

Unravelling the textiles trade

How accurate were GTAP models in predicting the impact of the end of the MFA?

Louise Curran^{1 2}

Draft

Comments welcome

April 2008

¹ Toulouse Business School, corresponding address l.curran@esc-toulouse.fr

² With thanks to Claudio Gasparini, European Commission, Brussels, for statistical support.

Abstract

World textiles trade has long been distorted by a series of quota limitations on market access institutionalised in the Multi Fibres Agreement (MFA). One of the key achievements of the Uruguay Round was the liberalisation of the sector through the Agreement on Textiles and Clothing (ATC). This liberalisation process was a key source of the welfare gains which most models forecast to result from the Round.

However, it was never evident that the impact of this liberalisation would be positive for all clothing suppliers. The quotas that had existed in the large industrialised country markets had multiple effects. In particular, they both limited the exports of the most competitive suppliers and encouraged importers in restricted markets to source their goods in a wide range of countries which were not subject to extensive quota restraints.

In 2005 the sector was finally fully liberalised. This paper will look at the impacts of that liberalisation on the basis of actual trade figures. It will then compare these flows with the changes forecast by various researchers. These forecasts, mostly based on GTAP analysis, generally indicated gains for many developing country suppliers and losses for preferential suppliers and the EU. In reality, gains have been quite heavily concentrated in a few key suppliers, while many have seen limited increases in trade and a few key exporters have experienced significant losses. This effect is particularly striking in Taiwan and Korea, which were not universally forecast by the models to lose out from the liberalisation.

This analysis indicates that, although the GTAP-based models forecast several outcomes accurately – in particular the gains experienced by China and India – for other sources they were less accurate. This paper will explore the reasons behind the difficulties in modelling the sector and its trade policy context and draw some conclusions for future GTAP modelling of quantitative limits on trade.

Keywords – MFA, ATC, Trade liberalisation, GTAP, quantitative limits on trade

1. Introduction

When textiles trade with industrialised country markets was finally liberalised in 2005, it hardly came as a shock to the market. After decades of protection under various guises, the industrialised countries had finally agreed in 1995 to liberalise the sector over a ten year period, as part of the final agreement of the Uruguay Round. This liberalisation had taken place slowly over the intervening years, with a given percentage of trade liberalised in a series of steps. There was much interest in the potential outcome of the liberalisation and several studies had attempted to forecast the trade and welfare effects. The actual impact of this liberalisation tells us much about the way in which quota limitations impact on markets, but it also provides the opportunity to assess the extent to which the models used in the forecasts – based, for the most part, on GTAP – accurately modelled these effects.

Prior to liberalisation, textile and clothing imports to most developed country markets were regulated by a complex system of quotas under the Multi-Fibres Agreement (MFA) and its successor, the Agreement on Textiles and Clothing (ATC). These quotas not only placed an overall limit on the growth of imports from restricted suppliers, but also limited the potential market for individual exporters through country specific quota systems (Nordas, 2004, Khanna, 1990). This characteristic of quotas is very different from the more classic form of trade protectionism - tariffs. Tariffs make imports more expensive, but once the tariff is paid, the level of exports can be as high or low as the market will bear. Quotas fix the absolute size of a country's bilateral exports and prevent excess exports at any price.

Towards the end of the scheme's life, most large textile suppliers had fixed volume quotas of permitted exports in the categories in which they were most competitive, with increases set annually. The inbuilt inflexibility which the quotas brought to the market meant that wider changes in competitiveness over time could only be partly reflected in changes in market share.

In this context, a major restructuring was inevitable once quota limitations ceased to restrain trade from the most competitive suppliers. The key question then was who would gain and lose, in what sectors and by how much? Prior to liberalisation, fears were expressed of the potential for serious market disruption. A series of studies were undertaken to establish the likely impacts. Global trade in the sector was forecast to increase significantly and market shares to change substantially. There was a lot of concern that China, as a highly competitive producer with a huge potential supply capacity, would seize a large slice of the market, displacing other, often much poorer, developing countries such as Bangladesh or India (Mc Donald et al, 2004, Ananthakrishnan and Jain-Chandra, 2005, Mlachila and Yang, 2004).

This paper will look at the impact of liberalisation on global textiles and clothing trade. It is complementary to and builds on, earlier work looking at impacts on the two most important quota restricted markets – the US and the EU (Curran, 2008a). The earlier work was constrained by data availability. Comprehensive and comparable trade data for 2005 now exists for most of the key actors. This means that a true comparison with forecasts can be made.

The objective of the paper is to explore the extent to which the studies undertaken prior to liberalisation accurately forecast its impacts and highlight any key anomalies. It is hoped that by comparing forecasts with actual outcomes this work can foster a better understanding of the way in which quantitative restrictions effect trade and thus help to ensure more accurate modelling of these trade policy instruments, which remain important in certain sectors of trade. In addition, the textiles sector remains one in which branding can significantly differentiate ostensibly similar goods. This fact, common to many consumer goods, reduces

the potential substitution between products on the basis of price alone and is likely to also complicate forecasting.

The textiles and clothing sectors will be considered separately as they have quite different industrial structures and characteristics. Most importantly for trade, textiles is a relatively capital intensive industry, where industrialised countries still have a comparative advantage in certain sectors. In addition it is an input to another industry – clothing. Thus the impacts on the textiles sub-sector are both direct – through increased demand for textiles further to liberalisation – and indirect – through increased demand for textiles as inputs to the clothing industry, which itself is stimulated by the liberalisation. Clothing, on the other hand, is a labour intensive industry, where industrialised countries generally only have a comparative advantage in very high quality or high fashion levels of the market (Nordas, 2004). In addition, it is purely a consumer goods industry, thus impacts on the consumer market are direct.

Although the two sectors are often referred to together, their inherent differences are reflected in quite different market structures and thus differing impacts from liberalisation. It is important to note in this context that the global market for clothing is significantly larger than that for textiles. In 2005 the value of global clothing exports was over 40% higher than the value of textile exports (€230bn compared to €161bn), so comparable percentage losses in exports in the former have more significant economic impacts.

The paper will start with a brief description of the policy context. It will then discuss the various efforts made to forecast the impacts of liberalisation through GTAP modelling. The actual impact of liberalisation on the textiles and clothing trade of the key suppliers in the market will then be considered, in terms of changes in values and these results will be compared with forecasts. Finally the results will be discussed and some conclusions drawn.

2. The policy background

Protection has a long history in the textiles sector. Quota limitations were first instigated in the 1960s, in response to the emergence of competitive developing country suppliers, although protection really became institutionalised with the Multi-Fibres Arrangement in 1974 (Francois et al, 2000). The main objective of the MFA was to stabilise the growth in imports in certain textile products where industrialised countries' producers were considered vulnerable to competition from low cost sources (CEC, 1990). This was achieved through quota restrictions based on historical trade, which increased by a limited amount every year. The restrictiveness of the MFA varied across suppliers. Some countries only had a few quotas. The highest restrictions were generally reserved for the Asian 'tigers' – Hong Kong, Korea, Taiwan, Macau – which were historically the dominant suppliers. In more recent years, extensive restrictions have also been placed on the emerging Chinese industry.

The manner in which the MFA operated had the un-intended side effect of encouraging the internationalisation of the textile industry. When dominant suppliers began to reach ceilings in their quotas, production moved to other low cost countries, often as a result of investment from the tiger economies (so called 'quota hopping') (Davenport, 1990, Rivoli, 2005). In turn, as imports from new sources grew in restricted markets, new restrictions then began to be imposed on these sources and the agreement finally came to cover a large range of countries, products and markets, while the industry spread across the developing world (Meyer, 2005, Khanna, 1990). One overall impact of the system was to reduce the global efficiency of the industry, by encouraging the maintenance of production in 'sunset' centres and uncompetitive, but relatively unrestricted, suppliers (World Bank, 2004).

A key objective of the last round of trade negotiations – the Uruguay Round – was to eliminate textile quotas. Indeed, a large share of the expected gains from the round (between 42% and 27% depending on the study) were attributed to textiles and clothing (OECD, 2003). This liberalisation was seen as particularly vital to developing countries, as they are the biggest exporters in this sector. However, studies tended to forecast the textiles liberalisation as a win-win prospect with both developed and developing countries experiencing welfare gains³. Early impact studies generally forecast positive impacts for most developing countries or regions, although negative impacts on Africa, Latin America and Malaysia were forecast by some (see Whalley, 2000 Table 3, for details of these studies and their forecasts).

The Agreement on Textiles and Clothing (ATC) which emerged from the round, foresaw the expiration of the quotas over ten years, with full liberalisation on 1st January 2005⁴. This liberalisation process was to be back-end loaded however, in that almost half of the restrictions were to remain until 2005. Francois et al (2000), have argued that this structure means that the vast majority of the impact of the liberalisation process was concentrated in the final stage of liberalisation.

It is important to note that not all suppliers in the sector were restricted prior to the liberalisation process. For example, on the EU market industrialised countries were not restricted by quotas. Furthermore, several important developing country suppliers had quota free access to the EU market and many had tariff free access as well. The Least Developed Countries (LDCs) (under the Everything But Arms Initiative), the African Caribbean Pacific (ACP) countries (under the Cotonou Agreement) and countries involved in the Euro-Med Agreements, all had quota-free and tariff-free access to the EU market. Partly as a result of this access, Bangladesh, Tunisia, Morocco and Mauritius were the 4th, 6th, 7th and 18th suppliers to the EU in the clothing sector in 2004.

In the textiles sector, its capital intensive nature meant that there were fewer developing countries within the EU's key suppliers, but Turkey and Egypt were, respectively the 2nd and 10th most important suppliers in 2004. Clearly these preferential traders were at risk of losing market share once quotas on other EU suppliers ceased to restrain trade. In the US the situation was similar for Mexico and several Caribbean suppliers, who had preferential access to the market.

Although agreement on the ATC had initially been considered to be a major step forward for developing countries in the Uruguay Round, as liberalisation loomed, several of them became concerned that the impacts would not be universally positive (Meyer, 2005, Rivoli, 2005). Developing countries have a natural comparative advantage in the sector, especially in clothing, due to their low labour costs, however within developing countries there are quite large differences in competitiveness.

In particular, China was feared to be far more competitive than many others and there were concerns that they would seize a large share of the market, especially in clothing, once the quotas that had constrained their growth expired (Rangaswami, 2005). Meyer has argued that this fear was exaggerated and that several key factors were not being properly taken into account in forecasts (Meyer, 2005), however uncertainty was high. As pointed out in a study for the Canadian International Development Agency just after the ATC was agreed '*...after twenty two years of MFA trade restrictions, no country is sure whom is competitive with whom*'. (CSIER, 1996)

³ The magnitude of these gains was usually forecast to be higher in developed countries, where the reduction in prices due to liberalisation was forecast to have significant impacts on consumer welfare.

⁴ For further details on the agreement and modalities see, for example Meyer, 2005 or Francois, 2000.

Initial indications in the first months of 2005 were that China had indeed seen large gains in market share, although as Brenton and Hoppe (2005) pointed out at the time, China was not the only developing country to benefit. Nevertheless, in reaction to these increases, the EU negotiated a Memorandum of Understanding with the Chinese in 10th June which agreed quantitative limitations or ‘voluntary export restraints’ (VERs) on ten categories of textiles – 6 in clothing and 4 in textiles – up to the end of 2007 (CEC, 2005). This came into full effect in July and slowed the sharp increase in Chinese growth, mitigating negative impacts on some other suppliers, as well as EU industry (Curran, 2008a). The US negotiated even more extensive restrictions, which now cover 34 categories of products up to 2008 (USTR, 2005). These restrictions need to be kept in mind in any discussions on the impacts of liberalisation.

3. Forecasting the impacts of quota removal

Reflecting concerns about the potential impact of liberalisation, several studies were undertaken in the years coming up to the full liberalisation in 2005. These studies generally concluded that there would be a few key winners, while several developing countries would lose, although there is not universal agreement on whom these winners and losers would be. Different approaches gave slightly varied forecasts, although all studies agreed that China would be an important winner. All of the studies referred to below used computerised general equilibrium models based on the Global Trade Analysis Project (GTAP) database. A summary of the forecasts is provided below in tables 1 and 2.

As explained in some detail in, for example, the World Bank study (2004) on the impact on Pakistan, these models represent quotas as being equivalent to an export tax – Export Tax Equivalents or ETEs. This is a reflection of the fact that quotas were often bought by exporting companies from their governments, who managed the quota system. If companies wanted to export their goods they had to buy the quota, so it was, indeed, similar to an export tax. The effect of quotas could, to some extent, be gauged by the price of quota licences – very restrictive quotas were more expensive.

ETEs were calculated based on the price of quota and the level of quota utilisation and varied considerably by supplier and market. Ananthakrishnan and Jain-Chandra (2005) provide averages by country which illustrate this variation. For example in the clothing market in the EU the ETEs varied from 25.3% for China to zero for Taiwan and Bangladesh. The following analysis indicates that this ETE approach, although reflecting quite well the restrictive impacts of quotas on competitive suppliers, may not have captured all of the various impacts of this form of import restriction.

Forecasts of the potential welfare gains from liberalisation on the basis of these models were large. In welfare terms, CEP II forecast that China would gain by \$3.6bn from full quota liberalisation in the whole textiles sector, while South and South East Asia would gain by \$1.3 and Asian NICs by \$2.1bn (Avisse and Fouquin, 2001). The EU would gain \$1.6bn and NAFTA, \$5.2bn. IMF researchers found that China would experience a welfare gain from quota elimination in the whole sector (\$2.9bn), but almost all other countries modelled would lose (-\$449m for India, -\$486m for Bangladesh), except the large importing countries – the EU and the US – who would gain from the major welfare effect for consumers (\$10.5bn and \$5.7bn, respectively) (Ananthakrishnan and Jain-Chandra, 2005). UNECA research resulted in similar results – gains for China (\$2.4bn), the EU (\$8.4bn) and US (\$5.4bn) and losses for all other regions (Ben Hammouda et al, 2005).

Given the complexity of the concept of ‘welfare’, attempting to analyse the actual welfare impacts of the liberalisation would be a very difficult task, requiring data on several key

elements of the economy⁵. This study will therefore focus on the forecasts made for changes in trade, a much easier dimension to measure, in order to assess the accuracy of the modelling exercises. It is accepted, however, that export growth does not inevitably imply welfare gains⁶.

In trade terms, forecasts tended to differentiate between clothing and textiles. In **clothing**, the key studies and their forecasts were:

Avisse and Fouquin (2001) – hereafter referred to as *CEPII*. Under a full liberalisation scenario, this study found that China would increase their exports by 87%, Asian NICs by 18% and South and South East Asia by 36%. All other regions were forecast to see reductions in exports, the EU by 19% and NAFTA by 27%..

Ananthakrishnan and Jain-Chandra (2005) – hereafter referred to as *IMF (I)*. This study had less optimistic forecasts for the impacts of full liberalisation on most Asian countries. India was forecast to see a fall in clothing exports of 4%, while Bangladesh would lose 24% of their exports. China was forecast to increase exports by 85%. While the EU's exports were forecast to fall by 19%, little impact was expected on US exports (+0.7%).

The study, however, also modelled a scenario where only half of China's quotas were removed. This scenario is closer to reality. In this scenario (used in the table below) the forecast changes in clothing exports were more optimistic for Asian suppliers. An increase of 11% was forecast for India, 4% for the Philippines, 6% for Korea, 2% for Indonesia and 37% for China. Bangladesh was still forecast to lose exports (-12%) as was Hong Kong (-4%), Taiwan (-14%) and other South Asia (-7%) as well as the EU (-11%), the US (-1%) and Mexico (-15%).

Ben Hammouda et al, 2005, hereafter referred to as *UNECA*. This study forecast a 110% increase for Chinese clothing exports against a 28% fall for Tunisia, 22% for Turkey, 18% for Morocco, 20% for the EU and 2% for the US.

Mac Donald et al, (2004) at US Department of Agriculture - hereafter referred to as *USDA*. Thus study forecast an increase of 7% in China's clothing exports as a result of quota elimination in 2005, under an average growth scenario, increasing to 16% by 2014. India was forecast to increase exports by 5% and 14% and Indonesia, Thailand and Malaysia by 10% and 19% by 2005 and 2014 respectively. This study grouped Japan, Korea and Taiwan together, forecasting a growth rate for the group of 5% and 3% over the two time periods. For the EU 3% growth was forecast for 2005, while the figure was 2% for the US.

The World Bank (2004) – hereafter referred to as *World Bank*. This study on the impact on Pakistan forecast that clothing output could decline by 11% and exports by 17% as a result of quota elimination (World Bank, 2004).

Mlachila and Yang (2004) hereafter referred to as *IMF (II)*. This study considered the impact on Bangladesh, where it forecast losses of 18% in clothing export values due to full liberalisation, with GDP declining by 2.3% and employment by 4.5%. This study also modelled the differential impact of Chinese exports being restricted such that they increased by only half what they would under full liberalisation. Under this scenario, clothing exports from Bangladesh were forecast to fall by 'only' 13%. Although the accuracy of these

⁵See Hanslow (2000) and Hertel and Huff (2001) for discussion on the concept of welfare in GTAP.

⁶ It is worth noting, however, that one key element of the positive welfare impact on consumers – the reduction in relative prices – does seem to be visible since the liberalisation of the sector began, at least on the EU market (Curran, 2006).

forecasts cannot be gauged as Bangladesh has not yet declared their exports to the UN, the study is included in this paper in order to be as comprehensive as possible.

In the textiles sector, forecasts were as follows:

CEPII found the consequences of liberalisation to be less significant in textiles than in clothing, although the Asian NICs and Japan were forecast to gain from increased demand for Chinese textiles. The most marked change which they note is a 25% increase in textile output in the Asian NICS (although exact forecasts for changes in exports are not provided in the paper).

IMF (I), forecast a 51% increase for Chinese textiles exports under full liberalisation, with increases for Indonesia (30%), Hong Kong (19%), Other South Asia (15%), Korea (10%), Philippines (9%), India (6%) and Taiwan (1%) with reductions in exports for the EU (-16%), the US (-4%) and Mexico (-19%). Under the 'restricted China' scenario the forecast increase for China was 20%, while it was 39% for Indonesia, 23% for Hong Kong and 18% for the rest of South Asia. India was forecast to increase exports in textiles by 13% while exports were forecast to fall for the EU (-11%), US (-3%) and Mexico (-11%). Although the authors do not comment on the source of the forecast impacts on South East Asian exporters, it is likely that the significant increases forecast in this study are related to increased exports of textiles to China and other clothing exporters, as forecast in the *CEPII* study.

USDA forecast increases in textiles exports for all actors except Mexico and the Caribbean (-1%). China was forecast to see gains of 5%, Indonesia, Thailand and Malaysia 7%, Japan, Korea and Taiwan 6% and India 4%. The effect on the EU (1%) and the US (0%) was forecast to be neutral.

UNECA forecast a 61% increase for China against a fall of 21% for Tunisia, 14% for Turkey, 11% for Morocco, 16% for the EU and 2% for the US.

World Bank forecast an increase of 7% in textile output and 17% in exports for Pakistan. This growth is particularly linked to growth in Chinese textile demand, as Pakistan was forecast to lose out on the liberalising developed markets.

IMF (II) forecast a 3% reduction in Bangladeshi textiles exports under their 'restricted China' scenario (5% with full liberalisation).

4. Methodology

Statistics on the value of trade, expressed in euro, were extracted from the UN's database COMTRADE for the years 2004 and 2005 for all key countries modelled in the main studies on the impact of liberalisation discussed above. These figures are based on declarations from the member countries of the UN themselves. Textiles exports were classified as those within HS sectors 50-60. Clothing between HS 61-63. The changes in these exports in 2005, compared to 2004, were then calculated and compared to the forecast changes in trade made by the various studies. These figures were also compared to those calculated for the key restricted markets – the EU and US – on the basis of their import figures, in previous work on the impact of the liberalisation on these markets (Curran, 2008a).

5. Comparison of actual changes in trade with forecasts

The figures on actual changes in **clothing exports** are shown in table 1 where they are compared to the forecasts of the various studies and the figures for imports to the two key restricted markets – the EU and US – calculated in earlier work (Curran, 2008a). It is clear that trade varied quite considerably compared to forecasts. In the case of China, the global increase of 22% in clothing exports was lower than most models predicted, even using a

‘China restricted’ scenario and less than half of the increase seen on the key restricted markets only.

On the other hand, India’s increase in exports was significantly higher than predicted and also higher than the impacts seen on restricted markets – indicating that India expanded its exports globally by even more than they increased their exports to the previously restricted markets. The development of Hong Kong’s trade was also more positive than might have been expected from either the forecasts or the impacts on the EU/US. However, the level of re-exports from Hong Kong of Chinese goods complicates the picture and makes it difficult to establish the exact impact on Hong Kong producers⁷.

Taiwan lost clothing exports and the Philippines gained them at levels not too far from those forecast by the IMF (I), although that study was much less accurate for Korea (forecast +6%, actual, -21%). The group of Asian NICs in the CEPII study in the table essentially comprised Taiwan, S. Korea and Hong Kong. Given the negative impacts seen in the first two suppliers, the forecast positive impact on that group turned out to be optimistic.

Table 1 – Forecast and actual changes in global exports in clothing, various studies.

*Where possible the scenario closest to reality - continued restrictions on Chinese exports - is used and indicated with *.*

	<i>CEPII</i>	<i>IMF(I)*</i>	<i>WB</i>	<i>IMF (II)*</i>	<i>USDA</i>	<i>UNECA</i>	<i>Actual</i>	<i>US+EU⁸</i>
China	87	37			7	110	22	53
India		11			5		39	29
Hong Kong		-4					9	-10
Taiwan		-14			5		-20	-28
Bangladesh		-12		-13				2
Other S. Asia		-7						
Philippines		4					7	-4
Korea		6			5		-21	-39
Indonesia		2			10		14	8
S. and SE Asia	36							
Pakistan			-17				22	-7
Sri Lanka							3	3
Asian NICS	18							
Thailand					10		2	-4
Malaysia					10		2	-4
Med and CEECs	-5							
Morocco						-18	-6	-8
Tunisia						-28	-5	-6
Turkey						-22	6	2
Mexico		-16			-3		-2	
EU	-19	-11			-1	-20	5	
US		-1			2	-2	0	
World		1					5	

⁷ The phenomenon of Hong Kong-China trade in this sector is explored in more detail in Curran (2008b).

⁸ As calculated in Curran (2008a)

On the other hand, in the case of Pakistan (which represents a significant part of 'Other South Asia' in IMF (I)), forecasts were too pessimistic. Although Pakistan lost out on the EU/US market they increased trade overall in clothing (+22%) – a much better outcome than either the IMF (I) or the World Bank (-17%) had predicted. The other key South Asian supplier – Sri Lanka, also showed modest gains, in line with their increased exports on the EU/US market.

In the ASEAN, the significant gains that had been forecast turned out to be rather optimistic for several countries⁹ – increases were only 2% each for Thailand and Malaysia although Indonesia increased exports by 14%. For Mediterranean suppliers, losses were less severe than had been forecast by UNECA, but close to that forecast for the Mediterranean region by CEPII (-5 and -6 in Tunisia and Morocco respectively, although Turkey saw an increase in exports of 6%). Mexico saw a much smaller fall in exports than that forecast by IMF (I). USDA's forecast for Mexico was almost exactly correct

Forecasts for the impact of the liberalisation on the key industrialised countries themselves were overly pessimistic for the EU. Universally forecast to see falling exports, the EU actually increased its clothing exports in value terms in 2005. The US saw no change, which is in line with the very slight changes forecast. Thus forecasting the impacts on the EU seems to have been particularly difficult.

The forecasts and outcomes on the **textiles market** are shown in table 2. As indicated above, the results in this sector reflect two different and sometimes contradictory impacts of the liberalisation on textile suppliers. Firstly the impact on the demand for textiles on previously restricted markets¹⁰ and secondly, the indirect impact of increased demand for textiles for use in the clothing industries of those third countries which benefited from the liberalisation of the clothing sector.

Here we see that China and India both experienced increased exports after the liberalisation of the textiles sector. For China impacts were much lower than forecast by UNECA, but exactly as forecast by IMF (I). The USDA study was too pessimistic. As might have been expected, China's export gains were more evident on the EU/US market than elsewhere. India, on the other hand, saw modest growth on the EU/US market, but the global growth rate for textiles exports was very impressive (27%) and higher than forecast by studies. They seem therefore to have benefited mainly from the indirect effects of increased demand from third country clothing industries.

Hong Kong lost out slightly, in contrast to forecasts, but significantly less than initial figures for the EU/US market had indicated. Taiwan and, particularly, Korea, saw exports fall, while increases or neutral impacts had been predicted by the studies. These contrasts between predictions and actual impacts on these two sources had been noted in the earlier study (Curran, 2008a).

Pakistan increased exports by less than forecast by the World Bank, as did the Philippines, Korea and Indonesia compared to IMF (I), although USDA's forecasts for Indonesia/Malaysia/Thailand were close to actual impacts. Clearly these impacts largely reflected indirect effects, as the direct impacts of liberalisation on the EU/US markets (-9% for Indonesia and Thailand and a 2% increase for Malaysia) were negative or modest.

⁹This is particularly so for CEPII's forecasts, where the South and South East Asia group includes Indonesia, Malaysia and Thailand, as well as India and Pakistan

¹⁰ This could be both positive, reflecting increased demand due to lower prices as 'quota rents' disappeared or negative, reflecting reduced activity of local clothing manufacturers due to increased price competition on the domestic and global markets.

Morocco, Tunisia and Turkey all did better than UNECA had forecast and better than their performance on the EU/US market might have suggested. Clearly, therefore, for several textiles suppliers in the Mediterranean and Asia, the impact of the ATC liberalisation was felt as much outside of the markets directly affected, as within them. This indirect effect was forecast by the GTAP models.

Table 2 – Forecast and actual changes in global exports in textiles, various studies.
*Where possible the scenario closest to reality - restrictions on Chinese exports - is used and indicated with *.*

	IMF(I)*	WB	IMF (II)*	USDA	UNECA	Actual	US+EU⁵
China	20			5	61	20	27
India	13			4		27	7
Hong Kong	23					-4	-21
Taiwan	0			6		-3	0
Bangladesh	-10		-3				-1
Other S. Asia	18						
Pakistan		17				6	9
Philippines	20					3	-36
Korea	11			6		-4	-5
Indonesia	39			7		10	-9
Thailand				7		8	-9
Malaysia				7		11	2
Morocco					-11	35	-10
Tunisia					-21	-1	-8
Turkey					-14	11	2
Mexico	-11			-1		3	
EU	-11			0	-16	-1	
US	-3			1	-2	0	
World	0					2	

Once again, forecasts for the EU, at least those in IMF (I) and UNECA, were overly pessimistic. Exports hardly changed at all in 2005 (as indeed forecast by USDA). The US and Mexico also saw little change. Global textile demand was hardly affected by the significant changes in the distribution of trade, as IMF(I) had forecast, although clothing demand increased by a modest 5%. Thus the main impact of the liberalisation, in both textiles and clothing, was a re-distribution of trade between the developing countries, with developed country producers little affected although forecasts had been for losses for these high cost suppliers.

6. Discussion

Overall, the forecasts of the impacts of liberalisation on textiles and clothing trade were accurate on most key points – the positive effect on China and India in both sectors, the negative impact (although often exaggerated in forecasts) on certain preferential suppliers and the importance of indirect impacts on textile demand for certain Asian suppliers. This observation is re-assuring as it indicates that the key impacts of this trade reform in terms of both direct and indirect effects were well captured by the models.

However, there are some, on the whole more marginal impacts, where the models were less accurate. This analysis confirms the conclusion drawn from earlier work looking only at the EU/US markets that the models generally failed to forecast the negative impacts on certain key countries, especially Korea and Taiwan. On the other hand, they turned out to be overly

pessimistic about the global impacts on several key countries considered vulnerable – Pakistan, Morocco, Tunisia and Turkey - as well as the EU itself.

These discrepancies between forecasts and actual outcomes probably reflect three key elements which complicate efforts to model outcomes of liberalisation of quantitative restrictions in a complex and brand oriented sector through a GTAP approach.

Firstly this reflects the difficulty of modelling the potential positive effect of quota restrictions on uncompetitive suppliers which retained market share, at least partly, through the limitations on more competitive suppliers. The use of ETEs to represent the impact of quotas makes it difficult for these positive effects (and the likely negative effects of reform) to be modelled effectively. For instance, in the IMF's assessment of the impact of reform on India (IMF(I)), the ETE for China in the EU market was 25 in clothing – so the forecast impact of removal was clearly positive and significant. However the ETE for countries like Taiwan and Bangladesh, which potentially benefitted from the restrictions, but in different ways, was zero for both. This inability to adequately quantify the potential positive effects of quotas on suppliers through the ETEs is likely to be one explanation for the inaccuracy of the forecasts for the less competitive historic suppliers and the vulnerable preferential suppliers.

Of course there are many other factors which explain the outcome of the GTAP studies apart from the ETEs. The large differences in the forecast outcomes between the different studies reflect different assumptions, base years etc used in the models. It would be interesting to expand this analysis to include more detailed consideration of which elements contributed to more accurate forecasts, however such detailed work is beyond the scope of this paper.

A second aspect of the market which is difficult to quantify and integrate into such models is the impact of long standing industrial linkages, both investment-based and more informal, which bind importers to certain suppliers and make them reluctant to change overnight. Although there were major changes in sourcing strategy, which reflect the flexibility of certain sectors of the industry there is also evidence of a certain inertia in industrial partnerships. In particular, the very large negative impacts that had been predicted for suppliers neighbouring the liberalising markets, like the North African countries or Mexico and indeed for the EU itself, failed to materialise, at least in 2005. This gives some credence to the scepticism that certain observers had voiced before the liberalisation, about the extent to which the industry was really internationally 'footloose' as well as the capacity, or motivation of China to capture market share in all sectors (Meyer, 2005).

Finally, the fact that the industrialised countries were little impacted by the change, at least in terms of exports, probably reflects the very different market level at which EU and US producers operate, compared to developing country suppliers. In recent years the EU industry, at least, has been increasingly differentiating itself from low cost imports in most categories (IFM, 2004), this seems to have enabled it to avoid direct competition and retain market share, both globally and in its home market¹¹.

Differentiation between products depending on the source is modelled to some extent in GTAP through the so called 'Armington assumption' and related elasticities¹². However it seems that the way in which this assumption was incorporated into the models in the studies cited here, tended to lead to overly pessimistic forecasts about the capacity of high cost producers, particularly in the EU, to differentiate themselves adequately in a fully competitive

¹¹ Total EU imports did not explode, but increased in line with trends after the liberalisation, as detailed in Curran (2008).

¹² See, for example, Lloyd and Zhang (2006) on the role and impact of Armington elasticities in global trade modeling.

market. This practical difficulty is perhaps to be expected, as there is little economic logic to paying many times the price of a cheap imported pair of jeans for a brand label pair which is intrinsically very similar!

Finally, the differences between the forecast impact of liberalisation and the actual outcomes is certainly also a reflection of continued restrictions on China's exports. It is only when the quantitative limits agreed with the large importing markets lapse in 2008 (in the EU) and 2009 (in the US) that the true global impacts on trade can be assessed. Nevertheless, the study which most accurately modelled the actual outcome - retaining limitations on 50% of Chinese goods - IMF (I) - nevertheless forecast outcomes with the wrong sign for Korea and Hong Kong in clothing and textiles, while the magnitudes of impacts on several other countries were significantly different to their forecasts.

7. Conclusion

This paper has sought to shed light on the accuracy of GTAP modelling of trade liberalisation in the textiles sector through an analysis of the actual outcomes of liberalisation compared to forecast outcomes. It found that, in general, the models forecast most key outcomes accurately, however the impacts on several suppliers were inaccurate in several studies. In particular the negative impacts on Korea and Taiwan were not generally forecast, while the forecast strongly negative impacts on the EU and several key neighbouring suppliers failed to materialise.

These variations between forecast outcomes and actual impacts are important because policy makers and negotiators base their positions, at least to some extent, on these forecasts. Overly pessimistic forecasts, such as those made by UNECA for North African countries, are likely to have fuelled concern in the affected countries, while the exaggerated forecasts for increases in Chinese exports of both the UNECA study and CEPPI are likely to have contributed to the climate of fear around the liberalisation (see, for example, IFM, 2004 and Kaplinski and Morris, 2006). In turn these fears also motivated the negotiations with the Chinese to re-institute restrictions. In this context it is therefore all the more important that efforts continue to fine-tune the models by learning from experience. It is clear that forecasting the future is a lot more difficult than analysing the past, but it is hoped that the incorporation of lessons from the latter can increase the accuracy of the former.

References

- Ananthakrishnan, P and Jain-Chandra, S (2005) *The Impact on India of trade liberalisation in the Textiles and Clothing sector*, IMF, Washington.
- Avisse, R and Fouquin, F (2001) 'Textiles and clothing: the end of discriminatory protection', *La Lettre du CEPII* No 198, February 2001
- Ben Hammouda, H et al (2005) Comment sauver le textile maghrébin? Centre Africain de Politique Commerciale, UN Economic Commission for Africa (UNECA), Addis Ababa.
- Brenton, P and Hoppe, M (2005) Life after quotas? Early signs of the New Era in trade in Textiles and Clothing, in: *Trade, Doha and Development: A window into the issues*, World Bank, Washington.
- CEC (1990) *The Community's Textile Policy – Interim Report 1986-89*, Commission of the European Communities, Brussels
- CEC (2005) *Commission Regulation (EC) No 1084/2005 of 8 July 2005 amending Annexes II, III and V to Council Regulation (EEC) No 3030/93 on common rules for imports of certain textile products from third countries*, Commission of the European Communities, Brussels
- CSIER (1996) *Developing countries and the Uruguay Round*, study for the Canadian International Development Agency (CIDA) by the Centre for the study of International Economic Relations, University of Western Ontario.
- Curran, L (2006) From the container to the high street – does trade liberalisation really bring benefits to EU clothing consumers? *Journal of Fashion Marketing and Management*, 10 (4).
- Curran, L (2008a) Forecasting the Trade Outcomes of Liberalisation in a Quota Context - What do we learn from Changes in the Textiles Trade after the ATC? *Journal of World Trade*, 42(1).
- Curran, L (2008b) Unpicking the textiles trade – The impact of liberalisation on the global textiles sector, Forthcoming, *Global Trade and Customs Journal*
- Davenport, M (1990) 'The External Policy of the Community and its effects on the exports of developing countries', *Journal of Common Market Studies*, 29 (2), pp 181-200.
- Francois, J, Glismann, H-H, Spinanger, D (2000), *The cost of protection in textiles and clothing*, Working Paper 997, Kiel Institute of World Economics
- Hanslow, K (2000), *A General Welfare Decomposition for CGE models*, GTAP technical paper, 19
- Huff, K and Hertel, T (2001) *Decomposing welfare changes in GTAP*, GTAP technical paper no. 5.
- IFM (2004) *Study on the implications of the 2005 trade liberalisation in the textiles and clothing sector*, Study for DG Enterprise of the European Commission, Institut Francais de la Mode, Paris.
- Kaplinsky, R and Morris, M (2006) *Dangling by a thread: How sharp are the Chinese Scissors?* Institute of Development Studies, Sussex.
- Khanna, R (1990) 'Market sharing under the Multifiber Arrangement: Consequences of non-tariff barriers in the textiles trade', *Journal of World Trade*, 24(1), pp.71-104

Lloyd, P.J. and Zhang, X. G (2006) *The Armington Model*, Productivity Commission Staff Working Paper, Melbourne.

Mac Donald, S et al (2004) 'China's Role in World Cotton and Textile Markets', Presentation at the *Conference of the Global Trade Analysis Project (GTAP)*, June 17-19, 2004, Washington. Available on www.gtap.org

Meyer, J (2005) 'Not totally naked : textiles and clothing trade in a quota-free environment', *Journal of World Trade*, 39(3), pp.393-426

Mlachila, M and Yang, Y (2004) *The end of textiles quotas: A case study of the impact on Bangladesh*, IMF, Washington.

Nordas, H (2004) *Global textiles and clothing industry post the Agreement in Textiles and Clothing*, WTO, Geneva.

OECD (2003) *Liberalising trade in textiles and clothing: A survey of quantitative studies*, OECD, Paris.

Rangaswami, V (2005) A stitch in time. Helping Vulnerable Countries meet the Challenges of Apparel quota elimination, Carnegie Endowment for international Peace, Policy Outlook, October 2005.

Rivoli, P (2005) *The travels of a t-shirt in the global economy*, John Wiley and Sons, Hoboken, New Jersey.

USTR (2005) Memorandum of Understanding between the governments of the United States of America and the Peoples Republic of China concerning trade in Textiles and Apparel products. Available at:
http://www.ustr.gov/assets/World_Regions/North_Asia/China/asset_upload_file91_8344.pdf

Whalley, J (2000), What can developing countries infer from the Uruguay Round models for future negotiations? Policy issues in International Trade and Commodities Study Series No 4, UNCTAD, Geneva.

World Bank (2004) *Implications for Pakistan of abolishing textile and clothing quotas*. World Bank, Washington