0	0.1	0.0	0.0
Gas	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Minerals	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0
Meat	0.0	0.0	0.0	0.3	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
Meat product	0.0	0.0	1.4	1.5	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.6	0.0	0.0	0.5
Vegetable oils	0.0	0.1	1.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dairy products	0.0	0.0	0.0	2.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Processed rice	0.2	0.4	0.5	2.5	1.1	0.6	0.0	0.2	0.0	0.4	0.0	5.9	0.0	0.3	0.0	0.0	0.0
Sugar	0.1	13.6	0.0	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.4	0.0	0.0	0.0
Food products	0.8	0.1	0.7	6.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Beverages and tobacco	0.1	0.0	0.0	5.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0
Textiles	0.8	1.0	0.4	4.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0
Wearing apparel	1.7	0.8	0.4	14.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2	0.0	0.0	0.0
Leather products	0.8	0.4	0.9	0.9	0.0	0.0	0.2	0.1	0.1	0.0	0.0	0.0	0.0	0.1	0.1	0.0	0.0
Wood products	0.2	0.0	5.1	3.4	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0
Paper products	0.0	0.0	0.8	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Petroleum products	0.0	1.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Chemical rubber, plastic	0.3	0.1	0.3	0.9	0.0	0.0	0.0	1.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Mineral products	0.1	0.0	2.3	0.2	0.0	0.0	0.0	0.0	0.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Ferrous metals	0.1	0.0	0.5	2.4	0.0	0.0	0.2	0.1	0.0	0.1	0.0	0.1	0.1	0.1	0.0	0.0	0.0
Metals	0.0	0.0	1.2	0.3	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Metal products	0.3	0.0	1.5	0.7	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Motor vehicles and parts	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Transport equipment	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Electronic equipment	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Machinery and equipment	0.0	0.0	0.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Other manufactures	0.0	0.0	0.1	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Services	0.0	0.1	0.4	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0

Source: Calculated from version 7 of the GTAP Database.

The figures in tables 2 and 3 may create the impression that the European Union and Indian markets are, in general, not very important for the low-income countries under consideration. However, table 4 indicates that the European Union market is a very important export destination for most of those low-income countries. Among the Asian countries, the European Union market accounts for as much as 54.15 per cent of total

Bangladeshi exports. Among the African countries, Botswana has a more than 70 per cent share. However, the Indian market is not a major export destination for most of the countries under consideration. Among the Asian countries, the rest of South Asia (Afghanistan, Bhutan, Maldives and Nepal) has the highest share followed by Sri Lanka. Among the African countries, Nigeria has a reasonably high share as far as the Indian market is concerned.

Table 4. Country shares of exports to India and European Union in total exports

	India	European Union
Bangladesh (BGD)	0.98	54.15
Pakistan (PAK)	0.91	32.01
Sri Lanka (LKA)	6.13	35.94
Rest of South Asia (XSA)	18.58	35.98
Cambodia (KHM)	0.15	31.42
Lao People's Democratic Republic (LAO)	0.20	46.29
Nigeria (NGA)	19.14	20.87
Senegal (SEN)	11.97	38.09
Ethiopia (ETH)	0.86	36.65
Madagascar (MDG)	1.33	46.99
Malawi (MWI)	1.84	34.55
Mauritius (MUS)	1.60	54.81
Mozambique (MOZ)	1.58	66.51
Tanzania (TZA)	6.19	35.36
Uganda (UGA)	2.26	36.47
Zambia (ZMB)	1.10	11.01
Botswana (BWA)	0.11	71.76

Source: Version 7 of the GTAP Database.

F. Trade similarities of excluded low-income economies with the European Union and India

In examining the impact of the European Union-India FTA deal on the excluded low-income economies in Asia and Africa, it is useful to explore the similarity of exports of those countries with India in the European Union market and with the European Union in the Indian market. One useful way of examining trade similarity is comparison of the top 50 export products of those countries, in both the European Union and the Indian markets. Table 5 shows the number of commodities at the HS 4 digit level that are common in the export baskets of India and other low-income countries in the European Union market as well as the number of commodities that are common in the export baskets of the European Union and other low-income countries in the Indian market. In the European Union market, among the Asian low-income economies the maximum similarity with India appears to be with Sri Lanka; and among the African low-income economies, the maximum similarity with India is with Madagascar. However, for all other African countries, the export similarity is very low. In the Indian market, among all the low-income economies the similarity with the European Union is very low.

The above findings are also supported by the F-K index[3] constructed by Winters and others (2009). Table 6 gives the values of the index. The general conclusion is that in the European Union market, the maximum similarity with India is observed for Sri Lanka, whereas the similarity index is very low for all the countries under consideration.

Table 5. Top 50 export items – similarity with India and European Union (HS 4 digit level)

Country/region	European Union market: similarity with India	Indian market: similarity with the European Union
Bangladesh (BGD)	16	5
Pakistan (PAK)	15	6
Sri Lanka (LKA)	18	8
Rest of South Asia (XSA)	15	6
Cambodia (KHM)	09	4
Lao People's Democratic Republic (LAO)	07	3
Nigeria (NGA)	2	7
Senegal (SEN)	1	4
Ethiopia (ETH)	7	4
Madagascar (MDG)	16	4
Malawi (MWI)	7	5
Mauritius (MUS)	5	5
Mozambique (MOZ)	4	6
Tanzania (TZA)	8	5
Uganda (UGA)	2	4
Zambia (ZMB)	4	3
Botswana (BWA)	11	5

Source: Computed from WITS database.

Table 6. Similarity of composition in trading structures

Country/region	European Union market: Similarity with India			Indian market: Similarity with the European Union		
	1	2	3	1	2	3
Bangladesh	0.179	0.173	0.000	0.020	0.020	0.020
Nepal	0.138	0.126	0.000	0.033	0.033	0.033
Pakistan	0.259	0.241	0.200	0.031	0.031	0.031
Sri Lanka	0.269	0.180	0.152	0.072	0.072	0.072
CARICOM	0.101	0.074	0.001	0.029	0.029	0.029
Central Africa	0.037	0.018	0.000	0.043	0.043	0.043
Eastern and Southern Africa	0.182	0.140	0.001	0.047	0.046	0.046
Pacific-EPA	0.031	0.013	0.002	0.010	0.010	0.010
SADA (less South Africa)	0.044	0.023	0.001	0.025	0.025	0.025
West Africa	0.056	0.034	0.001	0.031	0.031	0.031

Source: Winters and others, 2009.

Note: (1) = similarity across all products; (2) = similarity across products in which India (European Union) has +ve tariffs; and (3) = exports from both suppliers and both have +ve tariffs.

The aforementioned discussions points to the possibility of a low impact on the excluded low-income economies because of the low trade similarity in both the European Union and the Indian market. However, it should be kept in mind that the impacts on the excluded economies don't entirely depend on the similarity of trade of these countries with

[3] The F-K index of import similarity between country m and n can be defined, in general, as

$$FK_{mn} = \sum_i \min(\delta_{im}, \delta_{in})$$

where δ_{im} and δ_{in} are the share of imports from country m in product i and the share of imports from country n in product i, respectively. This index was computed at the 6-digit level of disaggregation. The FK index is equal to one when the structure of trade (defined by the share of each sector in total trade) across the two countries being compared is identical, and is equal to zero when the structure of trade is completely different.

the FTA partners, since many of these countries also enjoy significant preferences in the European Union and the Indian market. Such an FTA risks the loss in preferences for these countries. The next section discusses the margin of preferences of the excluded low-income countries in the European Union and Indian markets.

G. Margin of preferences in the European Union and Indian markets

The GTAP database provides the benchmark level and structure of protection in the European Union and India, which is useful in understanding the initial conditions from which the tariff liberalization aspects of the FTA need to be assessed. Most of the low-income economies enjoy some preferences in the European Union and Indian markets, and their margins of preferences for various products can be calculated from the GTAP database.

Table 7. Margin of preference in the European Union market compared to the tariff rates on Indian products (percentage point difference)

	BGD	PAK	LKA	XSA	KHM	LAO	NGA	SEN	ETH	MDG	MWI	MUS	MOZ	TZA	UGA	ZMB	BWA
Paddy rice	0	9	9	58.9	46.9	44.9	58.9	48.9	58.9	39.3	58.9	58.9	58.9	58.9	58.9	58.9	58.9
Wheat	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8	6.8
Cereal grains	19.9	18	19.9	19.9	19.9	19.9	19.1	19.9	19.9	19.9	19.9	-8.2	19.9	19.9	19.9	19.9	19.9
Vegetables	0.9	0.5	0	0.9	0.9	0.2	0	0.9	0.9	0.6	0.9	-6.8	0.9	0.9	-0.5	0.9	0.9
Oil seeds	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sugar cane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plant-based fibres	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Crops nec	1.6	1.6	0	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
Livestock	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8	9.8
Animal products	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Raw milk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wool	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Forestry	1	1	0.6	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Fisheries	3.5	3.5	0	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
Coal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Oil	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Gas	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Minerals	0	-0.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Meat	254.3	234.4	254.3	254.3	254.3	254.3	254.3	254.3	254.3	254.3	254.3	183.7	254.3	254.3	254.3	254.3	176.2
Meat products	17.7	0	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	17.7	5.8
Vegetable oils and fat	1.7	0.9	0	1.7	1.7	1.7	1.6	1.7	1.7	1.7	1.7	-0.1	1.7	1.7	1.7	1.7	1.7
Dairy products	20.2	0	0	20.2	20.2	20.2	-89.3	20.2	20.2	20.2	20.2	-20.6	20.2	20.2	20.2	20.2	20.2
Processed rice	59.4	0	0	109.3	44.6	62.3	109.3	105.3	0	72.2	-28.9	-6.5	109.3	109.3	109.3	109.3	109.3
Sugar	0	27.2	0	0	34	34	34	33	0	0	0	0	0	0	18.8	0	34
Food products	6.8	4.3	1.1	6.8	6.8	6.8	6.7	6.8	6.8	6.8	6.8	5.8	6.8	6.8	6.8	6.8	2.1
Beverages and tobacco	19.8	19.8	0	19.8	19.8	19.8	18.1	19.8	19.8	19.8	19.8	16.2	19.8	19.8	19.8	19.8	19.8
Textiles	7.4	3.7	0	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4	7.4
Wearing apparel	8.6	7.5	0	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6	8.6
Leather products	3.4	1.1	0	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4	3.4
Wood products	0.1	0.1	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Paper products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Petroleum products	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chemical rubber, plastic	0.6	0.6	0.4	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
Mineral products	1	1	0	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Ferrous metals	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Metals	1.7	1.5	1.5	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
Metal products	0.2	0.2	0	0.2	-0.3	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Motor vehicles and parts	4.1	4.1	3.7	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
Transport equipment	0.7	0.7	0	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
Electronic equipment	1.1	1.1	0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
Machinery and equipment	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other manufactures	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Calculated from version 7 of the GTAP Database.
Note: Positive figures indicate preference.

Table 7 shows the calculated margins of preferences, where the positive figures refer to the existence of preferences. It can be seen from table 7 that there are some significant margins of preferences for these low-income countries in the European Union market compared with the tariff rates imposed on imports from India. For the Asian countries, the margins of preference on textiles and clothing, which are their major export items to the European Union, are very important. For the African countries, however, the margins of preference on agricultural and agro-recessing are very relevant.

Table 8 shows the calculated margins of preference for the low-income economies in the Indian market compared with the tariff rates on imports from the European Union. Among the Asian countries, Sri Lanka and rest of South Asia enjoy some significant preferences over the European Union in the Indian market. Some African countries also have some preferences in the agricultural and agro-processing products.

Table 8. Margins of preference in the Indian market compared to the tariff rates on European Union Products (percentage point difference)

	BGD	PAK	LKA	XSA	KHM	LAO	NGA	SEN	ETH	MDG	MWI	MUS	MOZ	TZA	UGA	ZMB	BWA
Paddy rice	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5
Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cereal grains	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	5.1	-74.3	5.1	5.1	5.1
Vegetables	0	11.9	0	6.1	43.8	43.8	13.6	13.8	13.4	11.8	3	13.8	13.2	12.9	43.8	43.8	43.8
Oil seeds	16.2	0	0	16.2	16.2	16.2	-13.8	16.2	-13.8	16.2	16.2	-13.8	16.2	-13.8	16.2	16.2	16.2
Sugar cane	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Plant-based fibres	0	3.1	0	13.1	13.1	13.1	3.1	3.1	3.1	2.6	3.1	3.1	3.1	2.9	3.1	3.1	13.1
Crops nec	0	0	0	24.1	27.2	27.2	-2	27.2	-7.3	-41.4	-68.1	-34.6	-72.8	-40.4	-64.6	27.2	27.2
Livestock	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Animal products	0	2.7	0	1.9	2.7	2.7	1	2.7	2.7	2.7	2.7	2.7	2.7	-1.1	2.7	-0.4	-16.7
Raw milk	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wool	15	0	15	0	15	15	15	15	15	15	15	15	15	15	15	15	15
Forestry	0	5.6	5.6	0	5.8	0	4.2	-19.2	-19.2	-8.8	10.8	5.8	5.8	4.4	5.8	10.8	10.8
Fisheries	25.9	0	0	11.7	26.2	26.2	26.2	-3.8	26.2	26.2	26.2	26.2	26.2	-3.8	26.2	5.1	26.2
Coal	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
Oil	0	0	0	0	0	0	-10	0	0	0	0	0	0	0	0	0	0
Gas	0	0	0	0	0	0	-10	0	0	0	0	0	0	0	0	0	0
Minerals	1	0.8	5.6	12.8	15	15	5.5	10	0	0	0	0	0	0	0	0	15
Meat	17.8	17.8	17.8	0	17.8	17.8	17.8	17.8	-11.7	17.8	17.8	17.8	17.8	17.8	17.8	17.8	17.8
Meat products	39.3	39.3	0	0	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3	39.3
Vegetable oils and fats	19.2	42.6	32.8	36.9	72.6	72.6	72.6	72.6	72.6	72.6	72.6	72.6	72.6	42.6	72.6	72.6	72.6
Dairy products	6.7	0	5.8	36.7	36.7	36.7	36.7	36.7	36.7	36.7	36.7	-22.3	36.7	36.7	36.7	36.7	36.7
Processed rice	57.3	0	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	57.3	-12.7	57.3	57.3	57.3	57.3	57.3
Sugar	35.4	35.4	35.4	20.9	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	50.4	35.4	50.4	50.4	50.4
Food products	13.6	4.8	0	11.6	38.7	38.7	38.7	8.7	5.8	38.7	38.7	-19.7	38.7	8.7	8.7	38.7	38.7
Beverages and tobacco	107.2	76.5	13.9	99.7	137.2	137.2	-18.1	137.2	137.2	137.2	137.2	37.2	137.2	137.2	137.2	137.2	137.2
Textiles	1.2	0	0.7	14.6	0.7	15.7	0.7	-13.9	-14.3	-10.8	0.7	0.7	15.7	-8.6	0.7	15.7	15.7
Wearing apparel	0	0	0	14.7	0	14.7	14.7	14.7	-0.3	14.7	14.7	-0.3	14.7	-0.3	14.7	14.7	14.7
Leather products	2.5	1.1	0	13.8	3.4	13.8	1.9	8.8	2.3	13.8	13.8	-1.2	13.8	5.2	2.3	13.8	-1.2
Wood products	0	0.4	0.1	7.9	15	15	3.4	15	0.4	0	0	0	15	4.2	0	15	15
Paper products	0	0	0	13.6	0	14.4	1.6	-0.6	10.4	-0.6	-0.6	-0.5	14.4	9	14.4	-0.6	1.1
Petroleum products	0	0	0	14.5	14.5	14.5	4.5	14.5	14.5	14.5	14.5	-0.5	14.5	14.5	14.5	14.5	14.5
Chemical rubber, plastic	5.8	0.1	0.1	11.2	0.2	0.2	0.2	0.3	-13.9	-10	0.2	0.2	0.2	0	0.2	15.2	-0.2
Mineral products	5.8	0	1.4	12	15	15	15	0	0	15	0	0	15	0	15	0	15
Ferrous metals	0	0	0	13.1	0	0	-0.9	-1.1	-1.1	-1.1	-1.1	-1.1	-1.1	-0.8	-1.1	-1.1	2.7
Metals	0	0	0	9.8	0	15	0	0	0	15	15	0	0	0	0	0	15
Metal products	0	0	0	15	0	15	0	0	0	0	0	0	15	0	0	0	15
Motor vehicles and parts	0	15.6	0	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	-44.3	30.6	30.6	-3.6	30.6	30.6
Transport equipment	0	0	0	7.6	7.6	7.6	3.5	7.6	7.6	7.6	7.6	-4	7.6	-6.9	7.6	7.6	7.6
Electronic equipment	0	3.6	0.8	4.4	4.4	4.4	2.6	4.4	4.4	4.4	3.4	-3.9	4.4	4.4	-0.8	4.4	4.4
Machinery and equipment	0	0	0	14.1	0	14.2	0	0	0	14.2	-0.8	-0.3	14.2	-0.8	-0.8	-0.8	-0.8
Other manufactures	0	0	0.2	7.7	0	0	0	0	0	0	0	0	15	0	0	0	0
Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Source: Calculated from version 7 of the GTAP Database.
Note: Positive figures indicate preference.

However, despite some notable preferences, most of the Asian and African countries (except the rest of South Asia and Sri Lanka) have very low levels of imports into India. Therefore, even the loss in preferences is unlikely to result in large losses in exports to the Indian market by those countries.

H. GTAP model

The GTAP model is a comparative static model, and is based on neoclassical theories.[4] It is a linearized model and it uses a common global database for the CGE analysis. The model assumes perfect competition in all markets, constant returns to scale in all production and trade activities, and profit and utility maximizing behaviour of firms and households, respectively. The model is solved using the software GEMPACK (Harrison and Pearson, 1996).

1. Household income and expenditure

In the GTAP model, each region has a single representative household, termed as the regional household. The income of the regional household is generated through factor payments and tax revenues (including export and import taxes), net of subsidies. The regional household allocates expenditure over private household expenditure, government expenditure and savings according to a Cobb Douglas per capita utility function.[5] Thus, each component of final demand maintains a constant share of total regional income.

The private household buys commodity bundles to maximize utility, subject to its expenditure constraint. The constrained optimizing behaviour of the private household is represented in the GTAP model by a constant difference of elasticity expenditure function. The private household spends its income on consumption of both domestic and imported commodities, and pays taxes. The consumption bundles are constant elasticity of substitution (CES) aggregates of domestic and imported goods, where the imported goods are also CES aggregates of imports from different regions. Taxes paid by the private household cover commodity taxes for domestically produced and imported goods, and the income tax net of subsidies.

2. Government consumption

The Government also spends its income on domestic and imported commodities and pays taxes. For the Government, taxes consist of commodity taxes for domestically produced and imported commodities. Like the private household, government consumption is a CES composition of domestically produced goods and imports.

[4] Full documentation of the GTAP model and the database can be found in Hertel, 1997, and Dimaranan and McDougall, 2002.
[5] Savings enter in the static utility function as a proxy for future consumption.

3. Savings and investment

The GTAP model considers the demand for investment in a particular region as savings driven. In the multi-country setting the model is closed by assuming that regional savings are homogenous and contribute to a global pool of savings (global savings). This is then allocated among regions for investment in response to the changes in the expected rates of return in different regions. If all other markets in the multi-regional model are in equilibrium, if all firms earn zero profits, and if all households are on their budget constraint, such treatment of savings and investment will lead to a situation where global investment must equal global savings, and Walras' Law will be satisfied.

4. Producers' income

In the GTAP model, producers receive payments for selling consumption goods and intermediate inputs, both in the domestic market and to the rest of the world. Under the zero profit assumption employed in the model, these revenues must be precisely exhausted by spending on domestic intermediate inputs, imported intermediate inputs, factor income and taxes paid to regional household (taxes on both domestic and imported intermediate inputs and production taxes net of subsidies).

5. Production technology

The GTAP model considers a nested production technology with the assumption that every industry produces a single output, and constant returns to scale prevail in all markets. Industries have a Leontief production technology to produce their outputs. Industries maximize profits by choosing two broad categories of inputs, i.e., a composite of factors (value added) and a composite of intermediate inputs. The factor composite is a CES function of labour, capital, land and natural resources. The intermediate composite is a Leontief function of material inputs, which are in turn a CES composition of domestically produced goods and imports. Imports are sourced from all regions.

6. International trade

The GTAP model employs the Armington assumption, which provides the possibility to distinguish imports by their origin and explains intra-industry trade of similar products. Following the Armington approach, import shares of different regions depend on relative prices and the substitution elasticity between domestically and imported commodities.

7. Base data and base year adjustments

Version 7 has 2004 as the base year, updated national, economic and trade data, and more importantly protection data from the MacMaps (CEPII / ITC joint project). The new GTAP database has lower tariffs than the earlier versions as a result of the reform efforts until 2004 and the inclusion of bilateral trade preferences. The GTAP database has been further adjusted to incorporate the phasing out of the Multifibre Agreement in 2005 as well as few bilateral and multilateral trade agreements.

8. Region and commodity aggregation

Data on regions and commodities are aggregated to meet the objectives of the study described in this chapter. Version 7 of the GTAP database covers 57 commodities, 113 regions/countries and 5 factors of production. The current study has aggregated 57 commodities into 43, and 113 regions into 23 as shown in tables 9 and 10, respectively.

Table 9. Commodity aggregation in the GTAP model

No.	Code	Sector description	Comprising old sectors
1	Pdr	Paddy rice	Paddy rice
2	Wht	Wheat	Wheat
3	Gro	Cereal grains nec	Cereal grains nec
4	v_f	Vegetables, fruit, nuts	Vegetables, fruit, nuts
5	Osd	Oil seeds	Oil seeds
6	c_b	Sugar cane, sugar beet	Sugar cane, sugar beet
7	Pfb	Plant-based fibres	Plant-based fibres
8	Ocr	Crops nec	Crops nec
9	Ctl	Cattle, sheep, goats, horses	Cattle, sheep, goats, horses
10	Oap	Animal products nec	Animal products nec
11	Rmk	Raw milk	Raw milk
12	Wol	Wool, silkworm cocoons	Wool, silkworm cocoons
13	Frs	Forestry	Forestry
14	Fsh	Fisheries	Fisheries
15	Coa	Coal	Coal
16	Oil	Oil	Oil
17	Gas	Gas	Gas
18	Omn	Minerals nec	Minerals nec
19	Cmt	Meat: cattle, sheep, goats, horses	Meat: cattle, sheep, goats, horses
20	Omt	Meat products nec	Meat products nec
21	Vol	Vegetable oils and fats	Vegetable oils and fat
22	Mil	Dairy products	Dairy products
23	Pcr	Processed rice	Processed rice
24	Sgr	Sugar	Sugar
25	Ofd	Food products nec	Food products nec
26	b_t	Beverages and tobacco products	Beverages and tobacco products
27	Tex	Textiles	Textiles
28	Wap	Wearing apparel	Wearing apparel
29	Lea	Leather products	Leather products
30	Lum	Wood products	Wood products
31	Ppp	Paper products, publishing	Paper products, publishing
32	p_c	Petroleum, coal products	Petroleum, coal products
33	Crp	Chemical, rubber, plastic products	Chemical, rubber, plastic products
34	Nmm	Mineral products nec	Mineral products nec
35	i_s	Ferrous metals	Ferrous metals
36	Nfm	Metals nec	Metals nec
37	Fmp	Metal products	Metal products
38	Mvh	Motor vehicles and parts	Motor vehicles and parts
39	Otn	Transport equipment nec	Transport equipment nec
40	Ele	Electronic equipment	Electronic equipment
41	Ome	Machinery and equipment nec	Machinery and equipment nec
42	Omf	Other manufactures nec	Other manufactures nec
43	Serv	Services	Electricity; gas manufacture, distribution; water; construction; trade; transport nec; sea transport; air transport; communication; financial services nec; insurance; business services nec; recreation and other services; public admin/defence/health/education; dwellings.

Table 10. Region aggregation in the GTAP model

No.	Code	Region description	Comprising old regions
1	IND	India	India
2	European Union 25	European Union 25	Austria; Belgium; Cyprus; Czech Republic; Denmark; Estonia; Finland; France; Germany; Greece; Hungary; Ireland; Italy; Latvia; Lithuania; Luxembourg; Malta; Netherlands; Poland; Portugal; Slovakia; Slovenia; Spain; Sweden; United Kingdom
3	BGD	Bangladesh	Bangladesh
4	PAK	Pakistan	Pakistan
5	LKA	Sri Lanka	Sri Lanka
6	XSA	Rest of South Asia	Rest of South Asia
7	KHM	Cambodia	Cambodia
8	LAO	Lao People's Democratic Republic	Lao People's Democratic Republic
9	NGA	Nigeria	Nigeria
10	SEN	Senegal	Senegal
11	ETH	Ethiopia	Ethiopia
12	MDG	Madagascar	Madagascar
13	MWI	Malawi	Malawi
14	MUS	Mauritius	Mauritius
15	MOZ	Mozambique	Mozambique
16	TZA	Tanzania	Tanzania
17	UGA	Uganda	Uganda
18	ZMB	Zambia	Zambia
19	BWA	Botswana	Botswana
20	BRA	Brazil	Brazil
21	CHN	China	China
22	USA	United States of America	United States of America
23	ROW	Rest of the world	Australia; New Zealand; rest of Oceania; Hong Kong, China; Japan; Republic of Korea; Taiwan Province of China; rest of East Asia; Indonesia; Myanmar; Malaysia; Philippines; Singapore; Thailand; Viet Nam; rest of South-East Asia; Canada; Mexico; rest of North America; Argentina; Bolivia; Chile; Colombia; Ecuador; Paraguay; Peru; Uruguay; Venezuela; rest of South America; Costa Rica; Guatemala; Nicaragua; Panama; rest of Central America; Caribbean; Switzerland; Norway; rest of the European Free Trade Association **;** Albania; Bulgaria; Belarus; Croatia; Romania; Russian Federation; Ukraine; rest of Eastern Europe; rest of Europe; Kazakhstan; Kyrgyzstan; rest of former Soviet Union; Armenia; Azerbaijan; Georgia; Islamic Republic of Iran; Turkey; rest of Western Asia; Egypt; Morocco; Tunisia; rest of North Africa; rest of Western Africa; Central Africa; South Central Africa; Zimbabwe; rest of Eastern Africa; South Africa; rest of South African Customs

I. Simulation and results

A scenario of a full FTA between the European Union and India was simulated using the GTAP model. Under this scenario, all tariffs on exports from the European Union to India, and from India to the European Union, were reduced to zero.

1. Welfare effects

The welfare effects of the simulation for the countries/regions concerned are presented in table 11. It appears that in terms of absolute value, maximum welfare gain is attained by the European Union, followed by India. However, in terms of share in GDP, India's welfare gain is much higher than that of the European Union. All the low-income economies in Asia and Africa under consideration would experience welfare loss. In terms of absolute value, Bangladesh would incur the maximum welfare loss, almost US$ 84 million, which is 0.15 per cent of that country's GDP. However, in terms of share in GDP,

the rest of South Asia would experience the largest loss in welfare, equivalent to 0.5 per cent. It appears that in Asia, the welfare losses of the South Asian countries are much higher than those of Cambodia and the Lao People's Democratic Republic. This is mainly because of the low trade similarity of Cambodia and the Lao People's Democratic Republic with India and the European Union in the European Union and Indian markets, respectively (as indicated in table 5). Among the African low-income economies, Nigeria would experience the largest welfare loss in absolute value while Senegal would experience the largest welfare loss in terms of share in GDP. In general, however, it appears that the welfare losses of most of these low-income economies would not be very high.

Table 11. Welfare results

(Unit: US$ million)

Countries/regions	Allocative efficiency effect	Terms of trade effects	Investment-savings effect	Total welfare effect	Percentage of GDP
India	-941.4	5 533.7	1 070.4	5 662.6	0.88
European Union 25	14 082.8	-2 782.2	-304.2	10 996.4	0.09
Bangladesh	-23.0	-57.2	-3.7	-83.9	-0.15
Pakistan	-7.8	-32.1	-3.7	-43.6	-0.06
Sri Lanka	-9.6	-56.5	-2.2	-68.3	-0.34
Rest of South Asia	-23.3	-41.4	-5.0	-69.7	-0.50
Cambodia	-0.4	-1.4	-0.6	-2.0	-0.02
Lao People's Democratic Republic	0.0	-0.3	-0.5	-0.8	-0.03
Nigeria	-9.8	-28.3	-8.3	-46.4	-0.07
Senegal	-8.2	-12.5	-5.3	-26.0	-0.36
Ethiopia	-1.3	-1.7	-0.3	-3.3	-0.05
Madagascar	0.0	-1.9	0.0	-1.9	-0.04
Malawi	-1	-2.9	0.2	-3.7	-0.21
Mauritius	-2.9	-8.4	-0.1	-11.4	-0.19
Mozambique	-0.6	-2.5	-0.1	-3.2	-0.05
Tanzania	-1.8	-7.0	0.5	-8.3	-0.07
Uganda	-0.2	-3.8	-0.3	-4.3	-0.06
Zambia	-0.3	-1.7	-0.1	-2.1	-0.04
Botswana	-0.1	-8.5	0.9	-7.6	-0.09

Source: Simulation results.

The decomposition of the welfare effects (table 11) suggests that India's gain from the FTA would be primarily driven by terms of trade gain, whereas for the European Union the gain would mainly be due to the rise in allocative efficiency. India would incur a loss in allocative efficiency because of the loss in tariff revenue. India's terms of trade gain would be due to the rise in the prices of her export items relative to the prices of imports arising out of this FTA.

However, the European Union, because of elimination of tariff protection on many of its inefficient production processes (especially agricultural products), would experience large gains in allocative efficiency as resources would divert from the inefficient sectors to the more efficient sectors. The low income economies in Asia and Africa under consideration would suffer from both losses in allocative efficiency and negative terms of trade shock. However, for all these countries, negative terms of trade shocks would be the dominant factor behind welfare loss.

2. Macroeconomic effects

Table 12 presents the impact on some macroeconomic variables for the countries under consideration. It seems that India would experience a fall in real GDP by 0.15 per

cent from the base run. This would be due to the larger increase in imports compared with exports. India's imports would rise by 10.8 per cent compared with a small rise in exports by only 1.08 per cent. On the other hand, the European Union would experience a rise in real GDP by 0.11 per cent, and its imports and exports would rise by 0.28 per cent and 0.43 per cent, respectively. This suggests that the European Union-India FTA would result in greater market access for the European Union in India compared to India's market access in the European Union.

Table 12. Macroeconomic impacts

Countries/regions	Real GDP (% change from the base run)	Imports (% change from the base run)	Exports (% change from the base run)
India	-0.15	10.79	1.08
European Union 25	0.11	0.28	0.43
Bangladesh	-0.04	-0.38	-0.91
Pakistan	-0.04	-0.01	-0.66
Sri Lanka	-0.05	-0.10	-0.90
Rest of South Asia	-0.17	-0.10	-1.32
Cambodia	-0.01	-0.02	-0.08
Lao People's Democratic Republic	0.00	-0.09	-0.02
Nigeria	-0.01	-0.01	-0.12
Senegal	-0.11	-0.95	-0.77
Ethiopia	-0.02	-0.10	-0.08
Madagascar	0.00	-0.01	-0.11
Malawi	-0.05	-0.21	-0.49
Mauritius	-0.05	-0.19	-0.54
Mozambique	-0.01	-0.09	-0.09
Tanzania	-0.02	0.00	-0.23
Uganda	0.00	-0.14	-0.14
Zambia	0.00	-0.06	-0.08
Botswana	0.00	-0.01	-0.24

Source: Simulation results.

The macroeconomic impacts on other low-income countries are also shown in table 12. Bangladesh, Sri Lanka, the rest of South Asia, Cambodia, Nigeria, Senegal, Ethiopia, Malawi, Mauritius, Mozambique and Tanzania would experience falls in real GDP, whereas other low-income economies would not experience any impact on their real GDP. Among the Asian countries, the rest of South Asia would incur a loss in real GDP by 0.17 per cent. Among the African countries, the largest fall in real GDP would be experienced by Senegal. It also appears that all these low-income economies would face losses in exports. The losses in exports for Bangladesh and Sri Lanka would be as high as 0.9 per cent of their total exports. The corresponding figure for the rest of South Asia is 1.32 per cent. Cambodia and the Lao People's Democratic Republic, however, experience very low figures of losses in exports. Among the African countries, the largest fall in exports would be faced by Senegal.

3. Losses in exports to the European Union and Indian markets

From the GTAP simulation results it is also possible to isolate the loss in the exports of the low-income economies in the European Union and the Indian market. It should be noted that the losses of the low-income economies in exports would also be driven by losses in preferences of these countries in the European Union and India due to the diversion of trade in the European Union and India because of the FTA deal. It appears that the patterns of impacts on the low-income economies as far as export losses in the European Union and Indian markets are concerned. In South Asia, Bangladesh and Pakistan would experience

the bulk of their losses in the European Union market, whereas, Sri Lanka and rest of South Asia would incur major losses in the Indian market. Cambodia and the Lao People's Democratic Republic would experience virtually no losses in exports to the Indian market. Among the African countries, only Nigeria and Senegal would face larger export losses in the Indian market. However, for most of the other African countries, the losses in exports to the European Union market would be higher than those in the Indian market.

Table 13. Losses in exports

(Unit: US$ million)

Country/region	European Union market	Indian market	Total
Bangladesh	-56.3	-7.5	-63.8
Pakistan	-79.2	-2.7	-81.9
Sri Lanka	-10.1	-55.3	-65.4
Rest of South Asia	-2.8	-47.0	-49.8
Cambodia	-12.4	0.0	-12.4
Lao People's Democratic Republic	-2.2	0.0	-2.2
Nigeria	-3.6	-14.1	-17.7
Senegal	-0.7	-21.6	-22.3
Ethiopia	-1.8	-0.5	-2.3
Madagascar	-5.0	-0.6	-5.6
Malawi	-1.1	0.0	-1.1
Mauritius	-16.0	-3.9	-19.9
Mozambique	-1.3	-0.8	-2.1
Tanzania	-6.9	-3.4	-10.3
Uganda	-1.5	-0.2	-1.7
Zambia	-0.9	-3.1	-4.0
Botswana	-40.6	-0.1	-40.7

Source: Simulation results.

Table 14 shows the losses in the exports of major commodities in the European Union market by the low-income economies. It is clearly evident that in the case of Bangladesh, textiles and wearing apparel are the two dominant products that suffer from loss exports to the European Union market. For Pakistan, paddy and processed rice as well as textiles and wearing apparel constitute the bulk of the losses in exports. For the African countries, mainly the agricultural and agro-processing commodities would experience losses in exports.

Table 14. Losses in exports of major commodities in the European Union

(Unit: US$ million)

Country/region	Paddy rice	Crops	Meat	Processed rice	Sugar	Food products	Textiles	Wearing apparel	Leather products
Bangladesh	-1.0	-0.1		-0.3		-0.9	-21.8	-23.4	-0.5
Pakistan	-35.1			-8.8	-0.5		-18.5	-10.7	
Sri Lanka	-0.2	-0.5		-0.8				-4.1	
Rest of South Asia				-2.6					
Cambodia	-0.2		-0.4	-3.0			-4.8	-4.1	
Lao People's Democratic Republic	-0.9		-0.3	-1.0			-0.1	-0.4	
Nigeria	-0.1	-1.1	0.0	0.0		-0.2	-0.4		-0.6
Senegal	-0.1		-0.3	-0.3					
Ethiopia		-0.5	-0.2		-0.1		-0.1	-0.1	
Madagascar		-0.1	-0.1	-0.7	-0.1	-0.2	-1.0	-1.0	
Malawi		-0.6			-0.1				
Mauritius			-0.3		-0.6	-0.1	-8.3	-3.4	
Mozambique	-0.1	-0.2	-0.1		-0.1	-0.2			
Tanzania	-0.8	-0.6	-1.4	-0.4	-0.1	-0.8	-0.1	-0.2	
Uganda		-0.6	-0.1			-0.2			
Botswana			-34.6						

Source: Simulation results.

Table 15 lists the major products of the low-income economies that would suffer from export losses in the Indian market. Bangladesh would experience some notable export losses in the case of chemicals, rubber and plastic products. Sri Lanka and rest of South Asia would, however, experience losses in exports of a number of mineral and manufacturing commodities. For Sri Lanka, the largest loss would be in exports of metals. For Nigeria, some notable losses would be in exports of oil. Senegal would experience losses in exports of chemicals, rubber and plastic products. For other African countries, the figures for losses in exports to the Indian market would be minimal.

Table 15. Losses in exports of major commodities in India

(Unit: US$ million)

Country	Oil	Minerals	Food products	Beverage and tobacco products	Wood product	Paper products	Chemicals, rubber and plastics	Mineral products	Ferrous metal	Metals	Metal products	Machinery
Bangladesh			-0.2	-0.1	-0.1		-5.2	-0.1	-0.3	-0.2	-0.6	-0.3
Pakistan		-0.2				-0.1	-1.5		-0.1			-0.4
Sri Lanka		-0.1	-0.2		-2.6	-1.5	-5.0	-3.2	-3.2	-22.1	-2.6	-15.3
Rest of South Asia		-1.0	-1.3	-2.9	-1.6	-1.1	-14.1	-0.3	-15.4	-4.5	-1.2	-1.8
Nigeria	-13.5	-0.4							-1.5	-1.2		-0.2
Senegal		-0.3					-20.9		-0.4			
Mauritius	-0.1	-0.1				-0.1	-0.1		-0.7			-2.7
Tanzania		-1.9	-0.1		-0.1	-0.1	-0.5		-0.5			-0.1
Zambia		-2.4							-0.1	-0.6		

Source: Simulation results.

J. Conclusion

This chapter details the analysis of, and insights into the welfare, macroeconomic and trade impacts on a number of low-income economies as a result of a proposed bilateral FTA between the European Union and India. A global general equilibrium modelling technique was applied in the analysis. A simulation of a scenario depicting a full FTA between India and the European Union was conducted. The simulation results are summarized below:

(a) The European Union-India FTA would result in welfare gains for both India and the European Union. In absolute terms, the gains of the European Union would be much higher than those of India. However, in terms of share in GDP, the gains of India would be much larger than that of the European Union. India's welfare gain would mainly be driven by the gain in terms of trade, whereas the European Union's welfare gain would primarily be due to a gain in allocative efficiency;

(b) All the low-income economies under consideration in the analysis would experience losses in welfare, with the welfare losses for the South Asian countries being much higher than for the other low-income economies in Asia and Africa. Bangladesh would appear to experience the largest loss in welfare in absolute value, whereas the rest of South Asia would incur the largest loss in terms of share in GDP. The welfare losses of these low-income economies are mainly driven by the loss in terms of trade. However, in general, the extent of welfare losses in terms of share in their GDP for most of these countries would not be very high;

(c) Most of these low-income countries would also experience losses in real GDP and exports. For the rest of South Asia, the loss in real GDP would be as high as 0.17 per cent while in exports it would be as high as 1.32 per cent. Other South Asian countries such as Bangladesh and Sri Lanka would also experience losses in exports by more than 0.9 per cent. However, for most of the other countries, the losses in real GDP and exports would not be very large;

(d) Most of the low-income countries under consideration in the analysis would experience falls in exports, in both the European Union and Indian markets, mainly because of losses in preferences and diversion of trade in both those markets. However, the pattern of export loss is different for different countries. Countries such as Bangladesh and Pakistan would suffer from larger export losses in the European Union market compared with the Indian market, whereas for Sri Lanka and rest of South Asia the impacts would be just the opposite. Most of the other low-income countries would, however, experience larger losses in exports to the European Union market;

(e) The product-wise figures suggest that the losses of Asian low-income countries in exports to the European Union market would be dominated by the losses in exports of textiles and wearing apparel. Most of the African countries would, however, experience losses in exports of agricultural and agro-processing products to the European Union market. In the Indian market, Sri Lanka and rest of South Asia would experience losses in exports of a number of mineral and manufacturing products. Bangladesh's loss in exports to the Indian market would be primarily chemicals, rubber and plastics products. Most of the African countries would incur losses in exports of oil, minerals and mineral products to the Indian market;

(f) The simulation results in general suggest that the impacts of the European Union-India FTA on most of the excluded low-income economies would not be very large. It should, however, be noted that the impacts, as derived from the simulation results, would be static in nature and that the dynamic impacts could be much larger than the static impacts. For example, although the static loss in preferences for Bangladesh's exports of textiles and clothing to the European Union market might appear to be small, such a loss might result in a long-term loss in competitiveness; thus, the dynamic losses could be much larger than the static losses.

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