Preference Erosion:

The case of Bangladesh

A SUR-EC-AR Gravity Model of Trade

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Abstract

This paper analyses the impact of preference erosion on Bangladesh's clothing industry coming from both the ATC quotas phasing-out and the reduction on MFN tariffs under NAMA negotiations. First, it undertakes a numerical exercise to estimate the effects of tariffs reduction in the US and the EU on Bangladesh's economic performance. Then it uses a SUR-EC-AR gravity model of trade to measure the effects of ATC quotas phasing out and NAMA negotiations on trade pattern. The results suggest that Bangladesh gains from importing countries' tariffs reduction, independently of ATC implementation. Despite the fact that these results may underestimate the effects of quotas phasing out on T&C trade pattern, the model's structure presents the advantage of eliminating the aggregation bias problem. It would be interesting to expand the econometric model to include other trade partners and new variables.

List of Acronyms

ACP	African, Caribbean and Pacific
AGOA	African Growth and Opportunity Act
ATC	Agreement on Textiles and Clothing
DC	Developing Countries
EBA	Everything But Arms
FDI	Foreign Direct Investment
FTA	Free Trade Agreement
GATT	General Agreement on Tariffs and Trade
GSP	Generalized System of Preferences
GTAP	Global Trade Analysis Project
IC	Industrial Countries
LDC	Least Developed Countries
MFA	Multi-Fiber Arrangement
MFN	Most Favored Nation
NAMA	Non Agricultural Market Access
PE	Preference Erosion
RMG	Ready-Made Garments
RoO	Rules of Origin
SDT	Special and Differential Treatment
T&C	Textiles and Clothing
VER	Voluntary Export Restriction
WITS	World Integrated Trade Solution

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I. Introduction

Until 1994, textiles and wearing apparel was the "only major manufacturing industry not subject to the rules of the General Agreement on Tariffs and Trade (GATT), being the subject of an extensive use of quotas by the major importing countries"[1]. Textiles and Clothing (T&C) are highly protected goods, presenting "tariff peaks, high tariffs, and tariff escalation, as well as non-tariff barriers"[2]. Thus, countries with preferential access to restricted markets enjoy an increase on its relative competitiveness, granting them a market share they would not have under freer trade.

T&C industry is believed to be an "opportunity for the industrialization of developing countries[3] (DC) in low value added goods"[4], and many least developed countries (LDC) have programs for industrial development based on T&C production. There are many reasons for this: First of all, T&C is labor-intensive, and requires a large amount of unskilled workers[5]. Secondly, because the quota system imposed on T&C, any country can have a market share in the quota-imposing countries, independently of its competitiveness. Finally, part of the T&C exports from LDC is covered by unilateral preferences.

At the end of the Uruguay Round it was agreed by a voluntary commitment[6], known as "Textiles and Clothing Agreement" (ATC), to phase out quotas "gradually over a ten years period, with the last quotas being lifted 1st January 2005"[7]. But in 2005, the US and the EU used the safeguard clause in order to keep quota restriction on China until 2008. The total elimination of quotas will alter the competitiveness of various exporting countries, and those that have been less restricted by the quotas are

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[1] Ernst & al (2005), page 1.
[2] WTO homepage, at http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm.
[3] In this paper, the group of developing countries (DC) includes also least developing countries (LDC).
[4] Ernst & al (2005), preface.
[5] *Ibidem*.
[6] WTO homepage, at http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm
[7] Ernst & al (2005), page 1.

expected to lose market share to their competitors[8]. The change in market share will depend on factors as the degree of quota restrictiveness, the dependency on restricted markets, economic governance, and competitiveness in the T&C sector.

During the World Trade Organization's (WTO) Doha Ministerial Conference[9], the ministers agreed to start the negotiations on tariffs reductions for all non-agricultural products. The Non-Agricultural Market Access (NAMA) aims "to reduce, or as appropriate, eliminate tariffs, including the reduction or elimination of tariff peaks, high tariffs, and tariff escalation, as well as non-tariff barriers, in particular on products of export interest to developing countries"[10]. These negotiations should take place from January 2002 to 2006, but will probably last until 2008. During the WTO Hong Kong Ministerial Conference[11], a non-linear formula (Swiss type formula) was chosen in order to reduce tariffs, especially in sectors presenting tariff peaks. Because textiles and wearing apparel are highly protected goods, its "tariffs are particularly likely to be subject to deeper cuts under the current negotiations[12]."

Many DC have preferential access to restricted markets[13]. Preference erosion refers to a relative decline on market access due to elimination of preferences, reduction on barriers to trade, or an increase in competitors' preferential access.

LDC receiving unilateral preferences on T&C may face losses coming from two sources: at one hand, a reduction in tariffs under NAMA negotiation may represent lesser income, coming from both fall of tariffs revenues for importing entering these countries and preference erosion. On the other hand, since many LDC receive also quota free access to restricted markets, the quota phasing-out may represent loss of market share by exposing LDC' exports to more competitive producers.

Bangladesh is one of the poorest countries in the world. Being a LDC, Bangladesh's economy is characterized by low income, weak human assets, and economic

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[8] Yang & Mlachila (2006), page 3.
[9] The Doha Ministerial Conference launched the Doha Development Agenda, also known as Doha Round. The conference was held in November 2001, at Doha, Qatar. WTO homepage at http://www.wto.org/english/thewto_e/minist_e/minist_e.htm
[10] WTO homepage, at http://www.wto.org/english/thewto_e/minist_e/min01_e/mindecl_e.htm
[11] The Hong Kong Ministerial Conference was held in December 2005, in Hong Kong. WTO homepage at http://www.wto.org/english/thewto_e/minist_e/minist_e.htm
[12] Rahman & Shadat (2006), page 9.
[13] This paper does not aim to analyse the impact of unilateral preferences on trade, only the erosion on these preferences. For preferential access and trade, see Lipholdt & Kowalski (2005).

vulnerability[14]. During the early 1990's, Bangladesh started an ambitious plan for trade liberalization and economic stabilization. Trade liberalization measures implemented included reduction on import tariffs, and elimination of quotas and other non-tariff barriers. In order to encourage foreign direct investment and promote exports, two export processing zones (EPZ) were created[15]. As a result, Bangladesh's average annual real GDP growth in the 1990s was about 4.8 per cent[16].

At the present, Bangladesh international trade is largely dominated by wearing apparel, representing about 72 per cent of its exports in 2004. Also, as a LDC, Bangladesh relies on preferential schemas for its exports. Bangladesh's exports on clothing receive unilateral preferences from the EU (duty-free and quota-free access), but not from the US. A reduction on the most favored nation (MFN) tariffs worldwide would reduce Bangladesh preference margins in the EU, although it would increase its relative competitiveness in the US market. On the other hand, the elimination of T&C quotas in the US and the EU may cause "significant pressure on its balance of payment, output and employment"[17].

This paper analyses the impact of preference erosion on Bangladesh's clothing industry coming from both the ATC quotas phasing-out and the reduction on MFN tariffs under NAMA negotiations. It is structured as follows: Section 2 surveys the literature on preference erosion. Section 3 presents an overview of T&C international trade pattern. Section 4 evaluates Bangladesh competitiveness in the apparel sector. Section 5 undertakes a numerical exercise to estimate the effects of tariffs reduction in the US and the EU on Bangladesh's economic performance. Section 6 uses a gravity model to measure the effects of ATC quotas phasing and NAMA negotiations on trade pattern. Section 7 presents the conclusion.

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[14] A country is qualified to be a LDC if it presents low income (under $750), weak human assets (based on indicators of nutrition, health, school enrolment and adult literacy), and economic vulnerability (based on instability of agricultural production, instability of exports of goods and services, diversification form traditional economic activities, merchandise export concentration, and economic smallness.). UNCTAD Statistical Profiles of the Least Developed Countries 2005 at http://www.unctad.org/en/docs/ldcmisc20053_en.pdf

[15] Rahman, N (2005), pages 107 to 110, presents the main reforms and liberalization policies lead by Bangladesh since independency.

[16] United Nations Statistic Division.

[17] Yang & Mlachila (2006), Abstract.

II. Preference Erosion: Literature Overview

1. Preference Erosion's Framework

Preferences are granted with the objective to increase the industrialization in DC, to accelerate their rate of economic growth, as well as to increase their export earnings.[18] The idea behind preferences is to increase the relative competitiveness of beneficiary countries with respect to non-beneficiary countries[19]. In many cases preferences may create "preference-dependent"[20] producers. Decrease in protection, such as quota abolition or tariff reduction, may enhance market access for more competitive suppliers, bringing changes in relative prices, supply patterns and export revenues.[21]

Preferential programs cover a number of goods that may receive preferential access under certain conditions. Once these conditions are fulfilled, a preference-receiving country can use the preferential channel. The rules of origin (RoO) determine that only goods "substantially transformed" within a country can receive preferences[22]. Substantial transformation requires the exported goods and its inputs to belong to different tariffs classifications. Sometimes it fixes a ceiling for imported inputs, or else prohibits the use of certain inputs[23]. RoO can be viewed as a means to avoid the trade diversion that occurs when countries without preferences export through countries with preferential access[24]. In practice they work as a "powerful protectionist tool"[25] by imposing high compliance costs due to administrative burden, in addition to the requirement that inputs are sourced from higher costs suppliers[26].

Many studies suggest that stringent RoO may cause low utilization rate. Utilization rate refers to the ratio between exports going through the preferential channel and the

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[18] Inama (2005), page1.
[19] *Ibidem*.
[20] Expression used by The Commonwealth Secretariat (2004).
[21] Commonwealth Secretariat (2004), page 16.
[22] Inama (2005), page 1.
[23] Cadot et al (2005), pages 7 and 8, gives a good overview on RoO criteria.
[24] Inama (2005), pages 1 and 2.
[25] Cadot et al (2005), page 3.
[26] Low et al (2005), page 7.

exports covered by the preferential program[27]. Hence the scope of a preferential program will depend on the preference receiving country's utilization rate.

"Preference erosion refers to declines in the competitive advantage that some exporters enjoy in foreign markets as a result of preferential trade treatment—both unilateral and reciprocal. Preference erosion can occur when export partners eliminate preferences, expand the number of preference beneficiaries, or lower their most-favored-nation (MFN) tariff without lowering preferential tariffs proportionately."[28]

2.   Literature Overview

Due to the actuality of NAMA negotiations and the imminent quotas' abolition on T&C sector, the literature about preference erosion is fast increasing and attracting the interest of many researchers[29]. Because the effects of quotas and tariffs on prices are different, studies on erosion of preference can be separated between those analyzing the effects of tariffs changes, and those estimating the consequences of quotas elimination. Only a few studies analyze tariffs reduction and quotas elimination simultaneously.

While most of the literature refers to general studies, three papers study specifically the case of Bangladesh. **Rahman & Shadat** (2006) estimate the preference erosion for Bangladesh and other Asian LDC under different NAMA scenarios by comparing the changes due to tariff reduction in duty paid in the US with the decline on the preference margin enjoyed in the EU. They found that Bangladesh will lose between 24.3 million to 53 million US$, depending on the scenario simulated. Because they do not account for the preference utilization rates, their results may overstate Bangladesh losses.

Yang & Mlachila (2004) evaluate the effects on Bangladesh's economy of ATC quotas phasing out. They point out that the productivity of the Bangladeshi apparel industry is low mostly because the government restricted foreign investment in the RMG sector to keep the large quota rents for domestic producers. By using the Global

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[27] According to Inama (2005), page 5, product coverage is "the ratio between imports that are covered by a preferential trade arrangement and total dutiable imports from the beneficiaries' countries"; and utilization rate is "the ratio between imports actually receiving preferences and covered imports".
[28] Alexandraki & Landes (2004), page 5.
[29] Lipholdt & Kowalski (2005) present an excellent literature overview on preference erosion.

Trade Analysis Project (GTAP) global general equilibrium model, they found that the reduction on Bangladeshi total exports amounts to 6.8% to 29.5% (depending on the substitution elasticity used in the simulations). Based on the evaluation of quota restrictiveness, export similarity across countries, and supply constraints, they found that Bangladesh might face significant pressures on its balance of payments, output and employment.

Lips et al (2003) analyze the impact on the Bangladesh economy of both the quotas phasing-out and the reduction on MFN tariffs worldwide. Because Bangladesh has quota free access in the EU, liberalization may reduce its relative competitiveness. By using the GTAP general equilibrium model, they found that Bangladesh would face welfare losses from both tariff reduction and the elimination of quotas.

Among general studies, **Low et al** (2005) analyze the risk of preference erosion arising from MFN tariffs reduction for countries receiving non-reciprocal preferences in the US, the EU, Japan, Canada and Australia. They believe the risk of preference erosion to be overstated. By considering the effect of less-than-full-utilization, they find that on average DC do not lose from preference erosion, and that almost all LDC either lose or are unaffected by it. In a similar study, **Amiti & Romalis (2006)** review the effects of tariffs reduction on market access for DC. They show that preferential access is less generous than it appears because the product coverage is low and the rules of origin are complex. Hence, the gains on market access would offset the losses from preference erosion.

Córdoba & Vanzetti (2004) analyze the economic impact of proposals in the non-agricultural market access negotiations in the WTO using a GTAP global general equilibrium model. The authors find that losses from tariff revenue could have a strong negative impact on the government revenue in a number of countries. Still, changes in output may be moderate, suggesting small structural adjustment costs.

For many countries preference erosion may not be a serious concern because the low utilization rates of preferential access. In many studies, stringent RoO are considered to be the main cause of low utilization rate. **Cadot et al** (2005) find a negative correlation between utilization rates and costs associated to RoO. By constructing a synthetic index intended to capture the restrictiveness of rules of origin in preferential

trade agreements they find that RoO do discourage the use of preferences. **Inama** (2005) uses the World Integrated Trade Solution (WITS), from World Bank and finds that "the missing trade preferences" for textiles and clothing due to strict RoO is at the order of 1 billion US$.

According to **The Commonwealth Secretariat's** study (August 2004), many preference-dependent economies will have problems to adjust to a more liberalized trading environment. The authors analyzed the ATC quotas elimination by using quota rents as a measure for preferences, finding two sources of losses to preference-dependent economies: the losses in quota rents, and the losses in export revenues due to the lack of relative supply responsiveness. Because countries getting quota preferential access to highly protected markets receive a price premium over the normal rate of return, there is an incentive to allocate resources to that sector, independently of competitiveness. Hence under preferential access some countries may develop sectors that would not subsist under a more free trade. Once the preferences removed, these countries will suffer a loss in income transfer, which will reduce the investment incentives for that country or sector.

Alexandraki & Lankes (2004) try to identify middle-income developing countries that are potentially vulnerable to export losses coming from preference erosion. They conclude that countries relying deeply on preferential access to the QUAD markets, with a small export base and presenting a high share of its exports to high restrict markets, are likely to be vulnerable to the preference erosion.

Lipholdt & Kowalski (2005) use the GTAP standard model and database to simulate trade liberalization scenarios that would entail preference erosion. While highlighting a number of cases of preference reliance, the paper underscores the advantages of multilateral liberalization. Globally, and for a majority of developing regions, liberalization by preference-granting countries will result in positive welfare gains, notwithstanding the effects of preference erosion. In a comparatively small number of cases though, the analysis points to a risk of net welfare losses.

Ernst et al (2005) uses a gravity model to estimate the implication of the end of the MFA on trade and employment. They develop a quota impact indicator that takes into account the expected change on quota restrictiveness. By including this variable, as

well as tariffs, in a gravity model they found that only three countries, namely Pakistan, China and Hong Kong, would experiment a significant increase in total exports. Bangladeshi exports would decrease about 21 percent, representing a loss of about 220 thousand jobs.

Conversely, **Mayer (2004)** considers that the rise in China's market share due to quotas phasing out is likely to be lower than often suggested by the literature because the T&C industry structure and the sourcing strategies of buyers, and the current patterns of tariff protection and preferential schemes. In addition, the author considers that most of studies do not account for China's development objectives requiring structural changes towards production and exports of manufactures that are more skill-intensive than the clothing industry.

This paper analyzes the effects of preference erosion due to tariffs reduction and quotas elimination on the Bangladeshi economy. It uses a system gravity model of trade to find that, under constant demand, Bangladesh's decline on apparel exports from quota phasing-out amounts to 0.98 to 2.46 percent. Conversely there are no losses from preference erosion due to tariffs reduction: Bangladesh's gains from NAMA negotiations are between 195 and 661 million US$. These results may underestimate the overall losses from quota removal, and differ from the common literature on this subject. However, the model used presents the advantage of eliminating the aggregation bias. The inclusion of textiles products and more trade partners could bring interesting results.

III.   International Trade on T&C

1.   Overview

T&C trade structure is highly distorted by tariffs, quotas and preferential access, which affect exporters' relative competitiveness, international prices and trade pattern. Historically considered by industrial countries as a sensitive sector, textiles and wearing apparel were not part of the GATT until 1994[30]. The Uruguay Round launched the negotiations to phase out barriers to trade through the inclusion of T&C in the WTO framework[31] resulting in the 1994 ATC quotas phasing-out. The liberalization sector was pushed further in the Doha Round with the overture of NAMA negotiations[32]. While both work towards complete trade liberalization, they are independent from each other.

The elimination of quotas and reduction on tariffs may reduce consumer's prices and increase the volume of trade, reducing market distortions. On the other hand, the reduction in barriers to trade will reduce the scope of preferential access causing an erosion of actual preferences enjoyed by many DC.

2.   The Tariffs Structure

Tariffs are taxes imposed on imports value. Tariffs increase prices of imported goods in the home market, enhancing the relative competitiveness of domestic producers. Tariffs are an important trade policy's instrument that can be used to many purposes, such as to protect a new sector or a key industry in the economy [33]. The average tariff levels, as well as the dispersion rates across products, both influence consumers and producers decisions, affecting the overall trade structure[34].

The sensitive goods' tariff structure in developed countries is characterized by high tariffs, tariffs escalation and tariff peaks. The average tariff rate on textiles and apparel are from two to four times the average tariff level on manufactured goods

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[30] Ernst & al (2005), page 1.
[31] Quantitative restrictions are not allowed in the WTO framework.
[32] Understanding the WTO, at WTO homepage, at http://www.wto.org/.
[33] The Penguin Dictionary of Economics, seventh edition, page 375.
[34] WTO (2004), page 8.

taken as a group[35]. Table 3.2.1 compares the applied tariffs for industrial and T&C goods in the US and EU. It also presents the percentage of tariff peaks on total tariff lines.

Table 3.2.1: Structure of applied tariffs in the US and the EU, simple average, in percentage, in 2002.

Applied tariffs, *in percent*	US	EU
Industrial products	4.2	3.7
T&C MFN	9.7	8.0
T&C GSP	9.4	7.2
T&C LDC	9.4	0.0
International peaks*	6.3	8.6
Domestic peaks*	5.3	5.8

* % Of all tariff lines   Source: WTO (2004), pages 5 and 15.

Tariff escalation occurs when the tariff rate increases with the level of transformation of a good. Mild nominal tariff escalation provides high effective protection by affecting the entire structure of tariffs (raw materials, intermediated goods and final products)[36]. Tariff escalation causes a misallocation of resources in both importing and exporting countries. In the importing country, it affects negatively the domestic production of primary goods by allowing imported raw materials to enter the market at low prices. By imposing low tariffs on raw materials and high tariffs in processed goods, developed countries encourage downstream processing in the South, undermining technological upgrading and the development of industries with higher value added[37].

Table 3.2.2: Tariff escalation in Textile and related goods and on total industry, in percentage

	Textiles and leather			Total industry		
	(I)	(II)	(III)	(I)	(II)	(III)
US	2,9	9,1	10	2,3	4,7	5,5
EU	0,8	6,2	9,2	8,6[38]	4,8	7,0

Notes: (I) refers to first stage of processing; (II) refers to semi-processed goods; and (III) refers to fully processed goods.
Source: WTO (2004), page 13.

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[35] Mayer (2004), page 6.
[36] WTO (2004), page 12.
[37] *Ibidem.*
[38] The EU presents high tariff on food beverages and tobacco (about 14,6 percent) explaining the high value for the total industry's first stage of processing.

Tariff escalations often generate tariff peaks, which are tariffs presenting a high dispersion relative to the average MFN rate applied. T&C imports are subject to an extensive use of tariff peaks in both the North and the South. Because the tariff structure differs across countries, tariff peaks measured at national level differ from the international level rate. Therefore, "domestic peaks" are the tariff three times greater than the national average, while "international peaks" are tariffs exceeding a rate of 15 percent[39]. This definition implies that an international peak can be a domestic peak in a country having a relatively low average rate, without being a tariff peak in countries presenting high tariffs averages[40]. From 15 to 30 percent of exports from LDC were subject to tariff peaks. Product lines covered by tariff peaks go from 1,6 percent in Canada to more than 5 percent in the US, the EU and Japan[41].

According to Amiti & Romalis (2004), duties imposed by the US and the EU on goods for which LDC have competitive advantage are higher for DC and non-African LDC than those paid by industrial countries exporting the same products, implying that the actual tariff structure does not benefit DC[42].

NAMA negotiations address trade liberalization in manufactures, fisheries, minerals and forestry goods – products that are not covered by the agreement on Agriculture[43]. The main objectives of these negotiations are full binding coverage, rapid and continuous liberalization, and harmonization of tariffs across countries, plus greater uniformity of tariffs across product lines[44]. All these objectives affect directly the trade policy of DC, but only the uniformity of tariffs across product lines concerns preference erosion.

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[39] WTO at http://www.wto.org/english/tratop_e/markacc_e/nama_negotiations_e.htm
[40] Cordoba & Vanzetti (2005), page 9.
[41] WTO (2004), page 8, footnotes.
[42] According to Amiti & Romalis (2004), page 10, non-African LDC' tariffs amount 13.53 percent in the US and 5.35 percent in the EU; DC' rate is 3.96 percent and 2.35 percent; while industrial countries face only 2.8 percent in the US and 1.56 percent in the EU.
[43] WTO at http://www.wto.org/english/tratop_e/markacc_e/nama_negotiations_e.htm
[44] Full binding coverage refers to increasing permanently the tariffs' binding coverage in DC. Developed countries have full binding coverage but the same does not hold to DC and LDC. Actually, DC make an extensive use of trade policy as an instrument to boost their industries. Increases in binding coverage imply lost of flexibility to uses tariffs to protect sensitive sectors. Rapid and continuous liberalization refers to reduction in tariffs over time, converging to free trade. Harmonization of tariffs refers to reduction in tariff dispersion across countries, principally between developed countries and DC, estimated to be about 12 percent. Akyüs (2005), pages 3 to 6.

The modalities of tariffs reduction are still under negotiation. It was decided to use a Swiss type formula[45] approach in order to enhance transparency, predictability and equity in market access negotiations[46]. It was expected that negotiations on market access would be over in May 2003. The deadline was postponed to August 2004, and then to the Hong Kong Ministerial in December 2005. The strong divergence on interests between developed countries, DC and LDC limits the capacity of negotiators to attain an agreement.

3.   The Quota System

The Multifibre Agreement of 1974 provided the framework for unilateral quantitative restrictions on exports of T&C to the US, Canada, Norway and EC[47]. The MFA quantity restriction takes the form of voluntary export restraints (VER), which are discriminatory and bilaterally negotiated[48]. In other words, the VER are imposed on some countries but not globally, and its severity in terms of product coverage and degree of restrictiveness varies across countries. As they are supply side restraints, the exporting countries governments control the volume of exports by issuing licenses to their exporters[49].

Quotas are quantitative restrictions on imports that increase domestic prices by artificially limiting supply of the quota-restricted good. The artificial scarcity creates a "price wedge"[50] between international and domestic prices, benefiting those producers having access to the restricted market. By selling to a restricted market, exporters can increase profits by this price wedge, capturing quota rents[51].

A quota that "effectively limits the supply of a product"[52] is known as "binding quota" and is measured by its utilization rate. Since once a quota is filled the restricted market is closed[53], binding quotas can be used as a proxy for the degree of restrictiveness faced by an exporter. Although the literature diverges about the filling

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[45] The "Swiss formula" is discussed in Section 5.
[46] WTO at http://www.wto.org/english/tratop_e/markacc_e/nama_negotiations_e.htm
[47] *Ibidem.*
[48] Dean et al (2004), page 2.
[49] *Ibidem*
[50] Expression used by The Commonwealth Secretariat (2004).
[51] The Commonwealth Secretariat (2004), page 15.
[52] Dean et al (2004), page 2.
[53] However there are some provisions allowing countries to adjust the quota level for some products where the quantity released exceeds the limit imposed, by using limits of other product lines.

rate determining a binding quota, most authors believe a fill rate higher than 95 percent to be binding. Conversely, some authors consider that even quotas showing low utilization rate can be binding in exporting countries[54].

The tables 3.4 and 3.5 presents the number of quotas having utilization rates larger than 95 percent and those filled at 100 percent, for some selected countries. It is possible that quotas presenting a filled rate below 100 percent effectively restrict trade because a good management of exported quantity[55], as well as due to a poor control of the quantity released[56].

Table 3.3.1: Number of US apparel quotas filled up at 95 and 100 percent, MFA categories, selected countries.

	1998		2000		2002		2004	
Fill rate	95%	100%	95%	100%	95%	100%	95%	100%
Bangladesh	9	3	9	2	6	2	0	0
China	8	1	8	0	6	1	7	0
India	5	0	0	0	2	0	2	0
Hong Kong	4	0	5	0	2	0	2	0
Pakistan	0	0	4	1	6	2	10	5

Source: USCBP[57]

Table 3.3.2: Number of EU apparel quotas filled up at 95 and 100 percent, ATC categories, selected countries.

	1998		2000		2002		2004	
Fill rate	95%	100%	95%	100%	95%	100%	95%	100%
China	18	17	22	16	15	9	13	7
India	4	3	4	4	6	6	5	3
Hong Kong	7	4	8	3	5	3	3	1
Pakistan	3	0	3	1	2	2	3	3
Vietnam	10	8	10	7	14	13	8	7

Source: SIGL[58]

The quota system generates strong distortion on the T&C trade, as well as on investment patterns. Quota rents generate strong incentives to resource allocation in sectors producing restricted goods, bringing producers to enter the market

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[54] Dean et al (2004), page 2.
[55] This could be the case of Hong Kong, who presents a high number of the US quotas with a filled rate larger than 95 percent.
[56] This may be the case of Bangladesh and Pakistan.
[57] United States Customs and Border Protection at
http://www.cbp.gov/xp/cgov/import/textiles_and_quotas/textile_status_report/archived/
[58] Système Intégré de Gestion des Licenses at http://trade.ec.europa.eu/sigl/choice.html

independently of their competitiveness[59]. Because quantitative restrictions investment flows are attracted by countries having both low labor costs and high quota base. Once the larger established low cost producers reached their export ceiling, filling up the limits imposed by importers, other countries will receive the investment needed to start up their apparel industry[60]. This applies to Thailand, Philippines, Indonesia and Bangladesh, but also to smaller exporters such as Lesotho, Swaziland and Nepal. Although development of an apparel industry is considered an important means to fight poverty in DC and LDC, many exporters under the MFA regime may be economically inefficient preference-dependent economies.

At the end of the Uruguay Round it was agreed by a voluntary commitment, known as "Textiles and Clothing Agreement" (ATC), to integrate T&C goods in the GATT 1994 and to phase out quotas gradually over a ten years period. The ATC requires the integration of articles from four different groups of products, representing minimum percentages of their respective import volumes in 1990, in parallel to an enlargement of existing quotas[61].

Table 3.3.3: ATC quotas phasing out

Phase	Starting at	Products Integrated (in % of 1990 imports)	Annual growth rates of existing quotas (%)
1	January 1995	16	16
2	January 1998	17	25
3	January 2002	18	27

Source: WTO

The elimination of quotas should be gradual, allowing importers and exporters to prepare their industries to a quota-free world. Because the importing countries were free to choose which products would be integrated on each phase of the process, most of the articles integrated in the first stage were not under quotas, while those integrated in the second and third stages presented low utilization rates, leaving the categories presenting high values and utilization rates[62]. Hence 89 percent of US

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[59] The Commonwealth Secretariat (2004), page 15.
[60] Freund et al (2004), page 2-7.
[61] WTO at http://www.wto.org/english/tratop_e/texti_e/texti_e.htm
[62] Andriamananjara et al (2004), page 61.

imports on apparel and 47 percent of its textiles imports will be integrated in January 2005[63].

The quotas phasing out may cause a reallocation of RMG production and a drop in relative prices. Countries that have been facing more restrictive market access may have an improvement of their competitive position[64]. Preference-dependent economies may suffer losses in output, employment and exports revenues coming from two sources: the loss of quota rents and losses from supply changes[65]. An increase in global trade is expected, yet the impact may differ across countries. Apparel companies and retailers will likely reduce the merchandise's cost structure by consolidating their sourcing among fewer competitive and reliable producers[66].

The end of the quotas system may also change the international investment pattern. Under the MFA the main factors influencing investment and sourcing decisions were the quota availability and its costs. With the quotas phasing-out other factors will grow in importance, such as the factors of production's cost and availability, economic governance, good infrastructure (roads, ports, reliable sources of energy and water) as well as the reliability, efficiency and flexibility of suppliers and the proximity to major world markets[67].

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[63] *Ibidem.*
[64] Yang & Mlachila (2005), page 3.
[65] Commonwealth Secretariat (2004), page 16.
[66] Freund et al (2004), page 3-1.
[67] *Op.cité*, page 3-4. Freund et al (2004) presents the results of a survey about the main factors that may influence investment and sourcing decisions in a quota free environment.

4.   Major Players: Overview

The world T&C sector exhibits different degrees of specialization across countries, suggesting a tendency to segmentation around three different types of goods: low prices RMG, brand goods sector and a fashion segment[68]. The low prices wearing apparel may be produced in DC, while brand and fashion goods may be produced in both industrial countries and DC presenting high value activities[69].

Most of the world's apparel exports go to the EU, US and Japan[70]. The EU apparel trade is mainly intra-EU, accounting for two third of its imports. The EU is responsible for 36.4 percent of the world exports, although about 80 percent is traded within the EU. The extra-EU (25) trade embraces only 7.4 percent of the world's total exports. The European T&C sector is mostly concentrated in brand and fashion goods presenting high quality, creativity and innovation. A significant part of the industry presents low product differentiation with respect to imports coming from low costs competitors, and may suffer from trade liberalization[71].

As in most developed countries, the US apparel industry presented a steady decline over the past decades, mostly due to both the increase in import competition and the clothing production's relocation in low cost Latin American neighbors[72]. The US is responsible for 28 percent of the world's imports in clothing, but the sector is not export oriented, embracing only 2 percent of the international T&C trade.

Among restricted countries, China and Hong Kong are major single players accounting for more than one fourth of the global T&C exports. China is the world largest supplier of textiles and apparel with 16 percent of the world's market share[73]. China has abundant supply of young educated workers, allowing relative low wages

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[68] IFM (2004), page 155.
[69] High value activities refer to the "value derived from significant fashion content, better quality and prices, reactive production, integrated design, sophisticated fabric handle and touch etc". IFM (2004), page 173. Among the DC included in this study, South Korea, Hong Kong, Taiwan and India may present high value activities.
[70] A table presenting the world's main apparel importers and exporters is available in the annex to Section III.
[71] IFM (2004), page 12.
[72] *Op.cité*, page 218.
[73] Freund et al (2004), page E-3.

and high productivity[74]. Its T&C industry is fully integrated and the production is strongly rationalized[75]. In addition, China has efficient infrastructures. Conversely, China lacks in design and fashion capabilities and marketing know-how[76].

Exports from Hong Kong, Taiwan, and Macau declined between 1997 and 2001, mostly due to a shift in T&C production to lower wage suppliers, namely China. Conversely, the worldwide investment in apparel industry from companies originating from these countries rose during the same period[77]. South Korea has a high-skilled high-wages labor force. In order to keep the market share it developed a high value added T&C sector by producing technical textiles, design and fashion[78].

Both Pakistan and India have poor infrastructure and excessive government's regulations. Pakistan exports rely heavily on intermediate textiles products. It presents a large supply of cheap unskilled labor and access to raw materials. Still, it is likely that Pakistan will continue to be a global supplier of cotton and fabrics[79]. India has a T&C sector covering the entire production chain, cheap labor but low productivity when compared with China. It has skilled labor and design expertise, producing a broad assortment of wearing apparel. It is one of the world's largest textiles producers[80]. However India lacks on roads and ports infrastructure, and has an inefficient electricity supply.

Among ASEAN countries, Indonesia's industry is vertically integrated with a large synthetic fiber manufacturing industry, however social and political instability may reduce its competitiveness[81]. Cambodia and Vietnam are two of the fastest growing exporters of T&C in the world[82].

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[74] According to IFM (2004), page 177, labor costs in China is 20 % higher than India and Sri Lanka, 40 % than Indonesia, 100 % than Pakistan, 180 % than Bangladesh. However, when productivity, reliability and indirect costs are brought into the picture, China's quality / price ratio is unbeatable: Its cost per minute averages are the same as in India, Indonesia or Viet Nam and 25 % less than in Pakistan.
[75] IFM (2004), page 167.
[76] *Op.cité*, page 172.
[77] Freund et al (2004), page E-3.
[78] IFM (2004), page 168.
[79] Freund et al (2004), page 3-15.
[80] *Op. cit.*, page 3-15.
[81] *Op. cit.* pages G-6 and 3-16.
[82] *Op. cit.* pages G-5.

IV. Bangladesh

1. Overview

Bangladesh is situated in Southern Asia, bordering the Bay of Bengal, between Burma and India. Most of the country is flat alluvial plain, being regularly inundated during the summer monsoon season, hampering the economic development[83]. During the British colonization, Bangladesh was part of East India territories, which became independent in August 1947. East India was divided between Hindus and Muslins, giving birth to India and Pakistan, the latter being divided in two territories separated by the former. Because the hegemonic policy undertaken by Islamabad, the eastern territory began to ask for more autonomy. In December 1971, after a war that devastated its economy, the East Pakistan became an independent state: the People's Republic of Bangladesh[84].

After independency, Bangladeshi economy faced severe external sector difficulties coming from both a large domestic deficit and an expansionary monetary policy, leading to an overvaluation of the real exchange rate[85]. From 1972 to 1975, the regime became highly interventionist, imposing strong protectionist measures and massive nationalization of manufacturing and services sectors[86].

From 1975 to 1991, Bangladesh was governed by the army. Taking distance from the socialist government, the new regime started to deregulate the economy through policy reforms and liberalization. As long run strategy was lacking, the extent of these reforms stayed narrow. In the mid-eighties, the structural adjustment policies imposed by the "Washington Consensus" brought more effective liberalization to the economy[87]. Because highly unpopular, these measures caused social conflict outbreaks, ending the military regime.

During the early 1990's, the new (democratic) regime started an ambitious plan for trade liberalization and economic stabilization. Implemented trade liberalization

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[83] At https://www.cia.gov/cia/publications/factbook/geos/bg.html
[84] Historical overview from Cordelier, Serge, *"Le dictionnaire historique et géopolitique du 20ème siècle",* la Découverte, Paris, 2002, pages 67 and 68.
[85] Rahman, N. (2005), page 107.
[86] The rate of State-owned enterprises rose from 34 percent in 1970 to 92 percent in 1972. *Ibidem.*
[87] *Ibidem.*

measures included reduction on import tariffs, elimination of quotas and other non-tariff barriers, and flexible exchange rate regime. In order to encourage foreign direct investment and promote exports, two export processing zones (EPZ) were created[88]. From 2002, Bangladesh started to benefit also from preferential access to the European market through the "Everything But Arms" (EBA) program[89].

2. Apparel Industry in Bangladesh

From 1976 to 1985, the average GDP growth was 3.8 percent[90], passing to 4.8 percent during the 1990s, and reaching an average growth of 5.4 percent from 2000 to 2006. However steady, the income growth was offset by a high birth rate. From mid 1980s, a stable decline in natality enabled a boost in the growth rate of GDP per capita which passed from 237 US$ in 1985 to 443 US$ in 2004.

Graph 4.1: Rate of Growth, period average in percentage
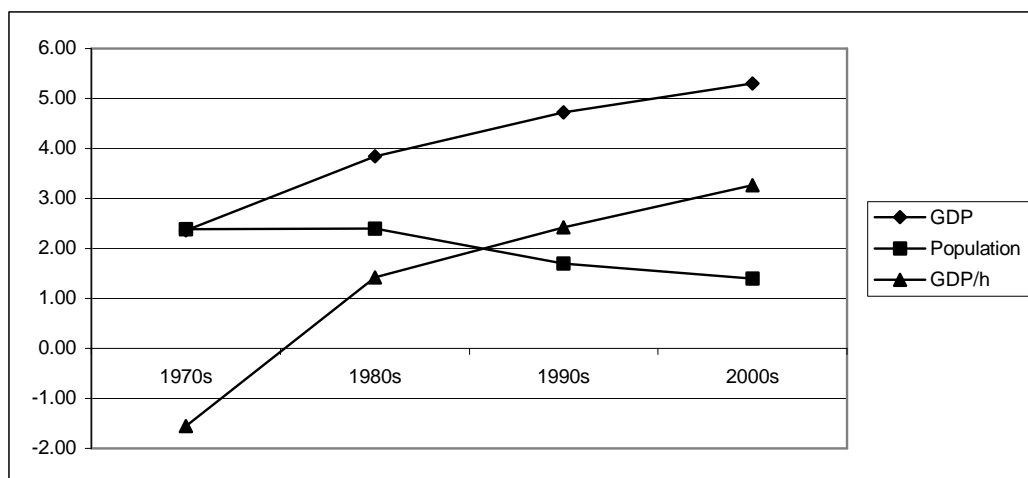
Source: United Nations Statistic Division and staff calculation

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[88] *Op.cite*, pages 107 to 110.
[89] From 1971 Bangladesh is beneficiary of the UNCTAD's General System of Preferences (GSP). However, the GSP does not include T&C goods. In 2001 two programs including preferential access to wearing apparel were created: the European "Everything But Arms" (EBA) benefiting all LDC, and the North-American "African Growth Opportunity Act" (AGOA) benefiting only African LDC. The US has no preferential access program for T&C exports coming from Asian LDC, probably because Bangladesh is a huge exporter.
[90] Liu et al (2005), page 5.

According to the IMF (2005), sound macroeconomic policies, together with financial and trade reforms, are the key factors explaining Bangladesh growth. These reforms had an impact on the income as well as on its structure[91]. However, Bangladesh still is a "rural based economy"[92] where the agriculture employs about 22.9 percent of manpower, being accountable for about 20 percent of the GDP in 2003.

Apparel is the largest single contributor to the past decade's growth, becoming a dominating sector in Bangladesh's export earnings. Nevertheless, it represented only 9 percent of the GDP in 2000[93], mostly due to a lack of domestic inputs, reducing the value added and profit margins of the RMG sector. In 2004, Bangladesh's value added by the industry in the GDP was 19 points lower than China's[94].

Bangladesh was the 9th largest exporter of wearing apparel in 2004, embracing 2.2 percent of the world market. RMG exports represented only 10 percent of total export earnings in 1984, passing to about 75 percent in 2004 [95]. While the exports of the clothing industry boosted, the participation of the traditional jute sector in total exports earnings diminished[96].

Graph 4.2: Bangladesh exports of Textiles and RMG in thousand of US$
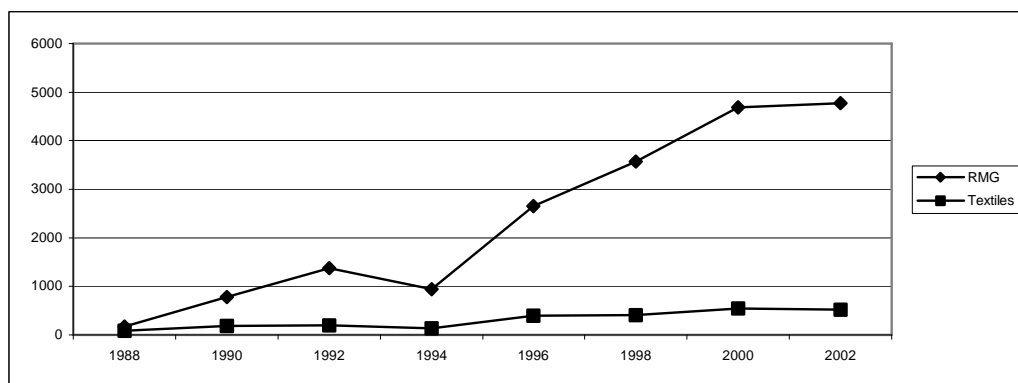
Source: WITS

T&C exports in 2004 accounted for 82,3 percent of total value of Bangladesh's exports, where RMG accounted for 71.9 percent. The main importing markets are the

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[91] Rahman, N. (2005), page 103.
[92] Freund et al (2004), page F-4.
[93] *Ibidem.*
[94] *Ibidem.*
[95] Liu (2005), page 9.
[96] Yang & Mlachila (2005), page 7

US and EU, accounting for 82.2 percent of its total exports, suggesting a strong reliance on restricted markets.

Table 4.2.1: Bangladesh's exports and share of exports to restricted markets in million US$ and percentage.

	1997		1999		2001	
	Value	Share	Value	Share	Value	Share
United States	1559	41%	1891	43%	2352	43%
European Union	1859	48%	2092	48%	2742	50%
Canada	78	2%	93	2%	115	2%
Total restricted markets	*3496*	*91%*	*4076*	*93%*	*5209*	*95%*
All other	*341*	*9%*	*296*	*7%*	*317*	*6%*

Source: USITC

The development of RMG sector in Bangladesh is the consequence of restrictions in market access due to the quota regime. Originally launched by foreign investors looking for quota access to restricted markets and abundant cheap labor, the apparel industry in Bangladesh became mostly domestic owned due to a government policy restricting the access to foreign investors[97]. In order to preserve apparel quota rents to domestic manufacturers, foreign investment's access was restricted to the EPZ, which represents only about 10 percent of total exports[98].

At the present, Bangladesh has a large export driven apparel industry, completely private owned[99] and representing an important source of income to the poor. RMG is the sector with the fastest and largest growth rate in the economy, being responsible for more the 2 million of direct jobs, most of them occupied by women. The apparel industry is also responsible for about 10 million of indirect employment[100].

On the other hand, the textile industry is small and inefficient. Most of the home produced textiles inputs do not meet the international quality standards. In 1999, only 10 percent of mills could produce export quality yarns, representing only 20 percent of domestic demand.[101] 95 percent of the cotton used by the T&C sector is imported, mostly from India and the US. Cotton imports are expected to rise about fivefold from

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[97]Yang & Mlachila (2005), page 6.
[98] *Ibidem.*
[99] Freund et al (2004) page F-5.
[100] *Op.cité* page F-5; Yang & Mlachila (2005), page 5.
[101] According to Freund & all. (2004), in 2000, about 70 percent of apparel industry inputs were imported, including 80 percent of woven fabrics and 30 percent of its yarns.

1998 to 2006[102].In order to reduce Bangladesh's dependency on imported inputs the government started to provide incentives to modernize the sector, expanding textiles' production. As a result, the knitted garment industry was able to comply with the 51 percent of domestic and regional value added requirement[103] and export to the EU by preferential channel.

3.   Competitive Analysis

Weak governance and poor infrastructure hamper Bangladesh's export competitiveness[104]. In addition, the lack of inputs to the apparel industry may present a serious risk once quotas are removed.

Factors of Production

Bangladesh has an abundant supply of low cost labor, accounting roughly 61 million of people[105], though low skills level undermines productivity. The country's apparel industry hourly wages are about 0.39 US$, one of the lowest wages among Asian producers[106]. While wages and fringe benefits in China are about twice Bangladesh's values, the annual value added by workers in the former is about three times as large[107].

Table 4.3.1: Comparing labor costs and productivity, selected countries

	Labor Costs	Value added Per employee	Wages	Productivity
Country	US$/Shirt	US$	$/year	Shirts/worker/year
Bangladesh	0.11	900	290	2536
India	0.26	2600	668	2592
Pakistan	0.43	2500	1343	3100

Source: Freund et al (2004), page 3-7 and Yang & Mlachila (2004), page 20

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[102] Freund et al (2004), page F-6
[103] Yang & Mlachila (2005), page 10.
[104] Baysan et al (2005), page ii.
[105] This refers to the work force only. The total population in 2004 was about 137 million of inhabitants.
[106] Freund et al (2004), page 3-7.
[107] *Ibidem.*

Bangladesh is highly dependent on imported inputs. Under the MFA regime Bangladesh could enjoy importing inputs at international prices, reducing significantly production costs. The elimination of quantitative restrictions may increase China's demand for textiles, affecting its international prices. In addition, there is a risk that traditional suppliers aim to develop their own RMG industry, causing shortage of supplies[108]. Finally, the restrictions imposed on input's imports[109] may increase the lead-time, reducing the flexibility to respond to quick turnaround orders.

In addition, Bangladesh's export base is concentrated on a small range of goods such as T-shirts, shirts, trousers, jackets and sweaters[110]. The low diversification level of the apparel industry may increase the sector's vulnerability to changes in international demand.

Infrastructure

Bangladesh has poor transport infrastructure. In 2004, only 10 percent of its total roads were paved, compared to 45.7 percent in India and 97.5 percent in Thailand[111]. In addition, roads are poorly constructed, with inadequate maintenance. Furthermore, Bangladesh suffers from low integration of different modalities of transportation, undermining private activity[112].

Bangladesh also lacks in port structure. The main export gateway is the port of Chittagong[113], coping with 85 percent of all goods traded by the country[114]. It is poorly managed, has obsolete machinery and labor unrest, resulting in low productivity, high costs and low terminal container's capacity. Ship turnaround time is 5 to 9 times higher than a standard efficient port[115], affecting apparel producer's

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[108] IFM et al (2004), page 250.
[109] For example, all inputs imported from India have to be shipped to Chittagong port, often via Singapore. Baysan et al (2005), page 35.
[110] IFM (2005) page 247
111 World Bank Development Indicators Database at
http://www.worldbank.org/data/countrydata/countrydata.html
[112] Baysan et al (2005), page 24.
[113] Yang & Mlachila (2005), page 22.
[114] Baysan et al (2005), page 24.
[115] *Ibidem.*

flexibility. In addition, imported inputs face time-consuming customs procedures, excessive regulation, and high corruption[116].

Industries in Bangladesh also suffer from water and electricity shortages. The electricity access covers only 30 percent of the population, 80 percent of which are in urban areas. Bangladesh's per capita electricity generating capacity is 11 times smaller than Thailand's, 8 times smaller than China's, and 4 times smaller than India's. The telecommunication services are underdeveloped[117]. With 8.3 telephones mainlines per 1'000 inhabitants, Bangladesh's communications facilities are 70 times smaller than China[118].

Foreign Direct Investment

The international investment in Bangladesh is low, in part because underdeveloped infrastructure, but principally due to government restrictions to foreign investment: The FDI entering apparel sector must be associated with the development of backward linkage facilities[119].

FDI is frequently associated with transfer of technical and managerial skills from abroad. By restricting it, the government slows down export diversification and production upgrading, reducing Bangladesh's competitiveness to low wages and quota access[120]. In addition, Bangladesh has been kept aside of global value chains loosing important channels to export sales[121].

According to the UNCTAD FDI inward index[122], which ranks countries by the FDI inflows in relation to their economic size, Bangladesh's FDI attractiveness is quite low. In the period between 2002 and 2004, it ranks 122nd in 140 countries, while

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[116] According to Baysan et al (2005), page 26, the time needed to get a shipment of products across the customs is on average 11.7 days. The same procedure in India or Chine takes 7.5 days, and in Malaysia only 3.4 days.
[117] According to Baysan et al (2005), page 26, Bangladesh has one public call office per 32'000 habitants. India has 1 per 1'000. The average cost per telephone is 10 times higher in Bangladesh than in India.
[118] *Ibidem.*
[119] *Op.cité*, page 35.
[120] Yang & Mlachila (2005), page 22.
[121] *Ibidem*.
[122] http://www.unctad.org/Templates/WebFlyer.asp?intItemID=2471&lang=1

Hong Kong ranks 7th, China 45th and Vietnam 50th. In 2003, only 0.29 percent of the FDI entering the country went to T&C industry[123].

Graph 4.3: FDI inward performance index, 2002 to 2004, selected countries.

FDI Inward Performance Index
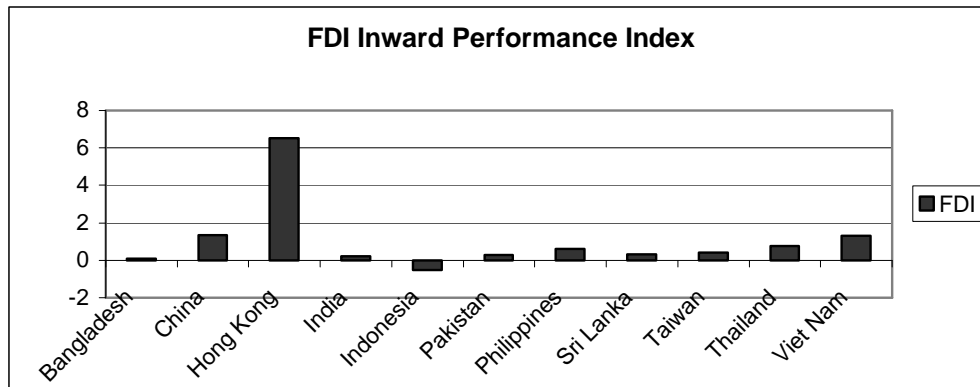
Source: UNCTAD, indexes for period 2000-2002

Economic Governance

The quota removal will change the sourcing pattern, and other variables will gain importance, such as business climate, which includes social and political stability, safety of personal, and government incentives to trade, as well as transparency and predictability of legal and regulatory systems, and corruption level[124].

According to the World Bank, governance can be defined as " the traditions and institutions by which authority is exercised for the common good" [125]. The quality of governance has three dimensions: political, economic and institutional. The political dimension includes the process of selection, control and replacement of the political authority. The institutional and economic dimensions refer to the respect for the economic and social institutions, as well as the government's capacity to manage its resources and implement policies[126].

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[123] http://www.jetro.go.jp/bangladesh/eng/link_files/fdi_swfipboi0405.html
[124] Freund et al (2004), page 3-7.
[125] The World Bank at http://www.worldbank.org/wbi/governance
[126] The World Bank developed six indicators of good governance. They are "voice and accountability" (which includes the political regime and freedom of expression, freedom of association and free media); "political stability and absence of violence"; "government effectiveness" (including the quality of public services, the quality of policy formulation and implementation, and the government's credibility); the "regulatory quality" to promote the development of the private sector; "the rule of law"

Table 4.3.2 compares the market share, the World Bank's governance indexes and the CPI for Bangladesh and its main competitors. Voice and accountability seem to have a small impact on market share. Without accounting voice and accountability, and political stability, Bangladesh presents the weakest governance.

Table 4.3.2: Comparing market share and good governance indexes for some selected countries, values from 0 to 10.

Exporter	Market Share	CPI	Voice & Accountability	Political Stability	Government Efficiency	Regulation Quality	Rules of Law	Corruption Control
China	0.34	3.40	1.96	4.69	5.10	4.23	4.17	3.82
Bangladesh	0.18	1.50	3.68	2.80	3.51	2.68	3.22	2.42
India	0.10	2.80	5.57	2.83	4.95	4.05	4.97	4.24
Hong Kong	0.07	8.00	5.44	7.39	8.13	8.75	7.76	8.12
Indonesia	0.06	2.00	4.14	1.80	4.17	4.12	3.36	3.08
Thailand	0.05	3.60	5.50	4.25	5.74	5.24	5.00	4.40
South Korea	0.04	4.50	6.53	5.88	6.85	6.51	6.33	5.24
Pakistan	0.04	2.10	2.38	1.67	3.97	3.22	3.34	2.88
Sri Lanka	0.03	3.50	4.65	2.72	4.41	5.16	5.04	4.66
Taiwan	0.02	5.60	6.93	6.01	7.38	7.22	6.64	6.26
Philippines	0.01	2.60	5.05	2.55	4.66	4.61	3.67	3.84
Vietnam	0.01	2.60	1.96	5.48	4.27	3.79	3.80	3.38

Sources: The World Bank[127] and The Transparency International

Weak governance hampers Bangladesh's export competitiveness[128]. Corruption is endemic[129], mostly due to excessive regulation. The export-oriented apparel sector faces complex customs regulations when importing inputs and machinery[130], facilitating corruption. According to Corruption's Perceptions Index (CPI) from the Transparency International, Bangladesh ranks last among 145 countries, while China ranks 71st, India 90th and Pakistan 129th [131].

(which includes the quality of contract enforcement); and the "control of corruption" The WB homepage presents the indicators definitions and explanations about the methodology used to construct them. *Ibidem.*
[127] The indexes go from 0 to 10. The original coefficients have values from –2.5 to + 2.5.
[128] Baysan et al (2005), page ii.
[129] *Op.cite*, page 22.
[130] According to Baysan et al (2005), page 52, bribes paid at the point of import increases machinery prices by about 10 percent.
[131] The CPI is available at http://www.transparency.org/

The analysis of the RMG exporters' performance during the different phases of ATC quota liberalization suggests that Bangladesh, and most of the other Asian T&C exporters, may lose market share to China once the quotas are completely eliminated. Graph 4.4 shows the losses in market share for Asian apparel exporters from China's accession to the WTO[132].

Graph 4.4: Apparel value based market share for selected countries, 1995 to 2004.
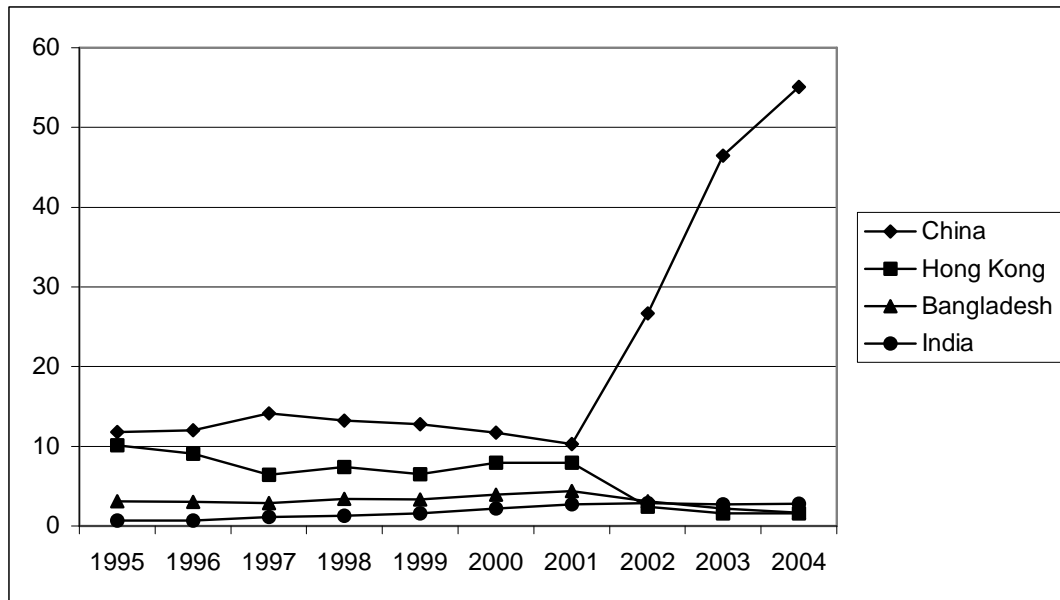
Source: Mayer (2004), page 17.

However there is a limit to China's capacity to increase exports without increasing costs. Also, China shows a tendency to produce goods with higher value added, reducing the importance of apparel on its total exports. Graph 4.5 shows China's manufactures' exports trends from 1990 to 2004. From 1998, clothing share in manufactured exports is decreasing steadily, while exports in fabricated metal products and machineries increases.

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[132] China became WTO member in 11 December 2001, and started to benefits from the ATC gradual quota liberalization, explaining at least in part its export performance from 2002.

Graph 4.5: China manufacture exports between 1999 and 2004
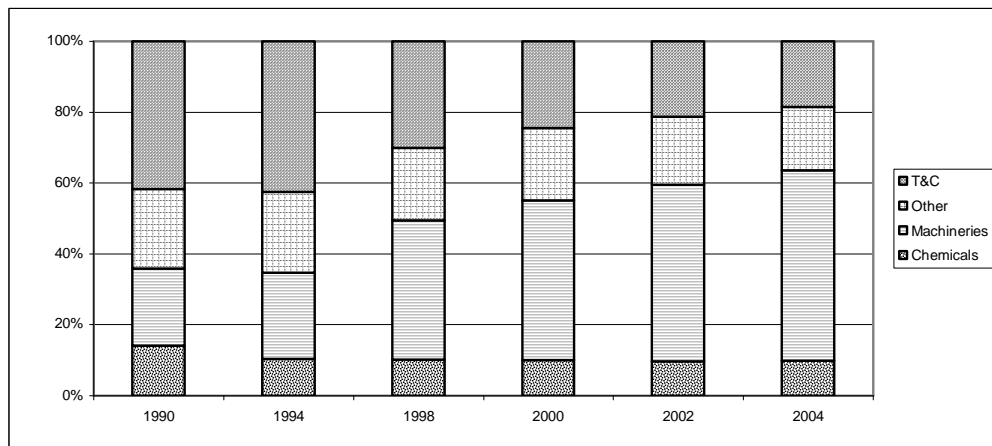
Source: WITS

The end of quotas system may reduce prices, but the effects on global demand are uncertain. An increase in the global demand could absorb and compensate in part the export losses for some countries[133].

In order to face the new apparel trade environment, Bangladesh has to fight corruption and increase good governance. Also, It has to review the government's investment policy in order to attract the foreign investment necessary to develop trade infrastructure, as well as to modernize and integrate the RMG industry. Finally, it has to simplify the custom regulations related with imports of inputs and machinery needed to the export-oriented sector, reducing as well the scope for corruption.

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[133] Ernst et al (2005), page 20.

V.   Estimating Preference Erosion under NAMA Negotiations

The first step to estimate the PE is to calculate the actual preference margin enjoyed by Bangladeshi exports. The preference margin at tariff line level is "the difference in percentage points between the most favored nation (MFN) and the preferential tariff rate"[134]. According to Low & all (2005), preference margins as a measure of preferences present some limitations because they do not take into account the importance of the product line covered by the preferences on the overall exports of the preference receiving country. In order to avoid this problem, tariffs (and preferences) faced by Bangladesh are weighed by the value of its exports on each product line (HS[135] 6 digits level).

Bangladesh relies on preferences schemas for its exports, receiving unilateral preferences from the EU (duty-free and quota-free access), but not from the US[136].

Table 5.1.1: Exports in million US$, tariffs and preference margins, in percentage[137].

	US			EU		
	Value of imports	Weighted tariffs	Preference Margin[138]	Value of exports	Weighted tariffs	Preference Margin
Knitted apparel	415	13.28%	0.01%	2'777	0.00%	11.85%
Not knitted RMG	1'138	9.98%	0.21%	1'728	0.00%	11.94%
Other made up textiles	55	7.68%	0.19%	32	0.00%	11.04%

Data source: Dataset

The preference margin measures the maximum tariffs "waiver" a country can enjoy. However, the exported product has to fulfill the RoO to be eligible to preferential access, which generates an administrative burden. Francois et al (2005) estimate this compliance costs to be about 4 percent of the products value in average, while Cadot

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[134] Low et al (2005), page 11.

[135] HS refers to "Harmonized Commodity Description and Coding System.

[136] Bangladesh is eligible to the US GSP (General System of Preferences) program. But the US GSP excludes most of T&C products, which explains the low values of preference margin enjoyed by Bangladesh. Until January 2005, US imposed quotas on Bangladeshi exports.

[137] Values for 2004. The product lines included in this section are those used in the gravity model presented in the next section.

[138] From an exporting country point of view, PM can be seen as the difference between the MFN tariffs and the tariffs it faces when exporting. For countries enjoying preferential access, Preference margin (%) = MFN tariff (%) - Preferential tariff (%)

et al (2005) situate this value between 6.8 and 8 percent[139]. Because the preference margins in the US are far below compliance costs, we assume that all exports entering this country pay the MFN tariffs.

On the other hand, while the preference margin is potentially high in the EU markets, Bangladeshi utilization rates are quite low. Inama (2005) estimates Bangladesh's utilization rates in the order of 49.55 percent for knitted apparel, 13.01 percent for not knitted RMG and 75.21 percent for other manufactured textiles.

After controlling for compliance costs (estimated to be about 4 percent) and low utilization rates, the net preference margin of Bangladesh in the EU is far from its initial value. The low utilization rate, especially for non-knitted RMG products, diminishes the risk of vulnerability due to tariffs reduction, but also raises the question about the scope of preferential access to European markets.

Table 5.1.2: Bangladeshi net preferences margin in the EU, percentage and thousand US$

Product line	Preference Margin	PM net of Compliance Costs[140]	Product Coverage	Preferences Utilization Rates	Net Preference Margin	Value of Net Preference Margin
Knitted apparel	11.85%	7.8500%	100.00%	49.55%	3.89%	108'045
Not knitted RMG	11.94%	7.9400%	100.00%	13.01%	1.03%	17'805
Other made up textiles articles	11.04%	7.0400%	99.92%	75.21%	5.29%	1'708

Data source: McMap from ITC, Dataset and staff calculations

Having the values of PM for Bangladesh, the second step is to simulate changes on the US and the EU clothing MFN tariffs[141] by using the Swiss formula. The Swiss formula is a non-linear formula presenting an important quality: While linear formula reduction keeps the proportion between high and low tariffs, the Swiss formula reduces higher tariffs rates more than lower tariff rates, and this in both absolute and

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[139] Cadot et al (2005), page 22, find that compliance costs when NAFTA countries export to the US are about 6.8 per cent, and these same costs are about 8 per cent when PANEURO countries export to the EU.
[140] Preference margin net of compliance costs = Preference margin (%) - compliance costs (%)
[141] NAMA negotiations aim tariffs reductions for all WTO members. However, when estimating PE one must analyze the importing countries' tariffs reduction only.

relative terms[142]. Because it fixes a ceiling positive tariff rate (given by its coefficient), "it is particularly effective in reducing tariff peaks since even the highest tariffs are reduced below the value [of the coefficient] 'a'." [143]

Swiss Formula: $\qquad t_{SF} = \dfrac{a.t_0}{a + t_0}$

Where: a is the ceiling positive tariff rate
$\qquad\qquad$ t_0 is the initial tariff
$\qquad\qquad$ t_{SF} is the final tariff

Because this formula is applied in a line-by-line basis, the simulations have to be carried out at the subheadings level (HS-6 digits level). Applying this formula with coefficients 6 and 10 on the MFN tariffs of the US and the EU gives the following reductions:

Table5.1. 3: Tariff simulation under different scenarios

	US					EU				
	MFN	MFN after reduction		Tariffs reduction		MFN	MFN after reduction		Tariffs reduction	
		SF 6	SF 10	SF 6	SF 10		SF 6	SF 10	SF 6	SF 10
Knitted apparel	13.28%	3.88%	5.32%	9.40%	7.96%	11.85%	3.99%	5.42%	7.86%	6.43%
Not knitted	9.98%	3.54%	4.72%	6.44%	5.26%	11.94%	3.99%	5.44%	7.95%	6.50%
Other	7.68%	3.07%	4.03%	4.61%	3.65%	11.04%	3.74%	5.08%	7.30%	5.96%

Data source: McMap from ITC and staff calculations.

A reduction on MFN tariff decreases preference margins. In the new tariff regime many preference-receiving countries will do better by not using their preferential access. Actually, depending on the coefficient used to reduce the MFN tariff, the difference between compliance costs and reduced preferences margins is too small, even negative. Where there is some margin left, it will not be enough to compensate for complying with RoO[144].

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[142] François & Manole (2005), page 5.
[143] *Ibidem.*
[144]The simulation using the Swiss formula with the coefficient equal to 6 eliminates Bangladesh's preference margin in the EU. The simulation using the Swiss formula with coefficient equal to 10 let a preference margin of 0.7 percent for knitted apparel, 0.18 percent for not knitted and 0.81 percent for other clothing products.

The reduction on MFN tariffs causes a drop on preference margins enjoyed in the EU, but also a diminution on tariffs costs in the US market. In 2004, the value of the US tariffs on Bangladeshi exports was about US$173 million. In the European market, while Bangladesh had US$ 192 million of duty release due to it preferential access[145], the tariff fee on exports not covered by preferences was about US$ 346 million.

Table 5.1.5: Bangladeshi exports to the EU: tariffs paid and preferences received in thousand US$.

| | EU | | |
Product line	MFN Duty (A)	Preferences received (B)	Tariff costs (A-B)*
Knitted apparel	329'135	163'086	166'048
Not knitted RMG	206'408	26'853	179'554
Other made up textiles	3'566	2'682	884
Total	539'109	192'622	346'487

Data source: Dataset and staff calculations

Under the *ceteris paribus* assumption, it is possible to do a simple comparison between the costs of MFN tariffs in 2004 with the costs Bangladesh would face for the same volume of trade but under reduced tariffs. By taking the difference between tariffs paid after and before the reduction, as well as the difference between preferences received, one can calculate the gains from lesser tariffs and the losses from smaller preferences.

Table 5.1.6: Simulation of duties to be paid under different scenarios, using 2004 exports value, in thousand US$.

| | Duty paid in the US | | | Duty paid in the EU | | |
	MFN	New MFN SF 6	New MFN SF 10	Before reduction	New MFN SF 6	New MFN SF 10
Knitted apparel	55'174	16'120	22'103	166'048	110'822	150'541
Not knitted	113'645	40'311	53'748	179'554	68'975	94'041
Other	4'248	1'698	2'229	884	1'208	1'641
Total	173'067	58'129	78'080	346'486	181'006	246'224

Data source: Dataset and staff calculations

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[145] After controlling for compliance costs, the preference margin enjoyed by Bangladesh falls to 127 million US$.

The sectors presenting higher utilization rates are more exposed to the PE. But the overall results are positive. Bangladesh gains from tariffs reduction; the stronger the reduction (Swiss formula with coefficient 6), the larger are the gains. Since most of Bangladesh's exports goes through the MFN channel, the reduction on duties paid due to reductions in tariffs goes from 195 to 280 million US$ (the Swiss formula with coefficient 10 and 6 respectively). Under the quotas system Bangladesh will be better off if tariffs are reduced.

These results differ from Rhaman & Shadat's (2006) essay, where Bangladesh losses from PE in Europe are larger than its gains in the US. The authors use different values for the Swiss formula's coefficient, but the main difference consists in the preference margin estimation: They do not take into account neither Bangladesh's utilization rates nor the compliance costs the country faces when using the preferential access to European markets. Thus, it is possible that their results are overstated.

VI.   Estimating Quotas Erosion: The Gravity model

1.   Overview

The Gravity model is a mathematical device used for the analysis of bilateral flows between different geographical entities in empirical research. Proposed by Jan Tinbergen in 1962, this adaptation of Newton's "Law of Universal Gravitation" has been applied in a whole range of international flows, such as trade, migration, tourism and foreign direct investment.[146] The gravity approach says that the attractiveness between two corps is proportional to the product of their mass and inversely proportional to the distance separating them. For economics, the attractiveness refers to trade flows; the distance is a proxy for trade costs, while the mass, measured by the GDP, can be seen as the trading partners capacity of both production and absorption[147]. Hence the general form of the gravity equation applied to economics will be[148]:

$$F_{ij} = R_{ij}^{\alpha} \frac{M_i^{\beta} M_j^{\gamma}}{D_{ij}^{\theta}} \qquad (1)$$

And its linear form is:

$$Ln(F_{ij}) = \alpha R_{ij} + \beta M_i + \gamma M_j + \theta D_{ij} \qquad (2)$$

o F_{ij} is the "flow" (trade flow, monetary flow, migration, etc) from origin i to destination j;

o M_i and M_j are relevant economic sizes of the two locations (GDP, GDP per capita or population).

o   Dij is the distance between the two locations, generally associated with transportation costs, but also time elapsed during shipment, synchronization costs, communication costs, transactions costs, and "cultural distance"[149].

o R_{ij} represents other factors that may influence trade.

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[146] Head (2003), page 2.
[147] Ernst et al (2005), page 17.
[148] Head (2003), page 2.
[149] Head (2003), pages 6 and 8.

The basic explanatory variables of the gravity equation are distance and mass[150]. However, economic trade theory allows the inclusion of many variables that may explain trade flows, like GDP per capita, corruption measurements, infrastructure facilities, exchange rate volatility, foreign direct investment, barriers to trade (such as tariffs, quotas, subsidies), as well as dummies for colonial history, similar language, whether landlocked, WTO membership, free trade agreements, decent work conditions, and openness to trade[151].

In the context of preference erosion, tariffs and quota restrictiveness are the two main variables. They enter the gravity equation to calculate how these barriers affect trade, and to estimate the potential trade flows without them.

Tinbergen's model presented good empirical results, leading many economists to study the microeconomic foundations of the gravity model. Linneman (1966), a member of Tinbergen's team, tried to elaborate a theoretical support to the gravity approach by using a Heckscher-Ohlin framework and found that trade depends on population size differential and trade resistance[152]. He was strongly criticized because using a partial equilibrium approach in an equation presenting a multiplicative form[153]. In 1979, Anderson used a trade share expenditure system to derive the gravity equation[154]. Bergstrand (1985, 1989) used a general equilibrium model of world trade to give to the gravity approach its first microeconomic basis. After that, a variety of theoretical and empirical studies have been done in order to derive the gravity model from different trade models, as Helpman and Krugman (1985), Helpman (1987), Baldwin (1994), Deardorf (1995), and Evenet and Keller (1998)[155].

The econometric research for the correct model specification and regression method was also important, in particular by the inclusion of panel data techniques in gravity estimation. Before that, gravity models were estimated by using a year-by-year cross

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[150] Ernst et al (2005), page 18.
[151] *Ibidem.*
[152] Krishnakumar (2002), page 4 and 5.
[153] Rahman, M. (2003), page 4.
[154] *Ibidem*
[155] For a detailed overview on Gravity model foundations, see Rahman, M. (2003).

section of countries or by pooling countries cross section across time, without counting for specific effects[156].

The use of panel data techniques in the gravity relationship increases the number of observations and provides more accurate estimates for the regressors. Also it allows for controlling issues such as unobserved heterogeneity and non-spherical disturbances.

Heterogeneity across units, or individual effects, is an integral part of panel data analysis[157]. Individual effects refer to a set of individual or group specific variables constant over time. When all individual effects variables are observed, the model can be estimated by OLS. But if there is an unobserved heterogeneity across units, the omitted variable will lead to a biased and inconsistent least square estimator[158]. In the absence of correlation between the excluded variable and the variables included in the model, the random effect approach can lead to efficient estimators. But if the included and excluded variables are correlated, a fixed effect approach must be preferred.

In general, panel data sets may exhibit non-spherical disturbances, namely heteroscedasticity and autocorrelation. Autocorrelation occurs when "the variation around the regression function is not independent from one period to the next"[159]. Heteroscedasticity occurs when the error variance across individuals is not constant, which is much likely to occur when analyzing trade flows between different countries. Under non-spherical disturbances, OLS estimators are still consistent and unbiased, but not efficient relative to other unbiased estimators.

Finally, there is the problem of simultaneity that occurs when some regressors are endogenous to the dependent variable and therefore are likely to be correlated with the error term. As a country cannot export more than it produces, the gravity structure may present endogeneity between total exports and income. Also, because quotas and total exports influence each other, there may be endogeneity between these variables. Krishnakumar (2002) considers the endogenous variables correlated with both the

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[156] Mátyás (1998), page 3.
[157] Greene (2003), page 283.
[158] Trade is also influenced by political, cultural, historical and geographic factors that cannot be readily observed, and then will be omitted. When the omitted variable is correlated with the error term, the estimates will be biased.
[159] Greene (2003), page 192.

disturbances and the specific effects as "doubly endogenous", whereas those correlated only with the specific effects as "single endogenous"[160].

2.   The model

The gravity model to be will take the following form[161]:

$$y_{\text{odt}} = \alpha + \beta(X_{odt}) + \gamma(Z_{odt}) + \mu_o + \lambda_t + \varepsilon_{ijt} \qquad (3)$$

Where[162]:

o y_{odt} is the clothing exports from origin country 'o' to destination country 'd', in natural logarithm.

o X_{odt} includes the time variant variables[163], namely GDP, and GDP per capita for importing and exporting countries, all measured in natural logarithms; bilateral information on quota restrictiveness and tariffs, an index for FDI receptiveness (UNCTAD's FDI inward performance index), the exchange rate between trade partners (as a proxy for prices), and a variable for business infrastructure (number of telephones lines per 100 inhabitants).

o Z_{odt} includes the time invariant variables, namely dummies for common border, colonial links, plus the distance between the two capitals, measured in natural logarithms.

o μ_o refers to "individual effects", presenting specific effects for exporting countries.

o λ_t refers to "time effects".

Among the variables present in the model, the quota restrictiveness requests a more detailed explanation. The quota restrictiveness (QB) is a dummy variable that takes the value of one when a country faces a binding quota and zero otherwise. In this paper, binding quota refers to a quota that is completely utilized (filled at 100 per

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[160] In the SUR-EC-AR(1) model, Krishnakumar (2002) considers that the two incomes, relative size factor and relative factor endowment may be "double endogenous", while the distance between trade partners may be "single endogenous". Egger (2001) uses analogous notation, by labeling exogenous variables correlated with the error term as "single exogenous" and those uncorrelated as "doubly exogenous.

[161] In this paper, the gravity model will be estimated by using Krishnakumar's (2002) "SUR-EC-AR(1) System Gravity of Trade". Hence, from now on all equations have the same structure the author uses.

[162] See the annex to Section VI for detailed information about the variables and their sources.

[163] The gravity structure separates the time variant variables from time invariant variables as in Egger's (2002) model.

cent). From a country's point of view, only the binding quotas restrict trade[164]. For countries facing binding quotas tariffs are not binding because gains from quota rents compensate losses from tariffs. Hence when QB is equal to one, tariffs will be zero[165].

Since quotas are imposed at the product line level, the quota restrictiveness variable cannot be measured at the aggregated level, otherwise the role of quotas restriction on trade would be exaggerated. Hence, the gravity model will take the form of a system of 'm' equations, having the same variables as before, but measured at product line level.

3.   The econometric framework

The gravity equation that will be estimated is a multivariate system of equations where od (od = 1, …, N) refers to trade partners, t (t = 1,…, T) refers to a time period, and m (m = 1,…, M) corresponds to the different equations.

$$y_{\text{odt}} = \beta'(X_{\text{mod}\,t}) + \gamma'(Z_{\text{mod}\,t}) + \varepsilon_{mijt} \qquad , \text{m= 1, …, 20} \qquad (4)$$

$$\varepsilon_{mijt} = \mu_{\text{mod}} + \lambda_{mt} + v_{mijt} \qquad\qquad (5)$$

$$v_{mijt} = \rho_m \, v_{mij,t-1} + \omega_{mijt} \qquad\qquad (6)$$

It is assumed that trade residuals, v_{mijt}, follows an AR(1) structure, with $|\rho_m| < 1$, and ω_{mijt} ~iid (0, σ_ω^2), and that the autocorrelation coefficient might differ across equations. The variables are the same as before, except that exports, quotas, and tariffs are measured at the group level.

It is assumed that disturbances are uncorrelated across observations, and that μ_{mod}, λ_{mt} and v_{mijt} are uncorrelated with themselves and with each other.

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[164] However, from the market point of view all quotas influence prices and expectations of economic actors, having an impact on decisions about investment and sourcing. With the quota phasing-out, a drop in clothing prices and a change on FDI pattern are expected.
[165] Tariffs are calculated as: (1- QB)*tariffs rates.

$$E(\mu_{mij}\mu_{kij}) = \sigma_{\mu mk} \,\forall\; i,j$$

$$E(\mu_{mij}\mu_{ki'j'}) = 0 \text{ for } i \neq i' \text{ and/or } j \neq j' \qquad (7)$$

$$E(\mu_{mijt}\lambda_{mt}) = E(\mu_{mijt}v_{mijt}) = E(\lambda_{mt}v_{mijt}) = 0 \;\forall\, i,t \qquad (8)$$

The disturbance formulation will be:

$$E(v_m v_k) = \sigma_{\omega mk} I_N \otimes \frac{1}{1-\rho_m\rho_k}
\begin{bmatrix}
1 & \rho_k & \rho_k^2 & \cdots & \rho_k^{T-1} \\
\rho_m & 1 & \rho_k & \cdots & \rho_k^{T-2} \\
 & & & \cdots & \\
\rho_m^{T-1} & \rho_m^{T-2} & & \rho_m & 1
\end{bmatrix} \qquad (9)$$

$$= \sigma_{\omega mk}(I_N \otimes \Omega_{vmk})$$

And in vector notation:

$$\varepsilon_m = (I_N \otimes i_T)\mu_m + v_m \qquad (10)$$

$$E(\varepsilon_m\varepsilon_k') = \sigma_{\mu mk}(I_N \otimes i_T i'_T) + \sigma_{\lambda mk}(i_N i'_N \otimes I_T) + (I_N \otimes \tilde{\Omega}_{vmk}) \qquad (11)$$

$$E(\varepsilon\varepsilon') = (I_N \otimes I_M \otimes i_T)\Sigma_\mu(I_N \otimes I_M \otimes i'_T) + (i_N \otimes I_T \otimes I_M)\Sigma_\lambda(i'_N \otimes I_T \otimes I_M) + \tilde{\Omega}_v \quad (12)$$

This is an error component model with AR(1) disturbances that must be transformed to get rid of autocorrelation. The Krishnakumar (2002) treatment consists in using the Cochrane-Orcutt type transformation, $I_N \otimes C$. For this, C must be such that C'C= Ω_v and $C\Omega_v C'=I_T$. This procedure must bring the equation to the classical error component framework, allowing GLS estimation[166]. Because the coefficient of autocorrelation differs across equations, there will be M different transformation matrix, C_m, given by:

$$C_m =
\begin{bmatrix}
-\rho_m & 1 & 0 & \cdots & 0 \\
0 & -\rho_m & 1 & \cdots & 0 \\
 & & & \cdots & \\
0 & 0 & \cdots & -\rho_m & 1
\end{bmatrix} \qquad (13)$$

such that $C_m'C_m = \Omega_{vmm}$, and that $C_m'\Omega_{vmm}C_m = \sigma_{\omega mm}I_T$.

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[166] For more specific details on the transformation procedure, see Krishnakumar (2002) and Egger (2001).

For the whole system, the transformation will be:

$$\tilde{\varepsilon} = \begin{bmatrix} (I_N \otimes C_1)\varepsilon_1 \\ (I_N \otimes C_2)\varepsilon_2 \\ \dots \\ (I_N \otimes C_M)\varepsilon_M \end{bmatrix} \tag{14}$$

Hence,

$$E(\tilde{\varepsilon}_m \tilde{\varepsilon}_k{}') = \tilde{\sigma}_{\mu mk}(I_N \otimes i_{T-1}i'_{T-1}) + \tilde{\sigma}_{\lambda mk}(i_N i'_N \otimes I_T) + \sigma_{\omega mk}(I_N \otimes I_{T-1}) \tag{15}$$

where $\quad \tilde{\sigma}_{\mu mk} = \sigma_{\mu mk}(1-\rho_m)(1-\rho_k)$, and $\tilde{\sigma}_{\lambda mk} = \sigma_{\lambda mk}(1-\rho_m)(1-\rho_k)$ $\tag{16}$

which leads to

$$V(\tilde{\varepsilon}) = \tilde{\Sigma}_\mu \otimes (I_N \otimes i_{T-1}i'_{T-1}) + \tilde{\Sigma}_\lambda \otimes (i_N i'_N \otimes I_T) + (\Sigma_\omega \otimes I_N I_{T-1}) \tag{17}$$

The spectral decomposition of the transformed errors' variance covariance matrix brings the model to the classical SUR-EC framework. The transformed model will be a quasi-difference model as follows[167]:

$$y_{\text{odt}} - \rho_m y_{\text{odt-1}} = \beta'(X_{\text{mod}\,t} - \rho_m X_{\text{mod},t-1}) + \gamma'(Z_{\text{mod}\,t} - \rho_m Z_{\text{mod},t-1}) +$$

$$+ (1-\rho_m)\mu_{\text{mod}} + (1-\rho_m)\lambda_{mt} + \omega_{mijt} \tag{18}$$

Where the coefficient of autocorrelation is calculated as:

$$\hat{\rho}_m = \frac{\sum_t \hat{\varepsilon}_{mijt}\hat{\varepsilon}_{mji,t-1}}{\sum_t \hat{\varepsilon}_{mij.t-1}} \tag{19}$$

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[167] In order to keep the first observations, they will be transformed by $(1-\rho^2)^{1/2}$.

4.   Methodology

The gravity equation is:

$$Exp_{\text{modt}} = \alpha_0 + \beta_1 QB + \beta_2 tariffs + \beta_3 GDP_{ot} + \beta_4 GDP_{dt} + \beta_5 GDP/h_{ot} + \beta_6 GDP/h_{dt} +$$

$$\beta_8 FDI + \beta_8 Exch\_rate + \beta_9 phone + \gamma_1 dist + \gamma_2 contig + \gamma_3 col45 +$$

$$\mu_{\text{mod}} + \lambda_{mt} + v_{mijt}$$

Where:

o QB is a dummy taking the value of one if exporting country faces a binding quota;

o $tariffs$ refer the tariffs a country faces when exporting clothing, measured at HS 2 level.

o GDP_{ot} and GDP_{dt} refers to natural logarithm of exporting and importing countries' income.

o GDP/h_{ot} and GDP/h_{dt}, refers to exporting and importing countries natural logarithm of per capita income.

o FDI refers to the UNCTAD's FDI inward performance index, an index aiming to capture a country's FDI "attractiveness".

o $Exch\_rate$ refers to the exchange rate between trade partners; phone refers to number of phones per 100 habitants.

o $dist$ refers to the distance between importer and exporter capitals, in natural logarithm.

o $contig$ and $col45$ are dummies for common borders and colonial links, respectively.

o μ_{mod} refers to panel individual effects.

o λ_{mt} refers to panel time effects.

Positive signs are expected for β_3, β_4, β_7, β_9, γ_2, and γ_3, negative signs for β_1 [168], β_2, β_8 and γ_1, while the signs for β_5 and β_6 may be positive or negative.[169]

The estimation was undertaken as follows: First, the system of 20 equations with panel effects was regressed by instrumental within estimation (3SLS) and its residuals were used in order to find ρ_m by using the equation (19)[170]. The model was then

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[168] It is expected quotas to have a negative impact on trade. But because quotas are imposed on countries having high exports value, the sign of this variable may be uncertain.
[169] Rahman, M. (2003), page 16, explains the ambiguity of per capita income by economies of scale effect (positive sign) and absorption effects (negative sign).
[170] Rho values by group are available in the annex to Section VI.

transformed by ρ_m to the quasi-difference equation (18), which includes individual and time effects. Finally the transformed model was regressed by using the Baltagi's EC2SLS approach.

Only exporting and importing countries' GDP are assumed to be "doubly endogenous", demanding to be instrumentalized. Instruments are importer and exporter's openness, measured as trade to GDP ratio. Even if QB must be endogenous it will not be instrumentalized because it is highly unlikely that appropriated instrument exits.

5.   Data Issues

The dataset consists of 4552 observations from 39 exporting countries and 15 importing countries, between 1997 and 2004. Importing countries are Austria, Belgium, Denmark, Germany, Spain, Finland, France, Greece, Ireland, Italy, Nederland, Portugal, Sweden, UK, and the US. The exporting countries are Austria, Belgium, Bangladesh, Cambodia, Canada, China, Denmark, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Italy, Lesotho, Luxembourg, Mauritius, the Nederland, Nepal, Pakistan, Philippines, Portugal, South Africa, South Korea, Spain, Sri Lanka, Swaziland, Sweden, Taiwan, Thailand, Turkey, Vietnam, UK, and the US. The panel is balanced.

The data covers exports[171] of clothing (categories HTS 61, 62 and 63), number of binding quotas (QB), tariffs, GDP, GDP *per capita*, distance, FDI "attractiveness", and share of phone users, plus dummies controlling for colonial links and common border. As suggested by Baldwin (2005) GDP and GDP per capita are measured in nominal terms (current US$). Detailed description of variables, their sources, as well as summary statistics are available on the annex to section VI.

Some variables that can enter gravity equations, such as indexes for economic freedom, and transparency (measuring the perceived corruption), were excluded from the model. This can be explained by the fact that there is no correlation between these

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[171] Because the model aims to establish the relationship between exports to restricted markets and quotas restrictiveness, unilateral trade flows were preferred to bilateral flows.

variables and total exports of clothing for the sample of countries used in the analysis. Actually, countries having similar export values present huge differences in the level of corruption and economic freedom, providing ambiguous coefficients for these variables[172].

In order to reduce the number of equations, groups of product lines were created using the quotas restrictiveness as criteria[173]. Thus, the product lines presenting the same QB across countries and over time were aggregated, allowing a significant reduction on the number of equations, which pass from more than 1670 products lines to 52 groups of products[174]. Finally, a sample of 20 groups[175] was draw, in order to carry on the estimation. Table 6.5.1 shows the total number binding quotas faced by exporters by year. Vietnam is the most restricted country with 44 binding quotas, followed by China with 40 and Indonesia with 31[176]. With the elimination of quotas these countries may increase their market share at the expense of less restricted countries.

Table 6.5.1: Number of binding quotas in the US and the EU, selected countries

Exporter	1997	1998	1999	2000	2001	2002	2003	2004
Bangladesh	4	3	1	1	1	2	-	-
China	7	9	6	6	3	2	4	3
Hong Kong	1	3	3	2	1	2	2	1
Indonesia	7	3	4	3	8	2	2	2
India	5	2	3	3	3	5	5	3
Pakistan	-	-	3	2	3	2	4	5
Philippines	4	-	5	2	-	3	3	1
Vietnam	6	6	8	5	6	7	3	3

Source: Dataset and staff calculation.

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[172] See the graph AS6.1 in the annex to Section VI.
[173] The creation of product groups presented some problems. The EU quota system uses the ATC categories, the US uses the MFA categories, and the export values are from the combined nomenclature (CN). The US provides a correlation between the MFA and the CN categories, but the EU does not provide the correlation between ATC and the CN. Hence the author had to create the correlation between the ATC categories and the CN system, convert both ATC and MFA categories to the CN to finally create the groups of products presenting binding quotas that are constant across countries and over time.
[174] There are 51 groups presenting at least one restriction, and one group representing the product lines without any quantitative restriction. Around 60 product lines were kept out of the sample because they could not be matched with the other groups.
[175] The criterion for selecting the sample's 20 groups was the value of Bangladesh's exports.
[176] These values refer to the 20 groups that enter the regression. If all 52 groups are taken into account, for the same period China has 122 binding quotas, Vietnam 87, and Indonesia 70.

Since groups were created in function of the number of binding quotas, they present a different number of products lines[177]. Also, importing countries are not constant across groups.

6. Results

The system of equations' estimation presents the coefficients for each variable in each group. In order to give an overall idea of these results, Table 6.6.1 presents the weighed average[178] of significant coefficients for the main variables, at a 5 percent significance level. The complete results are presented in the annex.

Table 6.6.1: Aggregated results, EC2SLS estimation, at 5 percent significance level

Variables	Coefficient
Exporter's GDP	1.8438
Importer's GDP	0.9819
Distance	-1.8793
Quota Binding	-1.315
Tariffs	-0.1564
Exporter's GDP per capita	-1.4155
Importer's GDP per capita	1.176
Exchange rates	-0.0001
FDI index	0.0252
Common border	1.4935
Colonial links	2.7597
Constant	-40.7158

Most of the variables present the expected sign, however there are differences across groups. These differences depend mainly on the characteristics of each group. Groups 1 and 10 have the US as the only importer, affecting the coefficients' signs or significance level for the exporter's income, distance, tariffs and quota restrictiveness' variables. On the other hand, groups 13, 18, and 19 have the EU as the only importer, which influences the sign of the importer's GDP estimate[179]. Finally, more than 20 percent of the total export flows go through the quota-free group in spite of the tariffs

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[177] In the annex to Section VI the table AS6.4 presents the groups in detail, showing the share of imports for the US and EU, the three largest exporters and their market share in the group, as well as the countries having at least one binding quota during the period between 1997 and 2004.
[178] The significant coefficients for each group were weighed by the value exported by the group.
[179] In the regression, the EU enters as 14 individual countries (except Luxemburg and Belgium that enter jointly).

imposed, affecting this variable's coefficient. The significant coefficients' estimates are robust, though estimates for tariffs and importers' GDP are more stable than those for exporters' GDP and quota restrictiveness.

The exporter's GDP is positive and significant for all groups, except groups 1 and 10, where the coefficients are insignificant. Hence the low significance level of exporters' GDP can be explained by the discrepancy between the US' GDP[180] and the exporters' income.

The importing country's GDP is also positive and significant for all groups, except those having only the EU as importer[181], which are negative and significant. Again, the difference between the US' and European countries' income explains the negative relationship between importer's GDP and trade flows, since the country having the largest GDP (namely the US) does not import products from these groups.

The distance is negative and significant for all groups with the exception of those having more than 90 percent of exports share going to the US, for which coefficients are positive or insignificant. Since the only country in the model sharing borders with the US (namely the Canada) accounts for only 4 percent of the US total imports, the distance does not work as a barrier to trade in these groups.

The estimates for per capita income are positive for importing countries and negative exporting countries. WTO membership, FDI indexes, number of telephones per group of inhabitants, and exchange rates are not significant in most of the groups. However, a F-test suggests that they cannot be excluded from the model.

The quota restrictiveness variable is positive in 2 groups, negative in 12 groups, and insignificant for the remainder[182]. As one would expect, the two groups where quotas presents positive signs are groups 1 and 10. Among the five groups presenting insignificant sign for the quota variable, only two groups, groups 9 and 15, have binding quotas in 2004. Group 15 has just one restricted country, Pakistan [183], and represents only 3 percent of the total exports. Conversely, group 9 presents important

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[180] The US' income is larger than the income of Japan, Germany, UK and France together.
[181] In the estimation, the EU imports are taken in a country-by-country basis.
[182] The quota restrictiveness variable is present in 19 of the 20 groups. It is not present in the quota free group.
[183] However the group 15 represents 23 percent of total Pakistani exports.

quota restrictions on seven countries and covers about 12 percent of the total exports in the regression. This group presents insignificant coefficients for both the quota restrictiveness and the tariffs, probably because these barriers do not discourage exporters. It is also possible that the simultaneity between quota restrictiveness and total exports affects the significance level of the quotas' coefficient[184].

Tariffs presents negative sign in most of the groups, the exception being groups 1 and 10, where the estimates are positive. The tariffs estimates are significant in other 16 groups, and insignificant in the quota-free group, where tariffs do not seem to discourage exports.

Time effects and country effects are significant and present the expected magnitude with respect to the benchmark categories.

7. Sensitivity Analysis

Countries facing binding quotas in 2004 have a potential increase in their exports amounting to 19.8 percent. Those are China, Indonesia, India, Pakistan, and Vietnam. However this potential increase does not refer to the overall exports. Because the structure of the model, the impact of quota restrictiveness on each group is different, and the potential increase on overall trade depends on the importance of each group on total exports.

The restricted countries lose 2.076 billion US$ due to quotas restrictions[185]. Assuming the demand constant, the elimination of quotas may cause a market share's transfer from non-restricted to restricted countries, from which China would capture 21.9 percent, Pakistan 26.6 percent, India 38 percent, Indonesia 8.2 percent and Vietnam 5.1 percent. It represents a potential increase on total clothing exports of 7.1 percent to Pakistan, 6.16 to India, and 0.27, 0.21 and 0.15 percent to China, Indonesia and Vietnam respectively. Bangladesh would lose about 0.98 percent of its total apparel exports, amounting to 60.25 million US$.

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[184] The simultaneity between binding quotas and total exports originates from the fact that the products presenting binding quotas have high export values.
[185] The total value of exports in 2004 for the 20 groups and all countries included in the study amount to 102,9 billion US$.

By looking at the group level, the effects of quotas elimination in groups restricted by binding quotas in 2004 are more significant. Bangladesh's losses are about 2.46 percent, while Pakistan gains about 29 percent, India 23 percent and China 2 percent.

Table 6.7.1 shows the gains and losses for all countries included in the model. The "overall" results refer to changes in the market share for the 20 groups under study, while the "group level" column refers to changes in the market share for the 6 groups presenting binding quotas in 2004.

Table 6.7.1: Changes in the market share due to the quota elimination[186].

Exporter	Overall	Group level		Exporter	Overall	Group level
Pakistan	7.10%	29.00%		Italy	-0.59%	-2.01%
India	6.16%	23.02%		Austria	-0.62%	-1.18%
China	0.27%	1.99%		Sri Lanka	-0.63%	-1.86%
Indonesia	0.22%	1.20%		Finland	-0.65%	-1.61%
Vietnam	0.16%	0.89%		Germany	-0.78%	-1.94%
Taiwan	-0.19%	-2.12%		Sweden	-0.79%	-2.06%
South Korea	-0.23%	-2.28%		Netherlands	-0.83%	-1.98%
Swaziland	-0.29%	-2.51%		Spain	-0.84%	-2.35%
Australia	-0.31%	-1.62%		Denmark	-0.86%	-2.05%
Hong Kong	-0.34%	-1.33%		USA	-0.87%	-2.65%
Nepal	-0.36%	-2.26%		UK	-0.91%	-2.28%
Philippines	-0.37%	-1.99%		France	-0.92%	-2.08%
Lesotho	-0.43%	-3.32%		Belgium	-0.92%	-2.21%
Canada	-0.46%	-2.79%		Bangladesh	-0.98%	-2.46%
Cambodia	-0.46%	-2.28%		Lao	-1.16%	-2.25%
South Africa	-0.49%	-2.26%		Portugal	-1.34%	-2.91%
Luxemburg	-0.50%	-0.70%		Turkey	-1.36%	-2.73%
Ireland	-0.58%	-1.69%		Mauritius	-1.92%	-3.51%
Thailand	-0.58%	-1.93%		Greece	-2.18%	-2.95%
Japan	-0.59%	-1.90%				

These results contradict most of the studies on the effects of the ATC quotas removal. Yang & Mlachila (2005) found a potential reduction on Bangladesh's exports amounting to 17.7 percent, Lips et al (2003) 11.3 percent while Ernst et al (2005) estimates the losses to be about 20 percent.

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[186] QB is a dummy variable. The effect of the quota restrictiveness on exports is calculated as the exponent of QB's estimate multiplied by the value of the exports at the group level. The transfer of market share is calculated within groups and the new export values are aggregated to calculate the overall change in the market share. Because this variable has a negative impact on trade, countries facing quota binding in 2004 will benefit from the quotas elimination.

The effect of tariffs reduction in exports is important. One percent of tariffs' reduction may increase exports by 0.855[187]. The Swiss formula with coefficients 6 and 10 produces from 5 to 9 percent of tariffs' reductions. Table 6.7.2 shows that countries enjoying tariff-preferences lose from tariffs reduction. Restricted countries gains amount to 5.46 to 7.57 billion US$, while losses of countries having preferential access amount to 8.3 to 9.3 billion US$. The European countries lose from the increase on international competition due to lesser tariffs.

Table 6.7.2: Gains and losses due to tariffs' reduction, in million US$[188]

Exporter	Gains and losses from tariffs' reduction			Exporter	Gains and losses from tariffs' reduction	
	Swiss Formula 6	Swiss Formula 10			Swiss Formula 6	Swiss Formula 10
China	2'075.28	2'729.16		South Africa	-7.48	-9.76
India	676.91	939.27		Finland	-12.99	-15.78
Vietnam	442.03	542.01		Ireland	-37.17	-42.63
Bangladesh	422.24	661.40		Sweden	-96.52	-110.24
Nepal	413.15	470.22		Canada	-98.75	-149.70
Thailand	245.79	327.90		Lao	-102.18	-28.32
Mauritius	245.15	270.57		Cambodia	-128.17	-17.71
Pakistan	210.90	323.86		Austria	-145.00	-175.35
Sri Lanka	126.37	147.63		Taiwan	-212.30	-90.82
Philippines	107.06	127.05		Denmark	-242.25	-286.66
Swaziland	101.49	164.24		Greece	-327.74	-364.87
Hong Kong	93.84	351.43		Spain	-373.99	-435.16
South Korea	79.65	94.46		UK	-442.81	-511.34
Indonesia	66.69	230.96		Netherlands	-681.50	-804.39
Luxemburg	60.59	35.48		France	-695.21	-806.76
Japan	43.54	94.31		Portugal	-782.32	-883.44
USA	42.89	46.06		Belgium	-870.93	-1'021.28
Australia	14.25	16.17		Italy	-876.56	-1'052.29
Lesotho	0.35	0.40		Turkey	-1'098.95	-1'198.75
				Germany	-1'148.66	-1'365.91

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[187] This value refers to the aggregated value for all groups. However the effects of tariffs changes are calculated at group level.
[188] Tariffs are calculated as the exponent of the product of the tariffs' estimate by the amount of tariffs reduction, multiplied by the value of the exports at the group level by importing country.

Since most of Bangladesh's exports face MFN tariffs, the tariffs reduction will bring an overall positive impact on the economy. Bangladesh gains will be between 422 and 661 million US$, depending on the formula used to simulate the reduction in tariffs. These gains will be reduced from 24 to 26 million US$ due to the quota removal, since lesser exports will reduce the gains from tariffs reduction. These results are larger than the one found in section five, which accounts only the gains from changes on duties paid.

The growth of GDP could compensate Bangladesh's losses, since one percent of growth rate increase the trade potential by 1.55. However in order to increase its income and attract foreign investments the government must enhance reforms to raise infrastructure facilities and reduce investment restrictions.

VIII. Conclusion

T&C industry is considered as an important means for the DC industrialization in low value added goods, since it is labor-intensive and requires a large amount of unskilled workers. This sector is also important for developed countries, which protect heavily their apparel industries by imposing import taxes and quantitative restrictions. The tariffs increase domestic prices directly, while the quotas affect prices by reducing the quantity supplied. Both distort trade by creating a price wedge between domestic and international prices.

The ATC quota phasing-out together with tariffs reduction from the NAMA negotiations may reshape the international trade in wearing apparel. The end of the quotas system may also affect the international investment pattern and sourcing decisions. Under the MFA the main factors influencing investment and sourcing decisions were the quota availability and its costs. With the quotas phasing-out other factors will grow in importance, such as the cost and availability of labor, the availability of low cost raw materials, good infrastructure (roads, ports, reliable sources of energy and water), as well as the reliability, efficiency and flexibility of suppliers. Increase in relative competitiveness will depend on a good business environment created by political stability, and trustworthy institutions.

The development of the RMG sector in Bangladesh is the consequence of restrictions in market access due to the quota regime. In 2004, it was the 9th largest exporter of wearing apparel, embracing 2.2 percent of the world market. The RMG industry alone was responsible for about 72 percent of the total export earnings.

Most of this success is due to abundant supply of low cost labor, and preferential access to restricted markets. Hence Bangladesh may face difficulty to adjust to a quota free world. In order to keep its export competitiveness it will have to enhance productivity, improve trade infrastructure, and develop its economic governance.

Bangladesh may not lose from preference erosion due to tariffs reduction. Its utilization rates are low, covering about 30 percent of its exports to EU. In addition, it does not enjoy tariff preferences in the US. Therefore, Bangladesh's gains from tariffs

reduction in the US and EU compensate largely the losses from reduction in preference margin in the EU. The potential welfare gains to Bangladesh are between 195 and 661 million US$, depending on the coefficient and the methodology used to estimate tariff reduction. These gains are not offset by the quota removal, but reduced from 24 to 26 million US$, suggesting that Bangladesh gains from NAMA negotiations independently of ATC implementation.

The quotas' elimination will alter the relative competitiveness of various exporting countries. Since Bangladesh has quota free access to the EU and a large quota base in the US, it is expected to lose market share to more restricted competitors. The results from the gravity model suggest that in a quota-free environment, Bangladesh faces a potential decline on its total apparel exports amounting to 0.98 percent. Within the groups presenting binding quotas in 2004 these losses are about 2.46 percent.

These results may underestimate the overall losses for Bangladesh and other countries relying heavily on markets protected by quantitative restrictions. The model does not account for many factors that may influence the decisions about sourcing and investment, such as infrastructure facilities, economic governance and FDI by economic sector. Also, it does not account for quotas presenting utilization rates below 100 percent, and does not include textiles products. By relaxing the assumption that only the quotas filled at 100 percent are binding, the number of groups presenting restrictions in 2004 increases and the discrepancy between the overall results and the results within groups may be reduced.

The "system gravity model of trade" suggests little change in market structure when compared with results from most of the studies on preference erosion, although it presents the advantage of eliminating the aggregation bias problem. Since this bias can increase overall results, it is also possible that some studies overestimate the changes in apparel trade pattern. However in order to compare results, this model must be expanded to include textiles and more trade partners. It could be also interesting to consider quotas presenting filling rates below 100 percent as binding quotas.

IX.   References

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X.   Annexes

Annex to Section III

Annex to Section IV

Annex to Section VI

Annex to Section III

World largest apparel exporters, in billion US$ and percentage.

World largest apparel importers, in billion US$ and percentage.

Table AS.3.1: World largest apparel exporters, in billion US$ and percentage.

Exporters	Value	Share in world exports		Annual change, in percentage	
	2004	2000	2004	2000-04	2004
European Union (25)	74.92	27.0	29.0	9	9
extra-EU (25) exports	19.13	6.9	7.4	9	11
China	61.86	18.3	24.0	14	19
Hong Kong, China	25.10	-	-	1	8
domestic exports	8.14	5.0	3.2	-5	-1
re-exports	16.96	-	-	4	13
Turkey	11.19	3.3	4.3	14	12
Mexico	7.20	4.4	2.8	-4	-2
India	6.62	3.1	2.8	7	...
United States	5.06	4.4	2.0	-12	-9
Romania	4.72	1.2	1.8	19	16
Indonesia	4.45	2.4	1.7	-2	8
Bangladesh	4.44	2.0	1.7	3	0
Thailand	4.05	1.9	1.6	1	12
Viet Nam	3.98	0.9	1.5	22	12
Korea, Republic of	3.39	2.5	1.3	-9	-7
Tunisia	3.27	1.1	1.3	10	20
Pakistan	3.03	1.1	1.2	9	12
Above 15	206.32	78.6	80.3	-	-

Source: WTO

Table AS.3.2: World largest apparel importers, in billion US$ and percentage**.**

Importers	Value	Share in world imports		Annual change, in percentage	
	2004	2000	2004	2000-04	2004
European Union (25)	121.66	39.9	45.0	10	14
extra-EU (25) imports	65.86	20.9	24.4	11	15
United States	75.73	32.4	28.0	3	6
Japan	21.69	9.5	8.0	2	11
Hong Kong, China	17.13	-	-	2	7
retained imports	0.17	0.8	0.1	-44	-83
Russian Federation	5.46	1.3	2.0	19	13
Canada	5.22	1.8	1.9	9	16
Switzerland	4.34	1.5	1.6	8	9
Korea, Republic of	2.75	0.6	1.0	20	8
Australia	2.67	0.9	1.0	9	22
Mexico	2.58	1.7	1.0	-8	-15
Singapore	2.06	0.9	0.8	2	6
retained imports	0.56	0.3	0.2	0	12
United Arab Emirates	2.05	0.7	0.8	...	...
Norway	1.67	0.6	0.6	7	8
China	1.54	0.6	0.6	7	8
Saudi Arabia	1.03	0.4	0.4	...	...
Above 15	250.61	93.7	93.0	-	-

Source: WTO

Annex to Section IV

Bangladesh's key indicators[189]

       Balance of Payments

       National Accounts

       Direction of Trade

       Exports

       Imports

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[189] All key indicators are from Asian Development Bank, at http://www.adb.org/statistics

Bangladesh's Balance of Payments, in million US$

Item	1990	1992	1994	1996	1998	2000	2002	2004
Current account	-436	-118	-89	-1291	-463	-418	157	176
Balance on goods	-1893	-1532	-1657	-3063	-1669	-1865	-1768	-2319
Exports	1486	1994	2534	3884	5103	5701	5929	7521
Imports	-3379	-3526	-4191	-6947	-6772	-7566	-7697	-9840
Services and income	-110	-21	-10	-49	-670	-708	-610	-986
Credit	444	565	670	806	798	946	915	987
Debit	-554	-586	-680	-855	-1468	-1654	-1525	-1973
Current transfers	1567	1435	1578	1821	1876	2394	2826	3743
Official	768	975	1247	1475	...	...	...	...
Debit	799	460	331	346	...	...	...	...
Capital account	...	357	379	331	445	561	410	196
Financial account	...	590	668	447	160	-116	391	78
Direct investment	2	4	16	7	249	383	391	385
Portfolio investment	1	6	53	-21	3	0	-6	6
Other investments	…	580	599	461	-92	-499	6	-313
Net errors and omissions	-76	-312	-166	-504	-88	152	-550	-279
Overall balance	138	517	792	-1017	54	179	408	171
Reserves and related items	...	-517	-792	1017	-54	-179	-408	-171
Reserve assets	…	-742	-625	1062	-14	-79	-276	-235
Use of Fund credit and loans	-139	...	-48	-121	-40	-100	-132	64
Others	…	80	-119	76	...	...	...	

Bangladesh's National Accounts, at current market prices, in billion Taka**.**

Item	1990	1992	1994	1996	1998	2000	2002	2004	2005
GDP by industrial origin	1003.3	1195.4	1354.1	1663.2	2001.8	2370.9	2732.0	3329.7	3684.8
Agriculture	295.1	339.4	334.8	409.9	490.1	583.7	599.0	672.0	708.8
Mining	8.2	10.5	13.7	16.7	19.5	23.1	30.0	36.4	40.4
Manufacturing	127.9	160.6	199.8	246.3	312.7	348.4	418.1	515.3	588.5
Electricity, gas, and water	15.1	17.9	21.1	24.0	26.4	30.7	36.4	44.3	49.1
Construction	58.2	70.6	83.2	110.0	138.6	176.2	211.6	254.0	290.4
Trade	119.8	141.6	163.6	206.1	248.4	292.0	353.1	441.0	500.8
Transport and communications	96.9	112.2	126.8	144.8	167.4	197.4	255.2	344.4	381.0
Finance	13.4	16.4	20.1	25.2	29.9	36.5	42.1	52.0	58.3
Public administration	20.0	25.9	33.8	40.2	49.6	62.3	71.2	86.2	98.6
Others [c]	248.6	300.4	357.2	440.2	519.1	620.5	715.4	884.1	968.9
Net factor income from abroad	20.9	29.0	42.3	49.5	65.0	87.1	125.4	175.5	209.9
GNI	1024.2	1224.4	1396.5	1712.8	2066.7	2458.0	2857.4	3505.3	3894.7

Bangladesh's Direction of Trade, million US$

Item	1990	1992	1994	1996	1998	2000	2002	2004
Exports, total	1671	2037	2650	3297	3822	5590	5443	7586
1. United States	510	734	886	1019	1368	1779	1504	1698
2. Germany	108	166	228	325	404	608	566	1102
3. United Kingdom	119	151	253	379	347	440	532	849
4. France	62	107	155	227	254	289	311	526
5. Italy	107	137	151	160	232	228	216	305
6. Netherlands	38	67	101	173	189	234	208	254
7. Belgium	…	…	…	…	147	175	188	253
8. Spain	7	20	35	41	47	72	104	240
9. Canada	27	29	48	66	79	97	83	247
10. Sweden	19	16	12	28	37	78	86	148
Imports, total	3656	3731	4584	6935	7370	9001	7848	11590
1. India	170	284	467	1018	1179	945	1146	1745
2. China, People's Republic of	124	215	299	641	547	667	910	1446
3. Singapore	407	222	220	313	430	761	906	873
4. Japan	482	294	527	673	456	850	595	614
5. Hong Kong, China	168	290	351	392	452	470	422	518
6. Kuwait	13	8	2	7	15	29	117	639
7. Korea, Republic of	156	214	331	368	331	348	341	419
8. United States	186	258	214	250	242	214	234	268
9. United Kingdom	118	132	121	170	314	239	223	283
10. Australia	60	62	86	122	197	175	172	266

Bangladesh's Exports by HSC

Item	1992	1994	1996	1998	2000	2002	2004
Animal and animal products	6590	10772	13551	15288	18300	17125	23222
Vegetable products	2345	2253	1622	2575	1492	1686	2356
Animal or vegetable fats	6	20	17	8	29	4	118
Prepared foodstuffs	286	133	88	370	227	745	2079
Mineral products	315	356	496	456	591	650	1539
Chemical products	569	1877	444	741	313	329	760
Plastics and rubber	9	42	25	289	639	795	988
Hides and skins	5117	6229	8624	7601	7069	12662	12770
Wood and wood products	79	150	144	174	284	271	355
Wood pulp products	107	46	36	102	181	89	95
Textiles and textile articles	56053	69688	98797	147403	178937	218746	291674
Footwear, headgear	388	1625	2601	3205	3156	4087	4069
Articles of stone, plaster, cement, asbestos	190	302	463	697	799	1110	1818
Pearls, precious or semi-precious stones, metals	3	3	0	28	0	0	99
Base metals and articles thereof	55	72	66	74	186	185	1723
Machinery and mechanical appliances	213	120	88	118	179	464	442
Transportation equipment	1	5	17	65	23	558	826
Instruments—measuring, musical	1	5	13	11	15	12	0
Miscellaneous manufactured articles	218	12	30	130	145	25	198
Works of art [m]	82	167	99	90	72	48	7

Bangladesh's Imports by HSC

Item	1992	1994	1996	1998	2000	2002	2004
Animal and animal products	2525	1659	2509	2889	4012	4502	4383
Vegetable products	5305	6684	27371	22299	27269	24696	47376
Animal or vegetable fats	4540	4080	7374	9915	13094	14538	28226
Prepared foodstuffs	771	1936	2455	5338	6872	9250	16681
Mineral products	16238	13249	22854	24892	36573	40889	52335
Chemical products	6293	9159	15220	20452	25939	32640	41976
Plastics and rubber	3231	4505	7593	9290	11594	14351	21629
Hides and skins	41	132	245	127	107	201	477
Wood and wood products	45	243	669	1119	1258	2151	3152
Wood pulp products	1053	2079	4549	5554	7148	8598	12334
Textiles and textile articles	26263	40321	64010	83893	89197	97449	133076
Footwear, headgear	87	216	377	364	215	187	495
Articles of stone, plaster, cement, asbestos	376	708	1189	1722	1765	2081	2678
Pearls, precious or semi-precious stones, metals	6	125	21	131	17	29	37
Base metals and articles thereof	5997	8482	13154	17769	19767	23722	28309
Machinery and mechanical appliances	8232	11065	25381	25827	34981	57970	75705
Transportation equipment	3391	5879	14256	17072	17990	24719	30974
Instruments—measuring, musical	697	811	1688	1669	2472	3011	3840
Miscellaneous manufactured articles	486	676	1362	1457	2583	3310	3796
Works of art [m]	109	148	170	397	1586	57	70

Annex to Section VI

Variables description and source

Summary Statistics

Results: Time effects and Individual effects

Results by groups

Graph AS6.1: The relationship between indexes for corruption, economic freedom and exports in wearing apparel.

Table AS6.2: Number of product lines presenting binding quotas by trade partners.

Table AS6.3: Total exports and number of product lines by groups.

Table AS6.4: Groups in detail.

Table AS6.5: Binding quotas by group, year and importing and exporting countries.

Table AS6.6: Rho by group

Table AS6.7: Tariffs reduction by groups and coefficients

Variables description and source

Variable	Description and source
Exports by groups	Export of clothing from origin country to destination country, current value, in US$ dollars. Values in natural logarithms.
	Sources: Europe as importing country: 　　Eurostat, at http://fd.comext.eurostat.cec.eu.int/, Exchange rate from UNSD at http://unstats.un.org/unsd/snaama/selectionbasicFast.asp US as importing country: 　　WITS, at http://wits.worldbank.org/
Ln_GDP_o	Log of exporting country's GDP, current value, in US$.
	Source: IMF at http://www.imf.org/external/pubs/ft/weo/2006/01/data/dbginim.cfm
Ln_GDP_d	Log of importing country's GDP, current value, in US$.
	Source: IMF, at http://www.imf.org/external/pubs/ft/weo/2006/01/data/dbginim.cfm
Ln_GDP_h_o	Log of exporting country's GDP per capita, current value, in US$.
	Source: IMF, at http://www.imf.org/external/pubs/ft/weo/2006/01/data/dbginim.cfm
Ln_GDP_h_d	Log of importing country's GDP per capita, current value, US$.
	Source: IMF, at http://www.imf.org/external/pubs/ft/weo/2006/01/data/dbginim.cfm
	Source: CEPII, at http://www.cepii.fr/anglaisgraph/bdd/distances.htm
Log_distance	Log of the distance between origin and destination countries capitals.
	Source: CEPII, at http://www.cepii.fr/anglaisgraph/bdd/distances.htm

Variables description and source *continued*

Variable	Description and source
QB	Quota restrictiveness is a dummy variable, which assumes the value of 1 if exporting faces a binding quota, and zero otherwise.
	Source: US quotas at http://www.cbp.gov/xp/cgov/import/textiles_and_quotas/textile_status_report/archived/ EU quotas at http: http://sigl.cec.eu.int/choice.html
Tariffs	Tariffs imposed by the importing country to the exporting country taking into account preferential agreements.
	Source: WITS, at http://wits.worldbank.org/
FDI_Index	"The Inward FDI Performance Index", which ranks countries by the FDI they receive relative to their economic size. A value greater than one indicates that the country receives more FDI than its relative economic size, a value below one that it receives less (a negative value means that foreign investors disinvest in that period).
	Source: UNCTAD at http://www.unctad.org/Templates/WebFlyer.asp?intItemID=2472&lang=1
Phone	Number of telephone lines for 100 habitants.
	Source: From 1997 to 2003, UNCTAD at http://www.e-stdev.org/benchmarking/ For 2004, World Bank at http://devdata.worldbank.org/data-query/

Contig	Dummy variable, which assumes the value of 1 if exporting and importing countries have common border, and zero otherwise.
	Source: CEPII, at at http://www.cepii.fr/anglaisgraph/bdd/distances.htm
Colony	Dummy variable, which assumes the value of 1 if exporting and importing have colonial link, and zero otherwise.
	Source: CEPII, at at http://www.cepii.fr/anglaisgraph/bdd/distances.htm

Summary Statistics

Variables from the original model

```
-------------+---------------------------------------------------------
    Variable |      Obs       Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
        year |     4552     2000.5      2.29154      1997       2004
    ln_gdp_o |     4552    25.5945      2.17644    20.38078   30.09354
    ln_gdp_d |     4552    26.88292     1.282456    25.12237   30.09354
    ln_pop_o |     4552    17.03289     1.74984     12.94125   20.97429
    ln_pop_d |     4552    16.79568     1.209991    15.11557   19.50387
  ln_gdp_h_o |     4552    8.557789     1.800064    5.353501   11.16556
  ln_gdp_h_d |     4552    10.08885     .3399112    9.247916   10.72933
 ln_distance |     4552    8.323549     1.070298    5.153484   9.808717
Exchange rate|     4552    1032.063     3178.572    .1520075   19606.16
   FDI index |     4072    1.391701     2.581537     -.624      19.653
       Phone |     4447    69.79773     57.15905      0         209
      Contig |     4552    .0544815     .2269904      0          1
      Colony |     4552    .0228471     .1494323      0          1
-------------+---------------------------------------------------------
```

```
-------------+---------------------------------------------------------
Total Exports      Obs       Mean    Std. Dev.       Min        Max
-------------+---------------------------------------------------------
 Quota freee |     4552    13.24523     5.56448       0       22.38351
     Group 1 |     4552    .9454449     3.788529      0       19.71101
     Group 2 |     4552    7.232185     5.994833      0       18.49929
     Group 3 |     4552    3.25865      5.031075      0       19.64569
     Group 4 |     4552    5.10844      5.494975      0       19.32925
     Group 5 |     4552    11.31762     5.180176      0       19.34382
     Group 6 |     4552    7.78729      5.752078      0       19.79855
     Group 7 |     4552    9.277755     6.290408      0       18.84105
     Group 8 |     4552    8.092622     5.723086      0       20.51293
     Group 9 |     4552    12.96191     4.821387      0       20.85722
    Group 10 |     4552    .8560287     3.482189      0       19.20732
    Group 11 |     4552    10.3826      5.214284      0       18.78875
    Group 12 |     4552    13.15265     4.612384      0       20.64722
    Group 13 |     4552    10.43726     5.857644      0       20.18682
    Group 14 |     4552    12.34194     5.00449       0       19.81062
    Group 15 |     4552    9.719576     5.749335      0       20.46338
    Group 16 |     4552    11.1672      5.231065      0       20.67121
    Group 17 |     4552    4.557581     5.620974      0       20.01225
    Group 18 |     4552    10.10602     5.966634      0       18.57978
    Group 19 |     4552    9.11077      5.98616       0       18.82217
-------------+---------------------------------------------------------
```

Summary Statistics *continued*

Quota binding	Obs	Mean	Std. Dev.	Min	Max
Group 1	4552	0	0	0	0
Group 2	4552	.0006591	.0256663	0	1
Group 3	4552	.0230668	.1501321	0	1
Group 4	4552	.0006591	.0256663	0	1
Group 5	4552	.0010984	.0331278	0	1
Group 6	4552	.0004394	.0209588	0	1
Group 7	4552	.034051	.1813801	0	1
Group 8	4552	.0026362	.0512819	0	1
Group 9	4552	.1783831	.382877	0	1
Group 10	4552	.0010984	.0331278	0	1
Group 11	4552	.0184534	.134599	0	1
Group 12	4552	.0707381	.2564151	0	1
Group 13	4552	.021529	.1451555	0	1
Group 14	4552	.1384007	.345358	0	1
Group 15	4552	.0006591	.0256663	0	1
Group 16	4552	.0004394	.0209588	0	1
Group 17	4552	.0010984	.0331278	0	1
Group 18	4552	.0369069	.1885538	0	1
Group 19	4552	.0338313	.1808146	0	1

Tariffs	Obs	Mean	Std. Dev.	Min	Max
Group 1	4544	7.257663	5.572662	0	14.83
Group 2	4544	7.172908	5.50722	0	14.33
Group 3	4544	6.908694	5.560604	0	14.33
Group 4	4544	7.221995	5.543256	0	14.6425
Group 5	4544	7.228808	5.555516	0	14.705
Group 6	4544	7.256754	5.57839	0	14.85083
Group 7	4544	6.963717	5.852054	0	17.46
Group 8	4544	7.221659	5.585538	-9.022727	14.78455
Group 9	4544	5.089738	6.066552	-12.51	17.46
Group 10	4544	7.233587	5.565613	-7.266667	14.74667
Group 11	4544	7.151318	5.818397	0	17.46
Group 12	4544	6.512013	5.897684	0	17.46
Group 13	4544	6.917145	5.551305	0	14.33
Group 14	4544	5.539482	5.635588	0	14.33
Group 15	4544	5.59922	4.999546	0	12.8
Group 16	4544	7.255381	5.576593	0	14.8402
Group 17	4544	7.365904	5.777481	0	17.46
Group 18	4544	6.735829	5.581834	0	14.33
Group 19	4544	6.775419	5.579245	0	14.33

Results:

o   Aggregated countries effects, weighed by countries' total exports, at 5 percent significance level, benchmark category: Bangladesh

Country	Coefficient
Australia	-1.585620
Austria	-1.765280
Belgium	-2.055880
Cambodia	0.924902
Canada	-1.393120
China	-1.012650
Denmark	1.625393
Finland	-1.549410
France	-1.819530
Germany	-2.041850
Greece	-1.470520
Hong Kong	2.841868
India	-1.477760
Indonesia	-0.520200
Ireland	-1.344410
Italy	-1.441520
Japan	-2.143080
Lao	3.276962
Lesotho	-0.230450
Luxemburg	-2.118400
Mauritius	2.744487
Nepal	-1.657500
Netherlands	-1.700330
Pakistan	0.219516
Philippines	-1.261120
Portugal	2.509310
South Africa	-1.635910
South Korea	1.488764
Spain	-1.521380
Sri Lanka	1.426747
Swaziland	0.632317
Sweden	-1.671190
Taiwan	-0.765110
Thailand	1.414804

o   Aggregated time effects, weighed by total exports in the year, at 5 percent significance level, benchmark category: 1997

Year	Coefficient
1998	24.20152
1999	24.39147
2000	24.57210
2001	24.26095
2002	24.32506
2003	23.51457

Results by groups

Group 1

	Variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 1	Quota binding	0.882119	0.005000	0.891124	0.004000	0.951413	0.002000
	Tariffs	0.091785	0.000000	0.092287	0.000000	0.098045	0.000000
	Exporter's GDP	0.030610	0.816000	0.056549	0.519000	0.009958	0.881000
	Importer's GDP	2.441275	0.000000	2.271349	0.000000	1.607380	0.000000
	Exporter's GDP *per capita*	0.028703	0.823000	0.006885	0.942000	0.050943	0.531000
	Importer's GDP *per capita*	-1.630874	0.000000	-1.445784	0.000000	-0.725189	0.000000
	Distance	3.887513	0.000000	4.215821	0.000000	5.491034	0.000000
	FDI inward	0.001050	0.790000	0.000986	0.802000	0.001030	0.792000
	Exchange rate	-0.000002	0.758000	-0.000002	0.762000	-0.000002	0.735000
	Telephone lines	-0.000979	0.518000	-0.000993	0.510000	-0.000992	0.507000
	Common border	2.855246	0.123000	3.418566	0.063000	5.616930	0.002000
	Colonial links	-5.841812	0.007000	-5.448078	0.011000	-3.906008	0.067000
	Constant	-11.623420	0.000000	-11.214220	0.000000	-9.024859	0.000000
R-squared	within	0.097400		0.1234		0.137200	
	between	0.329100					
	overall	0.132200					
rho		0.000000					

Group 2

	Variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 2	Quota binding	-2.571290	0.000000	-2.516397	0.000000	-2.499826	0.000000
	Tariffs	-0.263702	0.000000	-0.274423	0.000000	-0.273243	0.000000
	Exporter's GDP	2.236236	0.000000	1.707315	0.000000	1.841278	0.000000
	Importer's GDP	1.757800	0.000000	1.784499	0.000000	1.668042	0.000000
	Exporter's GDP *per capita*	-2.536633	0.000000	-2.117834	0.000000	-2.259290	0.000000
	Importer's GDP *per capita*	-0.058260	0.874000	-0.038454	0.897000	0.110781	0.706000
	Distance	-1.903989	0.000000	-0.000093	0.046000	-1.785984	0.000000
	FDI inward	-0.011259	0.656000	-45.030550	0.000000	-0.005667	0.830000
	Exchange rate	-0.000096	0.032000	-0.005019	0.849000	-0.000094	0.044000
	Telephone lines	-0.008775	0.053000	-0.008195	0.084000	-0.008596	0.070000
	Common border	1.852740	0.016000	-1.902500	0.000000	2.031502	0.001000
	Colonial links	1.659388	0.062000	1.614398	0.018000	1.761266	0.010000
	Constant	-52.861480	0.000000	1.826557	0.002000	-46.343890	0.000000
R-squared	within	0.167200		0.4524		0.4527	
	between	0.769500					
	overall	0.451900					
rho		0.098930					

Group 3

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 3	Quota binding	-0.998065	0.489000	-0.495200	0.756000	-0.017284	0.991000
	Tariffs	-0.169098	0.000000	-0.271481	0.000000	-0.238805	0.000000
	Exporter's GDP	1.610937	0.000000	1.548934	0.000000	0.723412	0.001000
	Importer's GDP	2.056067	0.000000	2.025405	0.000000	1.625152	0.000000
	Exporter's GDP *per capita*	-1.546319	0.000000	-1.653928	0.000000	-0.844900	0.004000
	Importer's GDP *per capita*	0.597926	0.110000	1.223699	0.000000	1.713690	0.000000
	Distance	1.315506	0.000000	1.640139	0.000000	1.949615	0.000000
	FDI inward	-0.024461	0.327000	-0.020342	0.466000	-0.014050	0.612000
	Exchange rate	-0.000043	0.315000	-0.000053	0.271000	-0.000052	0.280000
	Telephone lines	-0.006231	0.097000	-0.005976	0.157000	-0.004883	0.246000
	Common border	4.404999	0.000000	4.679455	0.000000	5.301673	0.000000
	Colonial links	-0.694674	0.432000	-0.759717	0.176000	-0.256002	0.646000
	Constant	-83.664460	0.000000	-87.241250	0.000000	-69.855180	0.000000
R-squared	within	0.019300		0.3348		0.3418	
	between	0.609300					
	overall	0.332900					
rho		0.211817					

Group 4

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 4	Quota binding	0.354405	0.812000	1.476649	0.343000	2.023096	0.192000
	Tariffs	-0.174726	0.000000	-0.215454	0.000000	-0.192312	0.000000
	Exporter's GDP	3.283870	0.000000	2.230557	0.000000	1.402016	0.000000
	Importer's GDP	1.801766	0.000000	1.803917	0.000000	1.536059	0.000000
	Exporter's GDP *per capita*	-2.141258	0.000000	-1.316887	0.001000	-0.466228	0.192000
	Importer's GDP *per capita*	0.979761	0.008000	1.292908	0.000000	1.618857	0.000000
	Distance	-0.130594	0.710000	-0.016005	0.948000	0.182658	0.454000
	FDI inward	-0.104824	0.000000	-0.091278	0.004000	-0.086262	0.006000
	Exchange rate	0.000080	0.111000	0.000074	0.171000	0.000077	0.155000
	Telephone lines	-0.002966	0.463000	-0.002364	0.590000	-0.000987	0.822000
	Common border	2.610972	0.000000	2.692869	0.000000	3.098661	0.000000
	Colonial links	1.607567	0.053000	1.558518	0.006000	1.893160	0.001000
	Constant	-108.552600	0.000000	-92.817690	0.000000	-75.86950	0.000000
R-squared	within	0.023300		0.3896		0.3924	
	between	0.700400					
	overall	0.383500					
rho		0.162261					

Group 5

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 5	Quota binding	-2.428195	0.000000	-2.567173	0.000000	-2.607466	0.000000
	Tariffs	-0.205195	0.000000	-0.216515	0.000000	-0.219894	0.000000
	Exporter's GDP	1.924857	0.000000	1.757957	0.000000	1.757073	0.000000
	Importer's GDP	1.352526	0.000000	1.313724	0.000000	1.379278	0.000000
	Exporter's GDP *per capita*	-1.753250	0.000000	-1.636980	0.000000	-1.622190	0.000000
	Importer's GDP *per capita*	0.860205	0.007000	0.948415	0.001000	0.869111	0.001000
	Distance	-2.001325	0.000000	-1.921590	0.000000	-1.981345	0.000000
	FDI inward	0.029141	0.100000	0.030894	0.090000	0.030519	0.094000
	Exchange rate	0.000025	0.412000	0.000025	0.443000	0.000025	0.437000
	Telephone lines	-0.011113	0.005000	-0.010896	0.008000	-0.010772	0.009000
	Common border	0.286016	0.694000	0.388673	0.517000	0.274777	0.646000
	Colonial links	1.790261	0.033000	1.832032	0.008000	1.743458	0.012000
	Constant	-42.357000	0.000000	-39.978430	0.000000	-40.433510	0.000000
R-squared	within	0.408500		0.5256		0.5258	
	between	0.753600					
	overall	0.525500					
rho		0.068093					

Group 6

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 6	Quota binding	-1.817819	0.240000	-1.928941	0.227000	-1.838377	0.248000
	Tariffs	-0.279099	0.000000	-0.304587	0.000000	-0.298313	0.000000
	Exporter's GDP	1.508894	0.000000	1.768148	0.000000	1.845560	0.000000
	Importer's GDP	1.997924	0.000000	2.016861	0.000000	1.868918	0.000000
	Exporter's GDP *per capita*	-0.723958	0.018000	-0.973662	0.000000	-1.091422	0.000000
	Importer's GDP *per capita*	1.555008	0.000000	1.593370	0.000000	1.776560	0.000000
	Distance	-1.027480	0.003000	-0.969445	0.001000	-0.833951	0.003000
	FDI inward	-0.012685	0.569000	-0.014746	0.523000	-0.014120	0.540000
	Exchange rate	-0.000023	0.553000	-0.000025	0.539000	-0.000026	0.517000
	Telephone lines	-0.011349	0.009000	-0.011679	0.010000	-0.012241	0.007000
	Common border	1.316384	0.074000	1.342906	0.023000	1.595708	0.007000
	Colonial links	1.065541	0.210000	1.024097	0.132000	1.216530	0.073000
	Constant	-68.506650	0.000000	-72.980880	0.000000	-73.117660	0.000000
R-squared	within	0.201200		0.4662		0.4668	
	between	0.783900					
	overall	0.465600					
rho		0.079683					

Group 7

	variable	EC2SLS Coefficient	p-value	2SLS Coefficient	p-value	OLS Coefficient	p-value
Group 7	Quota binding	-2.296639	0.000000	-2.143460	0.000000	-2.292879	0.000000
	Tariffs	-0.193075	0.000000	-0.190691	0.000000	-0.199558	0.000000
	Exporter's GDP	1.996972	0.000000	1.589485	0.000000	1.787225	0.000000
	Importer's GDP	1.484513	0.000000	1.446979	0.000000	1.464762	0.000000
	Exporter's GDP *per capita*	-1.193589	0.000000	-0.858394	0.001000	-1.025326	0.000000
	Importer's GDP *per capita*	1.307297	0.000000	1.353462	0.000000	1.342968	0.000000
	Distance	-2.181364	0.000000	-2.150054	0.000000	-2.136490	0.000000
	FDI inward	0.015327	0.513000	0.019752	0.416000	0.017618	0.467000
	Exchange rate	-0.000026	0.518000	-0.000026	0.539000	-0.000026	0.536000
	Telephone lines	-0.004545	0.330000	-0.003897	0.421000	-0.004123	0.395000
	Common border	0.613091	0.439000	0.674907	0.289000	0.669142	0.291000
	Colonial links	2.067695	0.024000	2.115571	0.004000	2.088120	0.004000
	Constant	-57.941890	0.000000	-51.498710	0.000000	-54.696610	0.000000
R-squared	within	0.200400		0.4746		0.4746	
	between	0.792200					
	overall	0.474400					
rho		0.079425					

Group 8

	variable	EC2SLS Coefficient	p-value	2SLS Coefficient	p-value	OLS Coefficient	p-value
Group 8	Quota binding	-2.823059	0.003000	-2.964104	0.002000	-2.533029	0.008000
	Tariffs	-0.330875	0.000000	-0.382242	0.000000	-0.361075	0.000000
	Exporter's GDP	2.360531	0.000000	2.362364	0.000000	1.889901	0.000000
	Importer's GDP	2.150188	0.000000	2.171112	0.000000	2.010281	0.000000
	Exporter's GDP *per capita*	-2.251503	0.000000	-2.329634	0.000000	-1.949088	0.000000
	Importer's GDP *per capita*	0.974976	0.005000	1.101303	0.000000	1.287164	0.000000
	Distance	-0.197068	0.560000	-0.070676	0.776000	0.027520	0.911000
	FDI inward	0.048423	0.067000	0.050005	0.077000	0.055964	0.047000
	Exchange rate	-0.000025	0.581000	-0.000029	0.548000	-0.000029	0.547000
	Telephone lines	-0.004032	0.316000	-0.003889	0.367000	-0.003966	0.358000
	Common border	1.974015	0.005000	2.050857	0.000000	2.279502	0.000000
	Colonial links	0.097576	0.904000	0.016386	0.977000	0.219348	0.703000
	Constant	-86.427400	0.000000	-87.825640	0.000000	-78.468490	0.000000
R-squared	within	0.141100		0.4757		0.4771	
	between	0.768600					
	overall	0.475800					
rho		0.137317					

Group 9

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 9	Quota binding	-0.172170	0.527000	-0.231743	0.386000	-0.415426	0.118000
	Tariffs	-0.031560	0.080000	-0.037357	0.034000	-0.050842	0.004000
	Exporter's GDP	1.763852	0.000000	1.568099	0.000000	1.816733	0.000000
	Importer's GDP	0.547599	0.000000	0.520880	0.000000	0.750580	0.000000
	Exporter's GDP *per capita*	-1.223398	0.000000	-1.073792	0.000000	-1.274174	0.000000
	Importer's GDP *per capita*	1.072427	0.000000	1.099180	0.000000	0.826259	0.000000
	Distance	-2.658396	0.000000	-2.608571	0.000000	-2.804481	0.000000
	FDI inward	0.008019	0.619000	0.009904	0.549000	0.007456	0.651000
	Exchange rate	0.000030	0.287000	0.000031	0.283000	0.000032	0.273000
	Telephone lines	-0.006329	0.071000	-0.005979	0.097000	-0.006157	0.086000
	Common border	-0.197726	0.734000	-0.130387	0.795000	-0.515151	0.302000
	Colonial links	3.196085	0.000000	3.231092	0.000000	2.925044	0.000000
	Constant	-26.687780	0.000000	-23.621980	0.000000	-28.970510	0.000000
R-squared	within	0.490500		0.5954		0.5973	
	between	0.795900					
	overall	0.596200					
rho		0.051147					

Group 10

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 10	Quota binding	1.230656	0.000000	0.759590	0.019000	1.038272	0.001000
	Tariffs	0.056316	0.000000	0.013475	0.320000	0.032724	0.012000
	Exporter's GDP	-0.013500	0.858000	0.152891	0.030000	0.057730	0.276000
	Importer's GDP	2.098761	0.000000	1.960652	0.000000	1.364265	0.000000
	Exporter's GDP *per capita*	0.097645	0.212000	-0.098686	0.230000	0.000619	0.993000
	Importer's GDP *per capita*	-1.103109	0.000000	0.208740	0.181000	0.917595	0.000000
	Distance	2.756828	0.000000	3.122080	0.000000	3.780286	0.000000
	FDI inward	0.007285	0.135000	0.006804	0.290000	0.007179	0.253000
	Exchange rate	0.000000	0.968000	-0.000003	0.771000	-0.000004	0.735000
	Telephone lines	-0.000355	0.809000	-0.000906	0.639000	-0.000652	0.729000
	Common border	2.008827	0.017000	2.468517	0.000000	3.668375	0.000000
	Colonial links	-2.980007	0.002000	-2.954110	0.000000	-2.063451	0.000000
	Constant	-28.452180	0.000000	-35.381820	0.000000	-30.712120	0.000000
R-squared	within	0.187900		0.3278		0.3595	
	between	0.424900					
	overall	0.331100					
rho		0.425043					

Group 11

	variable	EC2SLS Coefficient	p-value	2SLS Coefficient	p-value	OLS Coefficient	p-value
	Quota binding	-1.199933	0.025000	-1.193292	0.021000	-1.570411	0.002000
	Tariffs	-0.071929	0.020000	-0.082500	0.004000	-0.111212	0.000000
Group 11	Exporter's GDP	1.870813	0.000000	1.578020	0.000000	1.829716	0.000000
	Importer's GDP	0.410270	0.000000	0.451343	0.000000	0.770503	0.000000
	Exporter's GDP *per capita*	-1.470953	0.000000	-1.244344	0.000000	-1.467499	0.000000
	Importer's GDP *per capita*	1.490705	0.000000	1.427797	0.000000	1.058101	0.000000
	Distance	-2.760203	0.000000	-2.764876	0.000000	-2.991139	0.000000
	FDI inward	0.020268	0.333000	0.023388	0.292000	0.020819	0.346000
	Exchange rate	0.000063	0.085000	0.000067	0.084000	0.000068	0.082000
	Telephone lines	-0.009685	0.013000	-0.009303	0.025000	-0.009325	0.025000
	Common border	-0.071029	0.921000	-0.112983	0.831000	-0.599487	0.256000
	Colonial links	2.761361	0.001000	2.705746	0.000000	2.283665	0.000000
	Constant	-30.452850	0.000000	-26.115990	0.000000	-32.702030	0.000000
R-squared	within	0.302800		0.4844		0.4872	
	between	0.723800					
	overall	0.483800					
rho		0.120525					

Group 12

	variable	EC2SLS Coefficient	p-value	2SLS Coefficient	p-value	OLS Coefficient	p-value
	Quota binding	-0.638216	0.030000	-0.749092	0.008000	-0.770124	0.006000
	Tariffs	-0.053764	0.013000	-0.062861	0.002000	-0.065061	0.001000
Group 12	Exporter's GDP	1.888457	0.000000	1.846342	0.000000	1.826513	0.000000
	Importer's GDP	1.136225	0.000000	1.111080	0.000000	1.194450	0.000000
	Exporter's GDP *per capita*	-1.550761	0.000000	-1.530540	0.000000	-1.522991	0.000000
	Importer's GDP *per capita*	0.894446	0.001000	0.942613	0.000000	0.840934	0.000000
	Distance	-2.179065	0.000000	-2.116440	0.000000	-2.200355	0.000000
	FDI inward	0.004708	0.732000	0.005168	0.711000	0.005495	0.693000
	Exchange rate	0.000000	0.997000	0.000000	0.990000	0.000000	0.991000
	Telephone lines	-0.006495	0.056000	-0.006446	0.061000	-0.006450	0.061000
	Common border	0.073792	0.904000	0.150768	0.785000	-0.002386	0.997000
	Colonial links	2.006569	0.005000	2.034464	0.001000	1.919688	0.003000
	Constant	-35.805680	0.000000	-35.166840	0.000000	-35.510960	0.000000
R-squared	within	0.571200		0.6262		0.6264	
	between	0.781700					
	overall	0.626300					
rho		0.034504					

Group 13

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 13	Quota binding	-2.066093	0.000000	-1.171505	0.030000	-1.432794	0.007000
	Tariffs	-0.177836	0.000000	-0.125152	0.000000	-0.145780	0.000000
	Exporter's GDP	1.970544	0.000000	1.580143	0.000000	1.740909	0.000000
	Importer's GDP	-0.618214	0.000000	-0.587674	0.000000	0.074072	0.270000
	Exporter's GDP *per capita*	-1.739157	0.000000	-1.315278	0.000000	-1.461152	0.000000
	Importer's GDP *per capita*	0.402364	0.311000	-0.414847	0.123000	-1.251454	0.000000
	Distance	-4.461564	0.000000	-4.653478	0.000000	-5.282031	0.000000
	FDI inward	0.031618	0.111000	0.033860	0.152000	0.032438	0.165000
	Exchange rate	-0.000030	0.389000	-0.000021	0.610000	-0.000019	0.647000
	Telephone lines	-0.006975	0.052000	-0.006395	0.136000	-0.006430	0.130000
	Common border	-1.826632	0.050000	-1.996182	0.000000	-3.137272	0.000000
	Colonial links	3.603293	0.001000	3.677144	0.000000	2.834764	0.000000
	Constant	8.128939	0.147000	20.095690	0.000000	12.656360	0.001000
R-squared	within	0.319100		0.488		0.499	
	between	0.625000					
	overall	0.485900					
rho		0.299616					

Group 14

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 14	Quota binding	-2.206761	0.000000	-1.910001	0.000000	-2.046538	0.000000
	Tariffs	-0.188062	0.000000	-0.168184	0.000000	-0.179773	0.000000
	Exporter's GDP	2.078327	0.000000	1.588032	0.000000	1.782065	0.000000
	Importer's GDP	0.537423	0.000000	0.503218	0.000000	0.800273	0.000000
	Exporter's GDP *per capita*	-1.783209	0.000000	-1.359589	0.000000	-1.552417	0.000000
	Importer's GDP *per capita*	0.781432	0.009000	0.728421	0.006000	0.360607	0.172000
	Distance	-2.619419	0.000000	-2.635504	0.000000	-2.924787	0.000000
	FDI inward	0.022691	0.199000	0.026789	0.139000	0.025800	0.153000
	Exchange rate	-0.000019	0.534000	-0.000019	0.547000	-0.000019	0.552000
	Telephone lines	-0.014906	0.000000	-0.013905	0.001000	-0.014366	0.000000
	Common border	-0.200817	0.766000	-0.174962	0.762000	-0.706383	0.219000
	Colonial links	3.062246	0.000000	3.125402	0.000000	2.728820	0.000000
	Constant	-26.355090	0.000000	-18.625070	0.000000	-23.514330	0.000000
R-squared	within	0.413700		0.5282		0.5303	
	between	0.756500					
	overall	0.528100					
rho		0.053571					

Group 15

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 15	Quota binding	-0.315904	0.835000	-0.361315	0.813000	-0.376701	0.805000
	Tariffs	-0.087275	0.003000	-0.094035	0.001000	-0.101545	0.000000
	Exporter's GDP	2.211296	0.000000	1.940982	0.000000	2.150200	0.000000
	Importer's GDP	1.455334	0.000000	1.445723	0.000000	1.414305	0.000000
	Exporter's GDP *per capita*	-1.461372	0.000000	-1.246312	0.000000	-1.441173	0.000000
	Importer's GDP *per capita*	0.393451	0.185000	0.412658	0.094000	0.456004	0.062000
	Distance	-1.394151	0.000000	-1.372645	0.000000	-1.327776	0.000000
	FDI inward	0.026719	0.202000	0.029766	0.171000	0.028119	0.195000
	Exchange rate	-0.000045	0.216000	-0.000045	0.239000	-0.000045	0.235000
	Telephone lines	-0.006289	0.097000	-0.006030	0.126000	-0.006426	0.103000
	Common border	1.687524	0.006000	1.712363	0.000000	1.776604	0.000000
	Colonial links	0.898198	0.207000	0.906430	0.111000	0.942405	0.097000
	Constant	-58.147470	0.000000	-53.833450	0.000000	-56.964520	0.000000
R-squared	within	0.247400		0.5598		0.5598	
	between	0.844100					
	overall	0.559700					
rho		0.081190					

Group 16

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
Group 16	Quota binding	-2.847385	0.065000	-2.929503	0.064000	-3.046556	0.053000
	Tariffs	-0.251457	0.000000	-0.266727	0.000000	-0.270289	0.000000
	Exporter's GDP	2.035728	0.000000	1.967098	0.000000	2.069089	0.000000
	Importer's GDP	1.577913	0.000000	1.556981	0.000000	1.552879	0.000000
	Exporter's GDP *per capita*	-1.625050	0.000000	-1.593252	0.000000	-1.685152	0.000000
	Importer's GDP *per capita*	1.591768	0.000000	1.660855	0.000000	1.670014	0.000000
	Distance	-1.228460	0.000000	-1.159612	0.000000	-1.144562	0.000000
	FDI inward	0.038585	0.039000	0.039599	0.041000	0.038734	0.046000
	Exchange rate	0.000022	0.508000	0.000022	0.521000	0.000022	0.526000
	Telephone lines	-0.008127	0.030000	-0.008055	0.038000	-0.008216	0.034000
	Common border	0.485490	0.449000	0.560164	0.276000	0.576069	0.261000
	Colonial links	1.467368	0.048000	1.483207	0.012000	1.486592	0.012000
	Constant	-61.387290	0.000000	-60.455410	0.000000	-61.979410	0.000000
R-squared	within	0.394300		0.5629		0.5629	
	between	0.804400					
	overall	0.562900					
rho		0.080062					

Group 17

	variable	EC2SLS Coefficient	p-value	2SLS Coefficient	p-value	OLS Coefficient	p-value
	Quota binding	0.037845	0.975000	0.403181	0.754000	0.892974	0.485000
	Tariffs	-0.073659	0.046000	-0.072861	0.028000	-0.045650	0.158000
Group 17	Exporter's GDP	1.146349	0.001000	1.532837	0.000000	1.398144	0.000000
	Importer's GDP	2.084234	0.000000	2.107564	0.000000	1.784497	0.000000
	Exporter's GDP *per capita*	-0.725931	0.043000	-1.041808	0.001000	-0.929503	0.001000
	Importer's GDP *per capita*	-0.451429	0.254000	-0.236793	0.413000	0.140885	0.622000
	Distance	0.082554	0.836000	0.063629	0.819000	0.293724	0.287000
	FDI inward	0.003023	0.904000	-0.001102	0.968000	0.000649	0.981000
	Exchange rate	-0.000013	0.770000	-0.000019	0.686000	-0.000020	0.672000
	Telephone lines	-0.006425	0.131000	-0.006795	0.144000	-0.007070	0.129000
	Common border	4.295657	0.000000	4.255674	0.000000	4.743362	0.000000
	Colonial links	-0.025598	0.979000	-0.083327	0.898000	0.336034	0.605000
	Constant	-58.519820	0.000000	-67.109730	0.000000	-62.193270	0.000000
R-squared	within	0.081400		0.3774		0.3804	
	between	0.670900					
	overall	0.378100					
rho		0.170812					

Group 18

	variable	EC2SLS Coefficient	p-value	2SLS Coefficient	p-value	OLS Coefficient	p-value
	Quota binding	-2.849539	0.000000	-1.697377	0.001000	-1.992098	0.000000
	Tariffs	-0.250177	0.000000	-0.170725	0.000000	-0.193408	0.000000
Group 18	Exporter's GDP	2.132859	0.000000	1.466041	0.000000	1.808594	0.000000
	Importer's GDP	-0.528258	0.000000	-0.457682	0.000000	0.158272	0.035000
	Exporter's GDP *per capita*	-2.163866	0.000000	-1.489908	0.000000	-1.820787	0.000000
	Importer's GDP *per capita*	0.248856	0.548000	-0.510887	0.087000	-1.280671	0.000000
	Distance	-4.375230	0.000000	-4.676242	0.000000	-5.266693	0.000000
	FDI inward	0.010883	0.585000	0.014066	0.538000	0.011951	0.597000
	Exchange rate	-0.000040	0.249000	-0.000030	0.458000	-0.000029	0.465000
	Telephone lines	-0.006981	0.084000	-0.005979	0.197000	-0.006582	0.152000
	Common border	-1.553605	0.123000	-1.848011	0.003000	-2.929182	0.000000
	Colonial links	4.477092	0.000000	4.495369	0.000000	3.691179	0.000000
	Constant	5.496396	0.298000	19.542630	0.000000	9.907753	0.005000
R-squared	within	0.313200		0.4537		0.4618	
	between	0.603500					
	overall	0.450400					
rho		0.240489					

Group 19

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
	Quota binding	-1.470640	0.016000	-0.343090	0.560000	-0.621886	0.285000
	Tariffs	-0.168826	0.000000	-0.113747	0.004000	-0.135201	0.000000
Group 19	Exporter's GDP	2.531548	0.000000	1.728615	0.000000	2.040609	0.000000
	Importer's GDP	-0.302843	0.014000	-0.349498	0.000000	0.214333	0.002000
	Exporter's GDP *per capita*	-1.619265	0.000000	-0.844899	0.009000	-1.078178	0.000000
	Importer's GDP *per capita*	1.257217	0.003000	0.661160	0.019000	-0.053218	0.848000
	Distance	-4.449499	0.000000	-4.559262	0.000000	-5.075087	0.000000
	FDI inward	0.012176	0.611000	0.019238	0.493000	0.015000	0.590000
	Exchange rate	0.000005	0.905000	0.000011	0.828000	0.000014	0.781000
	Telephone lines	-0.000069	0.986000	0.000615	0.893000	0.000844	0.853000
	Common border	-1.985823	0.035000	-2.015367	0.000000	-2.962193	0.000000
	Colonial links	3.915653	0.000000	4.068562	0.000000	3.362883	0.000000
	Constant	-19.496060	0.005000	-0.562000	0.918000	-9.872961	0.031000
R-squared	within	0.1495		0.4204		0.4286	
	between	0.6238					
	overall	0.42					
rho		0.28456174					

Group Quota free

	variable	EC2SLS		2SLS		OLS	
		Coefficient	p-value	Coefficient	p-value	Coefficient	p-value
	Tariffs	-0.024955	0.423000	-0.062561	0.033000	-0.044735	0.121000
	Exporter's GDP	1.520910	0.000000	1.680597	0.000000	1.618708	0.000000
Quota free	Importer's GDP	0.755781	0.000000	0.748422	0.000000	0.277972	0.000000
	Exporter's GDP *per capita*	-0.998187	0.000000	-1.182731	0.000000	-1.113963	0.000000
	Importer's GDP *per capita*	1.744167	0.000000	1.921318	0.000000	2.489104	0.000000
	Distance	-1.509711	0.014000	-1.376448	0.000000	-0.897147	0.009000
	FDI inward	0.027651	0.034000	0.027004	0.083000	0.027289	0.078000
	Exchange rate	0.000009	0.697000	0.000007	0.789000	0.000007	0.805000
	Telephone lines	-0.008113	0.020000	-0.008600	0.039000	-0.008455	0.041000
	Common border	0.986968	0.460000	1.099291	0.134000	1.984037	0.006000
	Colonial links	3.939944	0.011000	3.912428	0.000000	4.578668	0.000000
	Constant	-31.208920	0.000000	-33.936080	0.000000	-30.013410	0.000000
R-squared	within	0.614500		0.550800		0.554500	
	between	0.396000					
	overall	0.550500					
rho		0.327973					

Graph AS6.1: Economic Feedom, Transparency and Trade

 The relationship between indexes for corruption, economic freedom and exports in wearing apparel[190].

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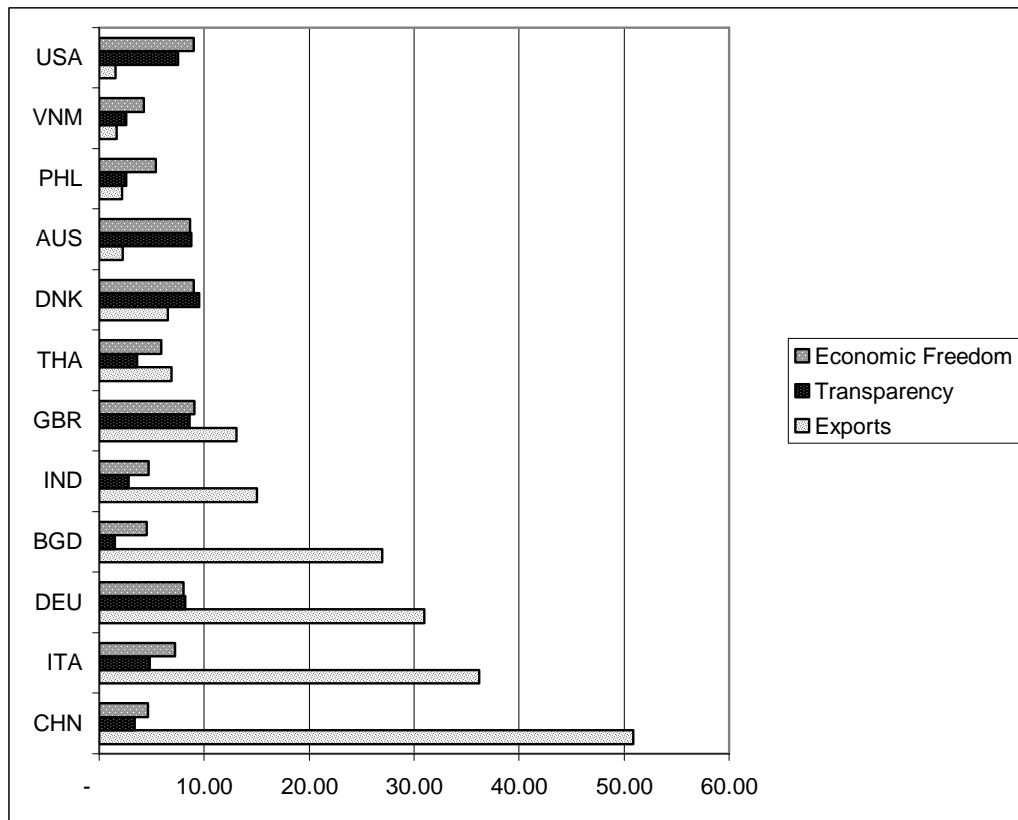
[190] The indexes for corruption and economic freedom values are from 0 to 10. The exports are in billion US$.

Table AS6.2: Number of product lines presenting binding quotas by trade partners.

Exporter	Importer	1997	1998	1999	2000	2001	2002	2003	2004
Bangladesh	USA	69	41	34	29	28	56	-	-
	EU	136	190	189	172	77	63	84	46
China	USA	35	5	5	-	-	4	-	-
Hong Kong	EU	23	50	48	30	23	30	32	23
Indonesia	EU	26	26	50	43	40	40	40	40
	USA	126	37	-	-	83	-	-	-
	EU	57	31	54	54	54	64	64	48
India	USA	7	-	-	-	-	-	-	-
Cambodia	USA	-	-	-	58	-	-	-	-
South Korea	EU	-	-	31	40	23	40	40	38
	EU	7	-	17	17	-	-	-	-
Sri Lanka	USA	12	55	-	-	1	-	-	-
	USA	-	-	-	-	63	-	28	82
Pakistan	EU	-	-	48	25	17	40	48	48
	EU	23	-	23	23	-	17	-	22
Philippines	USA	32	-	46	-	-	41	41	-
Thailand	EU	23	-	40	40	17	17	40	-
Turkey	USA	15	-	-	42	21	8	-	-
Taiwan	EU	43	23	40	-	23	40	23	-
	EU	100	78	111	85	103	126	-	-
Vietnam	USA	-	-	-	-	-	-	48	-

Table AS6.3: Total exports and number of product lines by groups, million US$.

Groups	1997	1998	1999	2000	2001	2002	2003	2004	Total Group
Quota free	19'898	20'912	19'546	20'705	20'357	18'477	22'126	26'363	168'385
Group 1	1'732	1'949	1'957	2'235	2'036	1'920	2'115	2'415	16'359
Group 2	619	632	653	674	659	658	668	671	5'235
Group 3	1'172	1'315	1'446	1'809	1'715	1'632	1'797	1'864	12'751
Group 4	1'070	984	735	808	852	767	830	879	6'924
Group 5	2'927	2'921	2'451	2'215	2'242	2'834	3'244	3'419	22'252
Group 6	864	982	1'015	1'119	991	1'070	1'260	1'566	8'867
Group 7	1'692	1'897	2'001	2'024	2'019	2'202	2'774	3'089	17'698
Group 8	2'929	3'257	3'586	3'770	3'758	4'303	4'992	4'926	31'521
Group 9	7'543	7'959	8'235	7'961	8'180	10'088	11'714	13'116	74'795
Group 10	818	805	710	798	886	777	834	962	6'590
Group 11	1'455	1'621	1'513	1'326	1'179	1'210	1'592	1'725	11'621
Group 12	6'636	7'651	7'583	7'653	7'735	8'567	10'721	13'160	69'707
Group 13	2'758	2'806	2'622	2'589	2'382	2'865	3'734	4'345	24'101
Group 14	3'825	4'374	4'973	5'359	5'664	5'817	7'290	8'302	45'605
Group 15	1'961	2'299	2'423	2'617	2'648	2'894	3'455	4'013	22'309
Group 16	4'306	4'518	4'325	4'362	4'102	4'300	4'941	5'334	36'187
Group 17	1'720	1'990	2'058	2'179	2'236	2'282	2'210	2'321	16'996
Group 18	2'483	2'520	2'342	2'204	2'169	2'261	2'691	2'875	19'545
Group 19	1'076	1'233	1'400	1'321	1'388	1'247	1'513	1'573	10'752
Total year	69'481	74'622	73'576	75'728	75'200	78'173	92'504	104'921	628'200

Table AS6.4: Quota-Groups

This table presents the groups in detail, showing the share of imports for the US and EU, the three largest exporters and their market share in the group, as well as the countries having at least one binding quota during the period between 1997 and 2004.

| Group | Imports (in percent) | | Exporters (in percent) | | Countries under at least one binding quota | |
	US	EU	Largest Exporters	Market share	EU market	US market
Group 1	1	-	Hong Kong	0.1641		Bangladesh, Indonesia
			Bangladesh	0.122		
			South Korea	0.1137		
Group 2	0.4849	0.5151	China	0.3286	China and Vietnam	Bangladesh, Indonesia, Sri Lanka, Pakistan and Philippines
			Hong Kong	0.0896		
			Sri Lanka	0.0709		
Group 3	0.9944	0.0056	Taiwan	0.1606		Bangladesh, Indonesia, and Cambodia
			China	0.158		
			Indonesia	0.1517		
Group 4	0.9661	0.0339	China	0.1787		Bangladesh, Indonesia, and Sri Lanka
			South Korea	0.1522		
			Taiwan	0.1007		
Group 5	0.098	0.902	Turkey	0.1243	China, India, Indonesia, Sri Lanka and Vietnam	
			Germany	0.1027		
			India	0.0978		
Group 6	0.8001	0.1999	China	0.2136		Bangladesh, Vietnam
			India	0.1045		
			Hong Kong	0.0803		
Group 7	0.2287	0.7713	China	0.2159	China and Vietnam	Philippines
			Hong Kong	0.0893		
			Austria	0.0671		

Table AS6.4 *continued*

Group	Importer		Exporters		Countries under binding quotas	
	US	EU	Largest Exporters	Market share	EU market	US market
Group 8	0.9481	0.0519	Hong Kong	0.1872		Bangladesh, China, Indonesia, Cambodia, Pakistan, Philippines, Turkey and Vietnam
			China	0.0895		
			Philippines	0.0679		
Group 9	0.1225	0.8775	China	0.1522	China, Hong Kong, Indonesia, India, South Korea, Pakistan, Philippines, Thailand, Taiwan and Vietnam	
			Italy	0.1148		
			Turkey	0.0972		
Group 10	1	-	China	0.1953		Bangladesh, Indonesia, Sri Lanka, and Philippines
			Hong Kong	0.1188		
			South Korea	0.1030		
Group 11	0.0017	0.9983	Turkey	0.1842	China and Vietnam	
			China	0.1519		
			Belgium	0.0875		
Group 12	0.1544	0.8456	Turkey	0.1634	China, Hong Kong, India, South Korea, Pakistan, Taiwan and Vietnam	
			Bangladesh	0.0811		
			Portugal	0.0635		
Group 13	-	1	China	0.2702	China, Hong Kong, and Vietnam	
			Germany	0.0818		
			Nederland	0.0815		
Group 14	0.0176	0.9824	Turkey	0.1224	China, Hong Kong, Indonesia, India, South Korea, Sri Lanka, Pakistan, Philippines, Thailand, Taiwan and Vietnam	
			Germany	0.1022		
			Italy	0.1009		
Group 15	0.5484	0.4516	China	0.2046		Pakistan
			India	0.1889		
			Pakistan	0.1458		

Table AS6.4 *continued*

Group	Importer US	Importer EU	Largest Exporters	Market share	Countries under binding quotas EU market	Countries under binding quotas US market
Group 16	0.5505	0.4495	China	0.2159		India and Indonesia
			Italy	0.1169		
			India	0.0925		
Group 17	0.9775	0.0225	Hong Kong	0.2141		India, Turkey and Vietnam
			South Korea	0.1708		
			Taiwan	0.1645		
Group 18	-	1	Bangladesh	0.1594	China, Indonesia, India, and Vietnam	
			India	0.0974		
			Hong Kong	0.0896		
Group 19	-	1	China	0.3669	China and Vietnam	
			Belgium	0.0931		
			Germany	0.0574		
Quota-free	0.3558	0.6442	China	0.2421		
			Italy	0.0894		
			Germany	0.0618		

Source: Dataset and staff calculation

Table AS6.5: Binding quotas

Binding quotas by group, year and importing and exporting countries.

Importer	Exporter	Group	y1997	y1998	y1999	y2000	y2001	y2002	y2003	y2004
USA	Bangladesh	Group 1	1	1	0	0	0	0	0	0
USA	Indonesia	Group 1	0	1	0	0	0	0	0	0
USA	Bangladesh	Group 2	1	1	0	0	0	0	0	0
EU	China	Group 2	1	1	1	1	0	0	0	0
USA	Indonesia	Group 2	1	0	0	0	1	0	0	0
USA	Sri Lanka	Group 2	1	0	0	0	0	0	0	0
USA	Pakistan	Group 2	0	0	0	0	1	0	0	0
USA	Philippines	Group 2	0	0	1	0	0	0	0	0
EU	Vietnam	Group 2	0	0	0	1	1	1	0	0
USA	Bangladesh	Group 3	0	0	0	0	0	1	0	0
USA	Indonesia	Group 3	0	0	0	0	1	0	0	0
USA	Cambodia	Group 3	0	0	0	1	0	0	0	0
USA	Bangladesh	Group 4	1	1	0	0	1	0	0	0
USA	Indonesia	Group 4	0	0	0	0	1	0	0	0
USA	Sri Lanka	Group 4	0	1	0	0	0	0	0	0
EU	China	Group 5	0	1	0	1	0	0	0	1
EU	Indonesia	Group 5	0	0	1	0	0	0	0	0
EU	India	Group 5	0	0	0	0	0	1	1	0
EU	Sri Lanka	Group 5	1	0	0	0	0	0	0	0
EU	Vietnam	Group 5	1	0	1	1	0	1	0	0
USA	Bangladesh	Group 6	0	0	0	1	0	0	0	0
USA	Vietnam	Group 6	0	0	0	0	0	0	1	0
EU	China	Group 7	1	1	1	1	1	1	1	1
EU	Hong Kong	Group 7	0	0	0	1	0	1	1	0
USA	Philippines	Group 7	0	0	0	0	0	0	1	0
USA	Bangladesh	Group 8	0	0	1	0	0	1	0	0
USA	China	Group 8	1	0	0	0	0	0	0	0
USA	Indonesia	Group 8	1	0	0	0	0	0	0	0
USA	Cambodia	Group 8	0	0	0	1	0	0	0	0
USA	Pakistan	Group 8	0	0	0	0	0	0	0	1
USA	Philippines	Group 8	1	0	1	0	0	1	1	0
USA	Turkey	Group 8	0	0	0	1	0	0	0	0
USA	Vietnam	Group 8	0	0	0	0	0	0	1	0
EU	China	Group 9	0	1	1	1	1	0	0	0
EU	Hong Kong	Group 9	1	1	1	1	1	1	1	1
EU	Indonesia	Group 9	1	1	1	1	1	1	1	1
EU	India	Group 9	1	0	1	1	1	1	1	1
EU	South Korea	Group 9	0	0	1	1	1	1	1	1
EU	Pakistan	Group 9	0	0	1	0	0	1	1	1
EU	Philippines	Group 9	1	0	1	1	0	0	0	1
EU	Thailand	Group 9	1	0	1	1	0	0	1	0
EU	Taiwan	Group 9	1	1	1	0	1	1	1	0
EU	Vietnam	Group 9	1	1	1	1	1	1	0	1

Table AS6.5 *continued*

Importer	Exporter	Group	y1997	y1998	y1999	y2000	y2001	y2002	y2003	y2004
USA	Bangladesh	Group 10	1	0	0	0	0	0	0	0
USA	Indonesia	Group 10	1	0	0	0	1	0	0	0
USA	India	Group 10	0	0	0	0	1	0	0	0
USA	Sri Lanka	Group 10	0	1	0	0	0	0	0	0
USA	Philippines	Group 10	0	0	0	0	0	1	0	0
EU	China	Group 11	1	1	1	0	0	0	1	1
EU	Vietnam	Group 11	0	0	0	0	1	0	0	0
EU	China	Group 12	0	1	0	0	0	0	1	0
EU	Hong Kong	Group 12	0	0	1	0	0	0	0	0
EU	India	Group 12	1	1	1	1	1	1	1	1
EU	South Korea	Group 12	0	0	1	0	0	0	0	0
EU	Pakistan	Group 12	0	0	1	1	0	0	1	1
EU	Hong Kong	Group 12	1	0	0	0	0	0	0	0
EU	Vietnam	Group 12	1	1	1	1	1	1	0	0
EU	China	Group 13	1	0	1	1	0	0	0	0
EU	Hong Kong	Group 13	0	1	0	0	0	0	0	0
EU	Vietnam	Group 13	1	1	1	0	0	0	0	0
EU	China	Group 14	1	1	0	1	0	0	0	0
EU	Hong Kong	Group 14	0	1	1	0	0	0	0	0
EU	Indonesia	Group 14	0	0	1	1	1	1	1	1
EU	India	Group 14	1	1	1	1	1	1	1	1
EU	South Korea	Group 14	0	0	0	1	0	1	1	0
EU	Sri Lanka	Group 14	0	0	1	1	0	0	0	0
EU	Pakistan	Group 14	0	0	1	1	1	1	1	1
EU	Philippines	Group 14	0	0	0	0	0	1	0	0
EU	Thailand	Group 14	0	0	1	1	1	1	1	0
EU	Taiwan	Group 14	0	0	1	0	0	1	0	0
EU	Vietnam	Group 14	1	1	1	1	1	1	0	1
USA	Pakistan	Group 15	0	0	0	0	1	0	1	1
USA	Indonesia	Group 16	1	0	0	0	0	0	0	0
USA	India	Group 16	1	0	0	0	0	0	0	0
USA	Indonesia	Group 17	1	0	0	0	1	0	0	0
USA	Turkey	Group 17	1	0	0	1	0	0	0	0
USA	Vietnam	Group 17	0	0	0	0	0	0	1	0
EU	China	Group 18	0	1	0	0	0	0	0	0
EU	Indonesia	Group 18	1	1	1	1	0	0	0	0
EU	India	Group 18	1	0	0	0	0	1	1	0
EU	Vietnam	Group 18	0	1	1	0	1	1	0	0
EU	China	Group 19	1	1	1	0	1	1	1	0
EU	Vietnam	Group 19	1	1	1	0	0	1	0	1

Table AS6.6: Rho by groups

Group	Rho	Group	Rho
Group 1	0.975108	Group 11	0.582009
Group 2	0.569403	Group 12	0.606987
Group 3	0.770658	Group 13	0.782677
Group 4	0.470586	Group 14	0.616188
Group 5	0.485119	Group 15	0.635194
Group 6	0.443203	Group 16	0.463786
Group 7	0.776367	Group 17	0.521986
Group 8	0.421425	Group 18	0.648388
Group 9	0.669496	Group 19	0.614016
Group 10	0.672759	Quota free	0.446514

Table AS6.7: Tariffs reduction

Tariffs reduction by groups, importing country and Swiss formula's coefficients, in percentage

	US		EU	
Group	Swiss Formula 6	Swiss Formula 10	Swiss Formula 6	Swiss Formula 10
Group 1	6.44%	5.26%	-	-
Group 2	6.44%	5.26%	7.95%	6.50%
Group 3	7.18%	5.94%	7.93%	6.48%
Group 4	7.33%	6.07%	7.92%	6.48%
Group 5	8.13%	6.80%	7.90%	6.46%
Group 6	7.67%	6.39%	7.91%	6.47%
Group 7	9.40%	7.96%	7.86%	6.43%
Group 8	7.52%	6.24%	7.92%	6.47%
Group 9	9.40%	7.96%	7.86%	6.43%
Group 10	7.43%	6.16%	-	-
Group 11	9.40%	7.96%	7.86%	6.43%
Group 12	9.40%	7.96%	7.86%	6.43%
Group 13	-	-	7.95%	6.50%
Group 14	6.44%	5.26%	7.95%	6.50%
Group 15	4.61%	3.61%	7.30%	5.96%
Group 16	7.65%	6.36%	7.91%	6.47%
Group 17	8.66%	7.29%	7.88%	6.45%
Group 18	-	-	7.95%	6.50%
Group 19	-	-	7.95%	6.50%
Quota free	7.55%	6.27%	7.92%	6.47%