Textile and Wearing Apparel Sector Liberalization - Consequences for the Bangladesh Economy

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Markus Lips*, Andrzej Tabeau*, Frank van Tongeren*,
Nazneen Ahmed** and Claudia Herok***[1]

Abstract

This paper analyzes the impact of the Agreement on Textile and Clothing (ATC) and a worldwide tariff reduction on textiles and wearing apparels on Bangladesh. In both scenarios Bangladesh reduces its wearing apparel production and faces a welfare loss. The main reason is that Bangladesh has free access to its most important export market, the EU. Further trade liberalizations are therefore worsening the Bangladeshi position opposite to its competitors.

The analysis stands on the general equilibrium model of the Global Trade Analysis Project (GTAP).

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* Agricultural Economics Research Institute (LEI), Burgemeester Patijnlaan 19, Postbus 29703, 2502 LS Den Haag, The Netherlands, markus.lips@wur.nl

** Bangladesh Institute of Development Studies (BIDS), E-17 Agargaon, Sher-e-Bangla Nagar, 1207 Dhaka, Bangladesh

*** Federal Ministry of Education and Research, Bonn, Germany

1 Introduction

Since the 1980s the export oriented wearing apparel sector of Bangladesh has experienced an extraordinary evolution: Having started with 9 enterprises in the late seventies, the number has now grown to over 3000[2]. This trend was accompanied by a tremendous rise in the export share from 0.2 percent in 1980 to nearly 75 percent in 1997-98.

The main policy framework is given by the WTO's Agreement on Textiles and Clothing (ATC). The ATC was decided in the Uruguay Round and has replaced the Multifiber Agreement (MFA) in 1995. The ATC includes the phase-out of export quantities restrictions of textile and wearing apparels. By December 31st, 2004, all quota restrictions will be abolished. The phase-out of export quotas has been widely analyzed in different studies (Hertel et al., 1996; Yang et al., 1997; Bach et al., 1997; Diao and Somwaru, 2001). They all conclude that world trade and welfare increase and consumer price decline.

In spite of the prediction for a world welfare gain, it is not straightforward for all the countries. It has already been noted that the benefit for South Asian countries depends on how severe the export restrictions are (Yang et al., 1997). Islam (2001) points out that export quotas are lower for Bangladesh, Pakistan and Nepal than for China and India, which means that under a quota free regime, Bangladesh will face comparatively greater competition from China and India. Bhattacharya and Rahman (2001), Zohir (2001) as well as Dowlah (1999) are convinced that the survival of the wearing industry in Bangladesh depends on the development of strong cost effective backward linkages and product and market diversification. Furthermore, maintenance of labor standards and improvement of labor productivity and quality of products deserve considerable attention.

This paper analyzes the impacts of the ATC, more specifically, quota phase out under ATC, on Bangladesh. In addition, we analyze an import tariff reduction for textile and wearing apparel as a result of the ongoing WTO Doha Round. Our analysis stands on various policy simulations applying the general equilibrium model of the Global Trade Analysis Project (GTAP, Hertel, 1997).

The paper is organized as follows: We discuss the used data aggregation as well as the definitions of the scenarios in section two. For the modeling of import tariff

[2] The number has decreased during the last year.

reductions in Bangladesh a change of the model is necessary, which is described in section three. The results are presented in section four, while the conclusions are drawn in the last section.

2 Data and Scenarios

We apply the version 5.1 of the GTAP database, which refers to the year 1997 (Dimaranan and McDougall, 2002). For the analysis we employ an aggregation with 14 regions and 12 sectors. They are presented in the Tables 1 and 2 respectively.

Table 1: Regions

Region	Description
Bangladesh	
India	
Sri Lanka	
rSAFTA	Rest of South Asian Free Trade Association (Bhutan, Maldives, Nepal, Pakistan)
China	China and Hong Kong
hASIA	Japan, Korea, Singapore, Taiwan
oASIA	Indonesia, Malaysia, Philippines, Thailand, Vietnam
EU	EU-15
CEEC	Hungary, Poland, Rest of Central and Eastern European Countries
Turkey	
USA	
Canada	
cAMERICA	Mexico, Central America and Caribbean
ROW	Rest of the World

Besides Bangladesh our aggregation includes India and Sri Lanka, two other countries of the South Asian Free Trade Association (SAFTA). All other member countries are in the region “rSAFTA”. While China and Hong Kong build an own region the rest of the Asian countries are distinguished between high income countries “hASIA” and others “oASIA”. The EU, the USA and Canada are important textile importers. The Central and Eastern European Countries (“CEEC”) and Turkey are important due to the Eastern Enlargement of the EU respectively the preferential access to the EU.

For our analysis all textile related sectors like plant based fibers (“Fibres)”, “Textiles”, “Wearing apparel” and “Leather products” are crucial. The sector “Rice” includes the production of paddy rice as well as the rice processing. All non-rice grains are in the sector “Grains”, while all other agricultural activities are included into the sector “rAGR”. The sector “Food” covers the whole food processing without

processed rice. Forestry, fishing and extraction activities are in the sector "Extract". The manufacturing is split into a labor intensive ("LiMANF") and capital intensive ("CiMANF") sector. The last sector includes all services.

Table 2: Sectors

Sector	Description
Rice	Paddy Rice and processed Rice
Grains	Non Rice Grains
Fibers	Plant-based Fibers
rAGR	Rest of Agriculture (Oil Seeds, Sugar Beet, Cattle, Pig and Poultry, Milk)
Food	Processed Food without processed Rice
Textiles	
Wearing apparel	
Leather products	
Extract	Fishing, Forestry, Coal, Oil, Gas, Minerals
LiMANF	Labor intensive Manufactures
CiMANF	Capital intensive Manufactures
Services	Services

We define two scenarios (Table 3). The base scenario revealed the implementation of the Agreement on Textiles and Clothing (ATC). It includes a complete phase-out of quantitative restrictions on textiles and wearing apparel. The export quotas, respectively the quota rents are included as export tariff equivalents in the GTAP5 database (Francois and Spinanger, 2002). Eliminating export quotas in the simulation means that the export tariff equivalents are completely dismissed. In 1997 the Bangladeshi export quotas to the EU have not anymore existed. Furthermore, Bangladeshi imports in the EU face no import tariffs[3]. Although the GTAP database includes both, export tariff equivalents and import tariffs for Bangladeshi textile exports to the EU, we do not change them in our simulation. Since the EU is the most important importer of Bangladeshi textile and wearing apparel both matters of fact have a huge impact on our analysis.

Besides the ATC the base scenario includes some further changes. The accession of China to the WTO implies import tariff reduction for China in order to respect the Most Favorite Nation clause. We consider such tariff reduction for two products: textiles and wearing apparel. Furthermore, the base scenario includes Eastern Enlargement of the EU as well as a preferential trade agreement with Turkey. That is

[3] We assume that the rule of origin for textiles as well as the export license for textile and clothing products, which are falling under the surveillance system, have just an administrative nature.

important because the CEEC as well as Turkey are exporting wearing apparel to the EU.

Table 3: Scenarios[4]

	Scenario
Base	Agreement on Textile and Clothing (ATC) WTO Accession of China for Sectors TEX and WAP EU Eastern Enlargement (No Tariffs between EU and CEEC) Preferential Agreement EU - Turkey
WTO	Base Scenario + Worldwide Import Tariff Reduction of 36 percent for TEX and WAP

In the WTO scenario we simulate a worldwide import tariff reduction of 36 percent for textiles and wearing apparel, as it is a possible outcome of the on-going Doha Round of the WTO. The WTO scenario includes also all changes of the base scenario.

3 Model

The analysis is carried out with the comparative static general equilibrium model of the Global Trade Analysis Project (GTAP, Hertel, 1997).

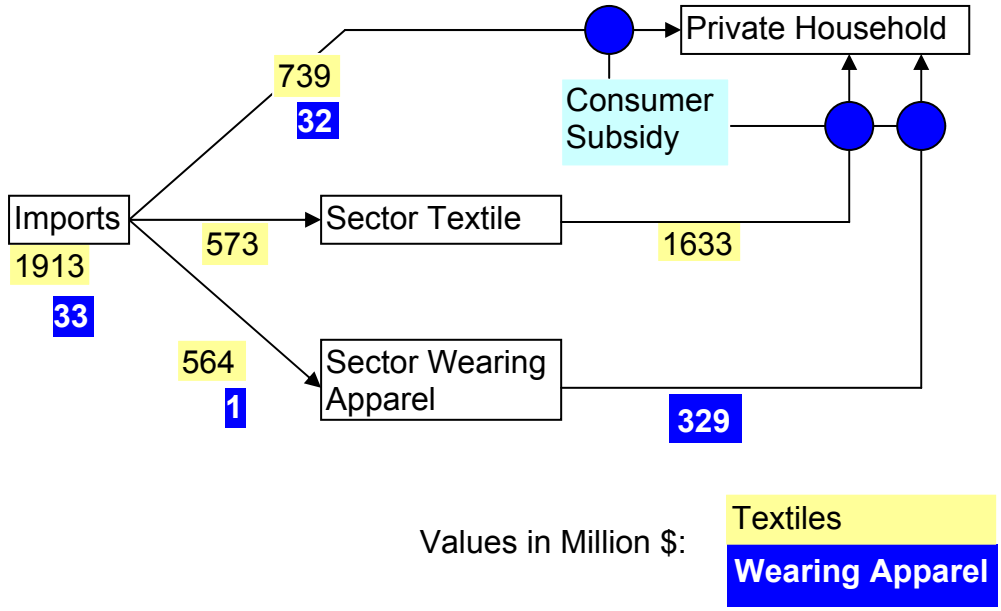
The tariff reduction in the WTO scenario has also to be applied for textiles and wearing apparel imports of Bangladesh. A simple import tariff reduction cannot be adopted, since Bangladesh applies the Duty Drawback regime (DD)[5]. Ianchovichina (2003) provides an approach to depict DD in the GTAP model. Therefore, the production of every sector is split into two sub sectors. One is only producing for domestic use while the other produces exported goods. The approach requires a substantial change of the GTAP standard model. Since we need the depiction of the DD regime just for two sectors of one particular region, we apply another approach.

[4] In a related paper (Lips M., Tabeau A. and van Tongeren F. (2003). Multilateral and Regional Trade Agreements: Options for Bangladesh) the base scenario is similar, except the presence of economies of scale.

[5] Under various export incentive programs, inputs used for exported goods are disburdened from paying import tariffs. Such incentives are available mainly for export-oriented firms (exporting at least 70 percent of their production) of important export goods including wearing apparel. Two of the most important incentives in Bangladesh are DD facility and Bonded Warehouse Facility (BWF). Under the DD, the exporters are refunded not only the duties paid on the imported inputs but also the value added tax paid on domestic inputs used in the production of the exports. The BWF is even more profitable for exporters. Under this system a firm can delay the payments of duties until they are ready to consume raw materials imported earlier and if theses raw materials are used for producing export goods then they are not required to pay the duty. It implies that the firms do not require capital to finance import tariffs.

DD means that only domestic consumers have to pay tariffs on imported textiles and wearing apparel. In the GTAP model all consumers of a region build the private household. In Figure 1 the values of textile and wearing apparel imports are included. While textiles for $ 1913 million are imported, $ 739 million worth of textiles go directly to the private household (GTAP 5 database). $ 573 million and $ 564 million are used as inputs in the textile and wearing apparel sectors respectively. The textile sector delivers $ 1633 million directly to the private household. The private household is buying domestic wearing apparel for $ 329 million[6].

Figure 1: Consumer Subsidy for the Private Household



Instead of reducing import tariffs we introduce a virtual consumer subsidy for the private household. The subsidy leads to price decrease for the private household, which is an imitation of a tariff reduction under the DD regime. Since domestic products also include imported imports there is a subsidy for both domestic and imported textiles and wearing apparels. The corresponding flows are marked with a circle in Figure 1.

To connect the import tariffs and the virtual consumer subsidies in the GTAP model we introduce the coefficient TN_L(r). It is the relation between consumer subsidies and import tariffs in region r.

[6] These numbers reveal that in value terms the domestic consumption of textile is much more important than that of wearing apparel.

$$TN\_L(r) = \frac{\sum^{TEXT} DPTAX(i,r) + \sum^{TEXT} IPTAX(i,r)}{\sum^{TEXT}\sum^{REG} MTAX(i,s,r)} \qquad (1)$$

DPTAX(i,r) is the virtual consumer subsidy on the domestic good i in region r. The virtual consumer subsidy on the imported good i in region r is denoted as IPTAX(i,r)[7]. Both consumer subsidies are summed over all elements of the set TEXT. TEXT contains two elements: textile and wearing apparel and is a subset of TRAD_COMM, the set of the traded commodities. MTAX is the import tariff for good i, which is exported from region s into region r. MTAX, has to be summed up for all elements of the set TEXT as well as all origin regions s which are included in the set REG[8]. In the database there are no consumer subsidies, hence all used DPTAX and IPTAX coefficients have values nearly by zero.

Concerning the modeling we linearize the above equation (1), attending that the consumer subsidies DPTAX and IPTAX has to be formulated as differences of agent and market values[9].

Since domestic textiles and wearing apparels includes a significant share of imported inputs as shown in Figure 1 we assume that the subsidies on domestic and imported goods are changing in the same way. Therefore, we introduce a new variable tz(r), which indicates the percentage change of the consumer subsidies of imported as well as domestic goods of the set TEXT. Looking at the modeling, we had to add two equations for all goods i which belongs to the set TEXT:

$$tpd(i,r) = tz(r) \qquad (2)$$

$$tpm(i,r) = tz(r) \qquad (3)$$

While tpd(i,r) indicates the percentage change of the subsidy for the private household of the domestic good i in region r, tpm(i,r) presents the referring percentage change of

[7] Both consumer subsidies [DPTAX(i,r) and IPTAX(i,r)] can also serve as taxes, depending on their value. While a negative value is a subsidy a positive indicates a tax.

[8] The set REG includes all regions (Table 1).

[9] DPTAX(i,r) = VDPA(i,r) - VDPM(i,r) and IPTAX(i,r) = VIPA(i,r) - VIPM(i,r)

the imported good i[10]. As a consequence of the model change, the consumer taxes tpd(i,r) and tpm(i,r) for textiles and wearing apparel cannot longer be given exogenously to the model as it is the case in the GTAP standard model. In our application they are endogenous while the change of TN_L(r) is exogenous[11].

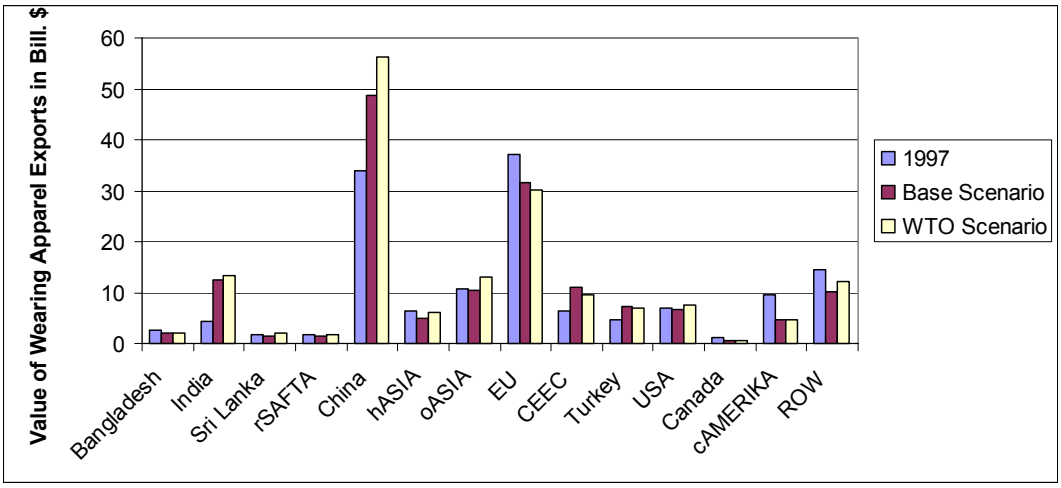
During the simulation for the WTO scenario the value of the coefficient TN_L is exogenously changed towards –0.36 in order to offset 36 percent of the tariff by consumer subsidies. The reason for the negative sign is the notation of the consumer subsidies, which are denoted as negative values. A consumer tax would have a positive value.

4 Results

4.1 Worldwide Results

The elimination of the export quotas and hence the quota rent lead to price decreases of textiles and wearing apparel exports. The magnitude of the price decreases depend on the fact how restrictive the quotas are and can be up to 30 percent (Base scenario). India and China exports of wearing apparel increase largely, since they have the most restrictive quotas (Figure 2).

Figure 2: Exported Value of Wearing Apparel in Bill. $



[10] Capital letters indicate absolute values (like TN_L) lower case letters presents the referring percentage change.

[11] In our case the set TEXT has two elements (textiles and wearing apparel). Looking at a particular region r, we totally add five equations to the model (linarized version of equation 1, equations 2 and 3. Accordingly, there are five new endogenous variables [tz(r), tpd(i,r), tpm(i,r)], while tn(r), the percentage change of the coefficient TN_L(r), is exogenous.

The production of wearing apparel increases by 107 percent in India and 29 percent in China (Table 4). The increases are transferred to the domestic textile sectors, the most important supplier of wearing apparel sector. Since in both countries the textile sector is larger than the wearing apparel industry, the increases are smaller.

Table 4: Output Changes in Percent (Base Scenario)

	Bangla-desh	India	Sri Lanka	rSAFTA	China	hASIA	oASIA	EU	CEEC	Turkey	USA	Canada	cAMERICA	ROW
Rice	0.0	-0.7	-0.0	-0.3	-0.3	0.0	-0.0	0.0	3.6	-1.7	0.5	0.6	0.2	0.2
Grains	2.6	-0.1	0.6	-0.2	-0.9	0.1	-0.0	0.6	-2.1	-1.3	0.1	0.3	0.4	0.1
Fibers	2.8	-0.5	0.6	0.7	7.5	1.2	0.2	-0.5	0.5	10.3	-1.7	0.1	-5.0	0.1
rAGR	0.4	-0.5	-0.2	0.1	-0.4	0.0	-0.0	0.2	-0.9	-1.2	0.1	0.2	0.5	0.0
Food	1.1	-2.8	-1.1	-0.9	-1.1	0.0	-0.1	0.1	0.7	-1.0	0.1	0.1	0.3	-0.0
Textiles	1.0	7.2	12.7	6.9	8.2	2.8	4.4	-3.3	3.8	21.7	-6.1	-9.5	-9.7	-2.0
Wearing Apparel	-11.3	106.7	-2.4	-2.6	29.3	-1.7	1.2	-11.1	29.7	34.0	-16.8	-26.8	-27.5	-5.0
Leather Products	14.0	-19.5	4.1	-6.5	-5.4	1.0	0.5	2.3	10.1	-0.3	1.5	0.8	2.5	0.7
Extract	0.0	-2.8	-0.4	-0.7	-1.1	0.0	-0.1	-0.0	-2.6	-1.8	0.2	0.2	0.8	0.1
LiMANF	2.9	-3.4	-0.2	-0.8	-1.7	0.0	-0.2	0.3	-3.3	-3.8	0.1	0.3	1.3	0.1
CiMANF	4.8	-5.0	1.5	-1.3	-2.9	0.1	-0.3	0.3	-3.4	-0.3	0.6	0.6	4.1	0.4
Services	-0.2	-0.2	-0.7	-0.3	-0.3	-0.0	-0.0	0.0	0.4	-0.1	0.0	0.1	0.0	0.0

The "enlargement" processes, i.e. the EU Eastern enlargement and the preferential agreement between EU and Turkey cause large increases of the wearing apparel sectors in the CEEC and Turkey. Both of them augment their production by at least 30 percent (Table 4). In Table 5 the quantity changes are assigned to the different parts of base scenario[12]. It becomes clear that the main reason of the quantity changes is not the ATC but rather the direct access to the EU (Table 5). The ATC has a negative impact on both regions CEEC and Turkey. This leads to the conclusion that the increases of wearing apparel production in India and China as a consequence of the ATC go in line with a decrease in all other regions except oASIA, which shows a modest increase.

[12] Therefore, we apply the function subtotals of the Gempack software.

Table 5: Decomposition of Wearing Apparel Output Changes of CEEC and Turkey (Base Scenario)

	ATC	China Accession	EU Enlargement	EU Turkey Agreement	Total
China	31.0	0.5	-1.5	-0.8	29.3
CEEC	-13.0	-0.1	46.2	-3.5	29.7
Turkey	-12.5	-0.1	-5.2	51.9	34.0

The decomposition of the output change of China's wearing apparel sector shows, that the Chinese WTO accession has just a minor effect compared to the ATC (Table 5). The USA, Canada as well as Central America, face strong reductions (16.8 percent, 26.8 percent and 27.5 percent respectively, Table 4), while the production in the EU is reduced by 11.1 percent.

A worldwide tariff reduction on textiles and wearing apparel (WTO scenario) increase even more the wearing apparel production in India and China (Table 6). Increases can also be observed in other Asian regions like Sri Lanka, rSAFTA and oASIA. The CEEC and Turkey show reductions compared with the base scenario due to declines of the exports to the EU. The reason is the tariff reduction in the EU for Asian countries. Therefore, countries with a preferential treatment like the CEEC, Turkey and Bangladesh face a harder competition.

Table 6: Output Changes in Percent (WTO Scenario)

	Bangla-desh	India	Sri Lanka	rSAFTA	China	hASIA	oASIA	EU	CEEC	Turkey	USA	Canada	cAMERICA	ROW
Rice	0.0	-0.8	-0.2	-0.4	-0.4	0.0	-0.0	0.3	3.7	-1.6	0.8	0.8	0.3	0.3
Grains	2.7	-0.1	-3.7	-0.4	-1.2	0.0	-0.3	0.6	-1.9	-1.2	0.2	0.4	0.5	0.1
Fibers	3.2	-0.6	-3.5	0.6	8.7	2.4	0.2	-1.6	-1.3	9.4	-1.9	0.2	-5.6	-0.1
rAGR	0.4	-0.5	-1.1	0.1	-0.5	0.0	-0.1	0.3	-0.8	-1.2	0.2	0.3	0.6	0.1
Food	1.2	-3.1	-4.1	-1.3	-1.4	0.0	-0.3	0.1	0.9	-1.0	0.1	0.2	0.4	0.0
Textiles	1.3	7.8	13.4	7.8	9.6	9.0	10.1	-4.8	1.2	19.8	-8.0	-13.5	-11.1	-3.7
Wearing Apparel	-11.4	118.2	24.3	3.9	41.1	-2.4	12.6	-15.0	18.8	29.9	-20.5	-34.2	-30.6	-6.2
Leather Products	14.4	-21.7	-16.2	-10.8	-6.8	1.0	3.7	2.4	11.3	-0.8	2.0	0.9	2.9	0.9
Extract	-0.0	-3.2	-2.0	-1.1	-1.5	0.0	-0.3	0.0	-2.4	-1.6	0.2	0.3	0.9	0.2
LiMANF	3.1	-3.8	-4.5	-1.6	-2.4	-0.0	-0.7	0.4	-2.8	-3.6	0.2	0.4	1.4	0.2
CiMANF	5.1	-5.6	-12.5	-2.1	-3.9	-0.1	-1.3	0.5	-2.7	0.2	0.8	1.0	4.6	0.5
Services	-0.2	-0.2	-1.1	-0.3	-0.3	-0.0	-0.1	0.0	0.4	-0.0	0.0	0.2	0.0	0.0

Looking at the welfare changes (Table 7) both scenarios lead to a remarkable worldwide welfare gain ($ 10 respectively $ 14 billion). All importers of wearing apparels (EU, US and Canada) gain remarkably. As the import prices drop Terms of Trade are enhanced. Furthermore, in these countries resources are removed from the textile and wearing apparel sector towards more efficient industries. A positive allocation effect results.

Table 7: Equivalent Variation in Mill. $

	Base Scenario			WTO Scenario		
	Allocation	Terms of Trade	Total	Allocation	Terms of Trade	Total
Bangladesh	-80	-321	-401	-86	-339	-425
India	2037	-364	1673	2278	-182	2095
Sri Lanka	-10	-218	-228	79	-159	-79
rSAFTA	113	-249	-137	225	-148	78
China	3243	-2885	358	4400	-2442	1959
hASIA	-262	-1418	-1681	159	-959	-800
oASIA	9	-1003	-994	383	-759	-376
EU	1997	2718	4715	2393	2472	4865
CEEC	1928	2666	4594	1964	2366	4329
Turkey	149	591	740	142	464	606
USA	1722	3789	5512	1872	3235	5107
Canada	407	362	769	485	382	867
cAMERICA	-342	-1230	-1572	-228	-1331	-1559
ROW	-972	-2442	-3414	-174	-2595	-2769
World, total	9939	-5	9934	13892	6	13898

India, China, the CEEC and Turkey can also improve their welfare due to increases of the allocation efficiency. A tariff reduction (WTO scenario) improves the welfare for China and India but also for other Asian regions (Sri Lanka, hASIA, oASIA). Both effects, the allocation and the Terms of Trade are improving.

4.2 Results for Bangladesh

The export quotas for wearing apparel are less restrictive for Bangladesh, than for its main competitors China and India[13]. Therefore, in importing countries a phase-out of export quotas drop the prices of wearing apparel from India and China more than that from Bangladesh. Consequently, Bangladesh becomes less competitive and the exported quantity of wearing apparel decreases by 13 percent (Table 8). The

[13] In addition, Bangladesh's exports face no quota restrictions in the EU.

production is reduced by 11 percent (Base scenario, Table 4). At the same time the textile sector augment its output by more than 1 percent due to an increase of exports. In contrast to wearing apparels, the ATC improves the Bangladeshi position for textiles exports to the USA and Canada. Generally speaking, the export pattern of Bangladesh is changing towards a stronger diversification. Besides leather products also exports of labor intensive manufactures (LiMANF) and services increase. The export increases of the other sectors are not so relevant since the initial exported quantities are rather small.

Table 8: Output Changes of Bangladeshi Exports and Imports

	Exports		Imports	
	Base Scenario	WTO Scenario	Base Scenario	WTO Scenario
Rice	10	11	-13	-14
Grains	6	6	-1	-1
Fibers	10	11	-2	-2
RAGR	2	3	-6	-6
Food	8	8	-4	-4
Textiles	13	13	-8	-8
Wearing apparel	-13	-13	-7	-5
Leather products	18	19	-7	-7
Extract	14	15	-4	-4
LiMANF	10	10	-4	-5
CiMANF	13	14	-3	-3
Services	10	11	-5	-6

In both scenarios all Bangladeshi imports decline. An import substitution takes place. Bangladesh faces a welfare loss of $ 400 million (Table 7). The main reason is the deterioration of the Terms of Trade. Since the export quotas are removed, export prices of textile and wearing apparel decreases and hence, Terms of Trade are decreasing[14]. Looking at the Bangladeshi Terms of Trade effect, we have to consider that the whole export quota rent is allocated to Bangladesh. If at least a part of the quota rent belongs to companies outside of Bangladesh, the welfare loss would be smaller[15].

[14] This is also the case for all other quota-restricted exporters. Some of them can compensate this effect with a positive welfare change from an improved means more efficient allocation (China, India).

[15] A large part of wearing apparel exports takes place through buying houses. By a total number of 895 buying houses an analysis of 106 of them revealed the fact that 15 percent are owned by foreigners. Therefore, it can be assumed that a part of the Bangladeshi quota rent is transferred abroad.

A reduction of tariffs for textiles and wearing apparels (WTO scenario) has a modest impact on the Bangladeshi production as well as the traded quantities (Tables 6 and 8). Although Bangladesh is a net exporter of wearing apparel the tariff reduction does not lead to an increase of the exported quantity. If we look more exact at the quantity changes of the Bangladeshi wearing apparel exports to the single regions, we can observe that all of them increase except that to the EU. Since Bangladesh has free access to the EU the Bangladeshi exports become relatively more expensive. This effect offsets the increases in all other export regions because the EU is the most important importer of Bangladeshi wearing apparels.

In the WTO scenario a welfare loss results for Bangladesh, which is slightly larger than in the base scenario. The reason is a further degradation of the Terms of Trade (Table 7).

5 Conclusions

The results indicate that India and China will benefit most from the Agreement on Textile and Clothing (ATC). The phase out of their very restrictive export quotas leads to remarkable increase of their wearing apparel productions.

Contrariwise, Bangladesh reduces its wearing apparel output by more than 10 percent and faces a welfare loss. The main reason is that Bangladesh has free access to its most important export market, the EU. Further trade liberalizations are worsening the Bangladeshi position opposite to its competitors. Due to the same argument, a worldwide tariff reduction on textiles and wearing apparels as a potential outcome of the WTO Doha Round is neither favorable. As a result, the export pattern of Bangladesh is changing towards a stronger diversification.

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