Sino-U.S. and Sino-E.U. Textile Safeguard Agreements:
Comparing the Effects to Free Market Conditions

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Abstract

The effects of Sino-US and Sino-EU safeguard agreements on US, China and world cotton and textile sectors are investigated using a partial equilibrium model. The effects are compared to a free trade scenario under the provisions of the Agreement on Textiles and Clothing (ATC). The two agreements capping Chinese textile exports would decrease China's textile and apparel exports, production and domestic consumption by an average 1.57 percent, 0.63 percent and, 0.32 percent respectively. The safeguard agreements cause an increase in the U.S. cotton textile price index and a slight decrease in U.S. net textile imports and textile consumption. The agreements cause a decrease in the world cotton price and the quantity of cotton traded, but these trends reverse at safeguard expiration. The results generally support the view that the safeguard agreements forestall the effects of free trade in textiles and apparel rather than creating long lasting shifts in the textile trade.

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> In cases where products of Chinese origin are being imported into the territory of any WTO Member in such increased quantities or under such condition as to cause or threaten to cause market disruption to the domestic producers of like or directly competitive products, the WTO Member so affected may request consultations with China with a view to seeking a mutually satisfactory solution, including whether the affected WTO Member should pursue application of a measure under the Agreement on Safeguards.
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> If, in the course of these bilateral consultations, it is agreed that imports of Chinese origin are such a cause and that action is necessary, China shall take such action as to prevent or remedy the market disruption.
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> *--Accession of the People's Republic of China, WTO, 2001*

Introduction

The growth of China's textile industry has been one of the dominant factors shaping world cotton and textile markets in recent years. Since China's accession to the World Trade Organization (WTO) in December 2001, China's clothing exports have grown by almost 70 percent and China's cotton consumption has grown by 36 percent (see Figure 1). From 2001 to 2004, China's share of world clothing exports increased from 18 percent to over 24 percent (UN Comtrade, 2006).

With the expiration of global quotas on textiles and apparel (T&A), China's dominance in this industry has increased[1]. In the first quarter of 2005, US imports of apparel from China (measured by units) doubled compared to the same period in 2004 (OTEXA, 2006). For specific products in the same time period, cotton knit shirts and blouses, cotton trousers, and underwear categories increased by approximately 1,250

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[1] On January 1, 2005, The Agreement on Textiles and Clothing (ATC) phased out all quotas on imports of textiles and apparel from countries that are members of the World Trade Organization (WTO).

percent, 1,500 percent and 300 percent respectively relative to the first quarter of 2004 (ICTSD Bridges Weekly, 2005). Table 1 presents the share of US textile imports accounted for by major suppliers from around the world in several import categories related to textiles and apparel. China has claimed the largest share of total U.S. textile and apparel imports since 2003 and presently holds a 25 percent market share, a 44 percent increase over 2004 (see Figure 2). Contemporaneously, Chinese textile and clothing imports gained in importance in the T&A import market of the European Union (E.U.). China's share of the EU import market doubled from about 15 percent in 2001 and 2002 to near 30 percent in 2005 (see Figure 2).

Concerns have risen within both the U.S. and E.U. over the rapid expansion of Chinese textile imports into both markets. In response to domestic pressure from their respective textile and apparel industries, the U.S. and E.U. have claimed "market disruption" and have reached an accord with China to limit textile import growth for certain categories of products. In Europe, agreement was reached on growth limits of 8-12 percent per year on ten categories of Chinese textile and clothing products (Europa, 2005). Textile import growth in the U.S. from China in the coming three years will be 10-15 percent for 2006, 12½-16 percent for 2007, and 15-17 percent for 2008 for the same basic class of products covered in the E.U. agreement (Gov.cn, 2005).

The question remains whether these temporary safeguards will effectively reduce or merely delay the steady growth of Chinese textile dominance both in the 2006-08 time frame of the agreements and beyond. The imposition of textile safeguards raises several specific questions: What will the economic impact of these temporary safeguards be on world textile and cotton markets? Will demand for textiles and apparel, shifted to other

suppliers, last effectively beyond the term of the safeguard agreement? In essence, the question is whether the safeguard agreements are more trade diverting or truly trade creating.

It is also likely that the safeguard agreements may affect the raw cotton market as well. What effect will the safeguard agreement have on U.S. cotton exports, especially those to its biggest customer, China? In the 2004/05 marketing year, 25 percent of U.S. cotton exports (3.3 million bales) were bound for China where cotton imports from the U.S. account for 50 percent of total raw cotton imports (FAS, 2005 and 2006).

The purpose of this study is to analyze the impacts of the agreed upon U.S.-Sino and E.U.-Sino textile safeguards on world cotton trade flows, prices, and market equilibria. This analysis first establishes a baseline in which the full effects of free trade under the terms of the Agreement on Textiles and Clothing (ATC) are modeled. Next, a scenario is created which models the imposition of caps on certain Chinese textile exports based on the two agreements affecting the textile and cotton markets. By comparing baseline estimates to the safeguard agreement scenario, we can quantify the impact of the agreements on terms of trade and trade flows between China, the U.S., the E.U., and other trading partners.

Several studies to date have estimated the effects of global free trade on China's T&A trade under the provisions of the ATC. However, not all of these studies provide insight on likely impacts on China's textile production, and only a very few address cotton (see Table 2 for a summary of research). Recently, studies by Andriamananjara, Dean, and Spinanger (2004), and Nordas (2004) discussed the impact of removing quotas on clothing exports to developed countries, both indicating that China's exports to the

United States could increase significantly with the removal of quotas. However, neither study addressed total textile trade or how China's textile production might be affected. Francois and Spinanger (2004) focused on a methodology for measuring the level of protection faced by China and other exporters under the pre-2005 quota system, but didn't address the implications of removing this protection. Rivera, Agama, and Dean (2003), using a static, global CGE methodology, estimated that China's clothing exports would rise more than 100 percent with the removal of the MFA quotas, but did not include the impact on China's textile production in their analysis.

Several earlier studies (Hertel, et al 1996; Yang, Martin, and Yanagishima, 1997; and Francois and Spinanger, 2001) used largely the same methodology as Rivera, Agama, and Dean. Francois and Spinanger's estimates ranged from a 6 percent change found using the standard Global Trade Analysis Project (GTAP) data, to 43 percent when an exogenous 10 percent cost advantage for production in China was incorporated into their analysis. The remaining studies estimated changes ranging from 6 to 16 percent. Fang and Babcock (2003) examined likely impacts of clothing quota removal on China's cotton sector which are based on an assumption that textile production would increase 20 to 30 percent. Of these previous studies, only Fang and Babcock, McDonald et al. (2004), and Li, Mohanty, and Pan (2005) examined cotton either from an agricultural perspective or with respect to competition with other fibers in China's textile industry.

Methodology

This paper investigates the effects of the ATC quota phase-out and the textile safeguard measures on the textile and cotton markets through a combination CGE model and a partial equilibrium model. A dynamic computable general equilibrium (CGE)

model was used to analyze how the global restructuring of T&A production and consumption would be expected to change production by China's textile industry (MacDonald et al., 2004). An econometric partial equilibrium (PE) model of world's fiber sector (Pan et al., 2004) was then used to examine the impact of changing demand by the textile industry on the E.U. textile trade, U.S. and China's textile and cotton consumption, production, and their net trades. Figure 3 presents the linkage between the results of the CGE model and the PE model.

The effects of quota removal on Chinese textile and apparel production are estimated based on an extension of Frankel and Romer's (1999) work. We analyze the relationship between T&A trade and national income of 91 countries over 37 years. Based on this econometric analysis, we exogenously increase the growth of T&A trade in the simulation. Technically, we exogenously increase the efficiency coefficient in the export functions for these regions by 0.3 percent annually (on average, with variation across countries)[2]. Assuming that quota phase-out will increase certain developing exporting countries' ability to export, we calculated for each developing exporting country the share of their T&A production to GDP. We assume that this ratio represents for each country the efficiency in their exporting ability (a crude approach equivalent to a productive index; see MacDonald et al., 2004 for detail). The effects on Chinese textile and apparel production are used to estimate the effects on the world, U.S. and Chinese cotton markets.

To further investigate safeguard agreement trade diversion in Chinese textile exports to the E.U. and U.S., we make some adjustments in our PE model. Since we are

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[2] Technical efficiency is assumed to increase with quota removal. Without trade restricting quotas, global trade in textiles is expected to increase resulting in expanded textile production capacity. This expanded capacity is expected to be composed of new plants utilizing updated, more efficient equipment.

interested in the effects on the cotton sector, we separate the Chinese textile and apparel exports into three sectors: cotton textile and apparel exports to the U.S., cotton textile and apparel exports to the E.U., and textile and apparel exports to the rest of the world (ROW), which includes man-made fiber (MMF) textile and apparel exports to both the E.U. and U.S. At the same time, U.S. and E.U. textile and apparel imports are separated as two sectors: cotton textile and apparel imports from China (which equals Chinese cotton apparel exports to the U.S. and E.U.) and textile and apparel imports from the ROW (including MMF apparel and textile imports from China). The new equations added to the model are provided in the Table 3. The equations, parameter estimates (with standard errors in parentheses), and diagnostic statistics of the new equations are also reported in Table 3. In addition to the Durbin-Watson statistics reported, tests were conducted to detect higher order correlation. No significant effects were found. As Table 3 shows, Chinese textile and apparel exports to the rest of the world increase as domestic apparel prices decrease and Japanese apparel price increases; U.S. cotton textile and apparel imports from the ROW increase as the domestic cotton apparel price increases and the CAFTA apparel price index decreases; E.U. cotton textile and apparel imports from the ROW increase as the domestic cotton apparel price increases and the U.S. apparel price index decreases. The Chinese apparel price index, E.U. apparel price index, U.S. apparel price index, Chinese cotton domestic price, and U.S. farm price are endogenously solved.

In the next step, we exogenously adjusted Chinese cotton apparel exports based on the three-year textile safeguard agreements. Other sectors are automatically adjusted

based on the effects of relative prices around the world. These results are compared to a quota-free trade environment discussed earlier.

The model is driven by a set of macroeconomic variables such as real GDP, the consumer price index (CPI), exchange rates, and population. Projections for these variables were obtained from the 2005 World and U.S. Agricultural Outlook published by the Food and Agricultural Policy Research Institute. Projections of other variables such as acreage, yield, and prices for competing crops (e.g. wheat, rice, and corn), and crude oil prices were collected from the same source.

Simulation and Results

The simulation procedure compares a baseline estimate assuming continuation of all current trade regulations and policies to an alternative scenario. In this case, the baseline models a free trade environment for textiles created by the Agreement on Textiles and Clothing referenced earlier. The alternative scenario is the imposition of safeguard quotas on certain Chinese apparel imports by the U.S. and E.U. through 2008. Tables 4-10 present the effects of the textile safeguard agreements compared to a free trade baseline (post ATC) in the textile and cotton markets.

As shown in Table 4, the textile safeguard agreements decrease China's textile and apparel exports, production and domestic consumption by an average 1.57 percent, 0.63 percent and, 0.32 percent respectively. In each case, the greatest negative effects are seen in the second year of the safeguards and then mitigate throughout the course of the estimation. The safeguards are shown to increase T&A imports into the U.S. and E.U. from sources other than China, as would be expected. However, while E.U. imports quickly revert to sans safeguard levels, the effects on U.S. imports, though declining,

linger longer. Increases are also seen in the Chinese apparel price index, again with the greatest impact during the terms of the safeguards and then decreasing effects as they expire.

The safeguard agreement also results in a higher U.S. cotton textile price index (see Table 5). Increases of 2 to 3 percent are seen during the term of the agreement and decline rapidly in 2009/01 as the safeguards expire. Net textile imports decline slightly with the safeguards with a concordant increase in U.S. cotton mill use. U.S. textile consumption is shown to decrease with the safeguards in place, but the effects are minimal (less than a 0.06 percent decrease). In the U.S. man-made fiber market (Table 6), the textile price index rises initially but quickly subsides as the agreement expires. Man-made fiber textile imports show the most market growth with increases mostly between 3 and 4 percent that continue even as the safeguards are no longer in place. Mill use shows a slight increase and consumption a slight decrease, but both by marginal amounts.

In the world cotton market (Table 7), it appears the textile safeguards effectively decrease the world trade of cotton and the world cotton price (as measured by the A-index) during the terms of the agreements. With expiration, effects quickly reverse. World production and cotton mill use are both lower under the safeguard scenario, but again only marginally as effects in any given year fail to exceed ½ of 1 percent.

Table 8 reports the effects of the safeguard agreements on cotton markets in the U.S. and China. As with the A-index and world trade, the effects in the U.S. cotton market are a lower farm price, lower production, and lower exports during the term of the safeguards. Again, effects reverse as the safeguard agreement expires. In China, price effects are similar to those in the U.S., but the effects on other sectors of the Chinese

cotton market appear to be more lasting. Declines in production, imports, and mill use as a result of the safeguards continue throughout the estimation period presented here. While none of the declines exceed 1 percent, they extend significantly well past safeguard expiration.

The effects of the safeguards on other major cotton exporters mirror those of the U.S. (see Table 9). Declines are shown for all exporters modeled here until 2009/10 when the agreements expire and exports again increase. The impacts on other cotton importers are more mixed. Turkish and Pakistani cotton imports decline under the safeguard scenario with the negative effects lasting longer in Turkey than in Pakistan. Mexico sees its cotton imports increase with safeguards placed on Chinese competitors at an increasing rate up until 2010/11 when they begin to return to levels seen without the safeguards in place.

Table 10 presents an estimate of welfare effects of the textile safeguard agreements. Gains in the U.S. textile and apparel industry would be an estimated $US648 million in the three years spanning the agreement. U.S. cotton producers and consumers suffer economic losses as a result of the safeguards. U.S. government expenditures are shown to decrease less with the safeguards in place (due to increased support for U.S. cotton producers with lower commodity prices) resulting in an increase in government expenditures of $US139 million. The safeguards are shown to negatively impact Chinese producers of both cotton and textiles as well as domestic consumers. The total economic welfare loss in China during the course of the agreement is approximately $US2 billion.

Conclusion

This study investigated the impacts on China, the U.S., E.U., and the rest of world's textile and cotton industries due to the Sino-U.S. and Sino-E.U. textile safeguard agreements. The results show that the effects will be marginal in most markets during the three-year time period of safeguards, with effects mitigating quickly as the agreements expire and market forces hold sway. For the majority of markets analyzed here, the textile safeguard agreements serve to, at best, delay or postpone changes in market conditions that are evolving under conditions of free trade.

However, exceptions to this trend can be seen in several important areas. First, increases in U.S. textile and apparel imports from the rest of the world, China excluded, appear to be relatively long lasting. Second, cotton imports by Mexico increase well beyond the expiration of the safeguard agreements. Third, China's cotton T&A industry sustains losses in production, exports, and domestic consumption that continue past safeguard expiration as well. These trends seem to indicate that the textile safeguards, at least in some markets, may serve to shift market share and competitive advantage away from China and back to a traditional textile exporter in close proximity to the U.S. which in this case is Mexico. Additionally, our findings support the hypothesis that the benefits of free trade result in net global welfare gains. This can be seen by the relatively large negative effect trade sanctions have in China compared to the smaller gains measured in the U.S.

References

Andriamananjara, Soamiely, Judith Dean, and Dean Spinanger. "Trading Apparel: Developing Countries in 2005," 7th Annual Conference on Global Economic Analysis, 7-9 June 2004, Washington, DC.

Europa. "EU-China Textile Agreement 10 June 2005". Memo 05-201, Brussels, 12 June 2005. Available online at http://europa.eu.int/comm/external_relations/china/intro/memo05_201.htm.

Fang, Cheng and Bruce Babcock. *China's Cotton Policy and the Impact of China's WTO Accession and BT Cotton Adoption on the Chinese and U.S. Cotton Sectors*. Working Paper 03-WP-322, Center for Agricultural and Rural Development, Iowa State University. January, 2003.

Francois, Joseph, and Dean Spinanger. "With Rags to Riches but Then What? Hong Kong's T & C Industry vs. the ATC and China's WTO Accession," The Fourth Annual Conference on Global Economic Analysis, Center for Global Trade Analysis, Purdue University, West Lafayette, Indiana, 27-29 June 2001

_____ . "Liberalizing Quotas on Textiles and Clothing: Has the ATC Actually Worked?" 7th Annual Conference on Global Economic Analysis, Washington, DC. 17-19 June 2004.

Frankel, Jeffrey A. and David Romer. "Does Trade Cause Growth?" *The American Economic Review* 89 (1999):379 – 399.

Gov.cn. "China, US Sign Textile Deal". 9 November 2005.   Available online at http://english.gov.cn/chinatoday/2005-11/09/content_93946.htm.

Hertel, Thomas, Christian Bach, Betina Demaranan, and Will Martin. *Growth, Globalization, and Gains from the Uruguay Round*, World Bank Policy Research Working Paper 1614, May 1996.

ICTSD Bridges Weekly. "Chinese Textile Exports Surge; US, EU TO Invoke Textile Safeguard?" Volume 9(11), April 2005. Available online at http://www.ictsd.org/weekly/05-04-06/story1.htm.

Li, H. Y., S. Mohanty and S. Pan.   "The Impacts of MFA Elimination on Chinese Fiber Markets," *Journal of International Agricultural Trade and Development* 1 (2005):71-91.

MacDonald, S., S. Pan, A. Somwaru, and F. Tuan. "China's Role in World Cotton and Textile Markets". Paper presented at the American Agricultural Economics Association Annual Meeting, Denver, Colorado, August 2004.

Nordas, H. *The Global Textile and Clothing Industry post the Agreement on Textiles and Clothing*, Discussion Paper Number 5, World Trade Organization, 2004.

Pan, S, S. Mohanty, M. Fadiga, and D. Ethridge. "Structural Models of the United States and the Rest-of-the-world Natural Fiber Market, " CER # 04-03, Cotton Economics Research Institute, Department of Agricultural and Applied Economics, Texas Tech University, 2004.

Rivera, Sandra A., Laurie-Ann Agama and Judith Dean. "Africa Beyond 2005: Understanding the Impact of Eliminating NTBs and Tariffs on Textiles and Clothing," the Sixth Annual Conference on Global Economic Analysis, The Hague, The Netherlands, June 2003.

United Nations Statistics Division, Commodity Trade Statistics Database (COMTRADE). Accessed 4 May 2006 and available online at http://unstats.un.org/unsd/comtrade/.

U.S. Department of Agriculture, Foreign Agriculture Service (FAS). "Cotton: World Markets and Trade", October 2005. Available online at http://www.fas.usda.gov/cotton/circular/2005/10/cotcov05.pdf.

_____. *U.S. Export Sales Reports,* 4 May 2006. Available online at http://www.fas.usda.gov/export-sales/myfijuly.htm.

U.S. Department of Commerce, Office of Textiles and Apparel (OTEXA). Accessed 22 May 2006. Available online at http://www.otexa.ita.doc.gov/.

World Trade Organization (WTO). *Accession of the People's Republic of China,* WT/L/432, 23 November 2001.

Yang, Y., Will Martin, and K. Yanagishima. "Evaluating the Benefits of Abolishing the MFA in the Uruguay Round Package," in Thomas Hertel, (ed.) *Global Trade Analysis: Modeling and Applications*. Cambridge: Cambridge University Press, 1997.

Table 1. Major U.S. Textile Suppliers

	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	Average
MFA											
China	10.65%	11.15%	9.77%	9.61%	9.10%	9.31%	12.11%	14.99%	17.47%	25.12%	12.93%
CAFTA	11.83%	12.99%	12.72%	12.97%	12.64%	12.83%	12.69%	11.94%	11.50%	10.28%	12.24%
Mexico	9.21%	10.98%	12.34%	13.52%	13.52%	12.74%	11.94%	10.25%	9.35%	8.12%	11.20%
Pakistan	2.20%	2.22%	2.36%	2.31%	2.56%	2.74%	2.75%	2.86%	3.06%	3.26%	2.63%
India	3.78%	3.72%	3.79%	3.74%	3.82%	3.75%	4.15%	4.15%	4.36%	5.18%	4.04%
Apparel											
China	10.36%	10.48%	8.95%	8.60%	7.86%	8.15%	9.82%	11.87%	13.78%	22.04%	11.19%
CAFTA	14.67%	16.14%	15.72%	16.05%	15.68%	15.82%	15.96%	15.01%	14.68%	13.25%	15.30%
Mexico	9.78%	11.79%	13.48%	14.84%	14.70%	13.83%	13.03%	11.29%	10.32%	8.85%	12.19%
Pakistan	1.54%	1.44%	1.40%	1.44%	1.61%	1.65%	1.54%	1.66%	1.76%	1.83%	1.59%
India	3.26%	3.15%	3.15%	3.00%	3.12%	3.04%	3.34%	3.27%	3.42%	4.33%	3.31%
Cotton Apparel											
China	6.43%	6.61%	5.42%	5.01%	4.44%	4.61%	5.89%	6.63%	7.37%	14.59%	6.70%
CAFTA	16.80%	18.85%	18.81%	19.42%	18.97%	18.74%	18.75%	18.12%	18.07%	15.78%	18.23%
Mexico	10.79%	12.87%	15.08%	16.77%	16.91%	15.66%	14.54%	12.46%	11.74%	9.69%	13.65%
Pakistan	2.67%	2.44%	2.35%	2.38%	2.58%	2.66%	2.41%	2.58%	2.78%	2.87%	2.57%
India	4.45%	4.25%	4.09%	3.76%	3.81%	3.64%	4.05%	3.87%	4.31%	5.61%	4.18%
Man made fiber apparel											
China	13.64%	13.38%	11.46%	11.75%	10.65%	11.33%	12.90%	14.75%	16.41%	27.36%	14.36%
CAFTA	13.22%	14.27%	13.50%	13.47%	13.22%	14.04%	14.08%	12.72%	12.53%	11.71%	13.28%
Mexico	10.58%	12.66%	13.97%	14.79%	14.01%	13.55%	12.65%	11.26%	10.11%	9.02%	12.26%
Pakistan	0.29%	0.38%	0.33%	0.29%	0.47%	0.45%	0.39%	0.42%	0.47%	0.37%	0.38%
India	2.20%	2.04%	2.07%	2.01%	2.19%	2.13%	2.13%	2.23%	2.11%	2.34%	2.15%

Data Source: Office of Textiles and Apparel.

Table 2. Previous estimates of the effect of MFA phase-out on China's textile industry

Source	Assumptions	Method	Results
Andriamananjara, et al., 2004	U.S. MFA quotas on China equal a 20 percent tariff	Reduced form market share equation for United States' imports	Elasticity between quota tariff-equivalence and import share is 1.5 to 3.9
Fang and Babcock, 2003	Textile production rises 20 to 30 percent with WTO accession	PE, global: parameters estimated with 1981-2000 data	China's cotton production rises 4-5 percent
Francois and Spinanger, 2001	U.S. MFA quotas on China equal 33 to a percent tariff	CGE, global, static: GTAP database (V.4) and model	China's textile production rises 6 percent (when a 10 percent cost advantage for China's industry is added, textile production rises 43 percent)
Francois and Spinanger, 2004	Constant elasticity of substitution import demand; relative expenditure weights are comparable across OECD countries	Reduced form market share equation for developed country imports	U.S. MFA quotas on China equal to a 25 percent tariff
Hertel, et al 1996	U.S. MFA quotas on China equal to a 40 percent tariff	CGE, global, static: GTAP database (V.2) and model; elasticities of substitution doubled	Textile output up 5.9 percent
Li. et al 2005	Remove MFA quotas	PE	
McDonald, et al 2004	Exogenously increase the efficiency coefficient in the export functions by 0.3 percent annually	CGE, global, dynamic: *GTAP database* version 6, pre-release 1	Chinese textile exports increase 20 percent after 14 years and 33 percent after 25 years
Nordas, 2004	Quota rents shared between importing and exporting countries; U.S. MFA quotas equal to a 20 percent tariff	CGE, global, static: GTAP database (V.5) and model	China's share of U.S. clothing imports triples to 50 percent; share of EU imports little changed at 12 percent
Rivera, et al, 2004	U.S. MFA quotas on China equal to a 33 percent tariff	CGE, global, static: GTAP database (V.5) and model	China's textile imports rise 18 percent, exports 8 percent. China's clothing exports rise 104 percent
Yang, 1997	U.S. MFA quotas equal to a 40 percent tariff	CGE, global, static: GTAP database (V.2) and model	China's textile production rises 16 percent

Sources: McDonald, et al. (2004).

Table 3. Parameter estimates of the bivariate T&A trade equations between China and EU, US

Equations	Parameters and St Error	Adj. R^2	D-W Statistics	F-Statistics
Chinese apparel exports to ROW	-**10383** -**14.60***Chinese Apparel price index (API)/china CPI (237.52) (5.74) +**177.49141***Japan API +**0.62787***lag(export to ROW) (18.11) (0.18)	0.88	2.23	29.46
EU textile imports from ROW	**18390** -**14357***US API /US CPI+**814.3618***Eu API/Eu CPI (37`0.79) (3604.52) (233.01)	0.79	1.60	7.98
US textile and apparel imports from ROW	-20985 + 252.23* US API /US CPI-86.99*CAFTA API/CAFTA (5308.82) (53.17) (9.68) CPI+2936.93*Shift01 (412.04)	0.89	1.59	43.21

Table 4. Safeguard Agreement Effects on Chinese, U.S., and E.U. Apparel Markets

		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Average
		Million Pounds								
Chinese	Base	14472.49	16040.03	18510.54	20152.46	21729.95	23770.83	25904.91	27330.23	20988.93
Exports	Safeguard	14231.83	15620.54	18031.88	19792.01	21515.61	23518.33	25589.90	27149.35	20681.18
	Net Effect	-1.66%	-2.62%	-2.59%	-1.79%	-0.99%	-1.06%	-1.22%	-0.66%	-1.57%
Chinese	Base	65409.39	69501.69	77353.16	81982.12	86948.90	91928.87	97174.45	102693.91	84124.06
Production	Safeguard	64872.36	68743.05	76548.87	81528.60	86525.57	91549.78	96836.67	102411.83	83627.09
	Net Effect	-0.82%	-1.09%	-1.04%	-0.55%	-0.49%	-0.41%	-0.35%	-0.27%	-0.63%
Chinese Domestic	Base	50934.46	53461.16	58840.20	61833.01	65134.22	68159.54	71370.93	75360.20	63136.72
Consumption	Safeguard	50644.98	53123.54	58520.24	61733.04	65010.92	68031.31	71250.92	75255.26	62946.28
	Net Effect	-0.57%	-0.63%	-0.54%	-0.16%	-0.19%	-0.19%	-0.17%	-0.14%	-0.32%
U.S. Imports,	Base	15198.17	15404.84	15689.12	15718.16	15878.29	16011.20	16109.93	16091.41	15762.77
China Excluded	Safeguard	15221.32	15459.78	15759.09	15777.18	15926.53	16051.62	16145.65	16120.41	15807.70
	Net Effect	0.15%	0.35%	0.45%	0.38%	0.30%	0.25%	0.22%	0.18%	0.29%
E.U. Imports,	Base	6781.80	7007.88	7118.40	7478.44	7639.90	7718.47	7789.31	7796.95	7416.39
China Excluded	Safeguard	6803.49	7027.91	7132.90	7481.49	7643.79	7722.40	7792.49	7800.13	7425.58
	Net Effect	0.32%	0.29%	0.20%	0.04%	0.05%	0.05%	0.04%	0.04%	0.13%
Chinese Apparel	Base	91.18	95.45	96.61	98.39	98.66	98.33	98.64	97.81	96.88
Price Index	Safeguard	92.37	96.74	97.73	98.71	99.06	98.72	98.99	98.10	97.55
	Net Effect	1.31%	1.35%	1.16%	0.32%	0.40%	0.40%	0.36%	0.29%	0.70%

Table 5. Safeguard Agreement Effects on the U.S. Cotton Textile Market

		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Average
Textile Price Index	Base	73.80	89.93	95.56	91.40	92.12	93.31	96.54	97.50	91.23
	Safeguard	76.46	92.35	97.59	91.78	92.72	93.88	97.01	97.89	92.46
	Net Effect	3.60%	3.04%	2.12%	0.41%	0.65%	0.62%	0.49%	0.40%	1.42%
					Million Pounds					
Net Imports	Base	8095.91	8319.71	8654.35	8803.14	9014.05	9236.59	9450.90	9568.79	8892.93
	Safeguard	8086.31	8309.00	8645.78	8799.65	9011.36	9234.76	9449.02	9566.89	8887.85
	Net Effect	-0.12%	-0.13%	-0.10%	-0.04%	-0.03%	-0.02%	-0.02%	-0.02%	-0.06%
Mill Use	Base	2865.69	2836.20	2819.62	2611.08	2529.97	2535.28	2446.15	2357.59	2625.20
	Safeguard	2868.29	2839.64	2823.04	2613.19	2531.25	2536.30	2446.90	2358.30	2627.12
	Net Effect	0.09%	0.12%	0.12%	0.08%	0.05%	0.04%	0.03%	0.03%	0.07%
Textile Consumption	Base	10961.67	11156.02	11473.26	11414.62	11543.14	11771.84	11896.26	11926.02	11517.85
	Safeguard	10955.14	11149.36	11468.69	11413.48	11541.99	11770.67	11896.26	11926.02	11515.20
	Net Effect	-0.06%	-0.06%	-0.04%	-0.01%	-0.01%	-0.01%	0.00%	0.00%	-0.02%

Table 6. Safeguard Agreement Effects on the U.S. Man-made Fiber Textile Market

		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Average
Textile Price	Base	70.87	74.46	76.38	78.80	81.20	83.19	85.39	87.74	79.75
Index	Safeguard	71.09	74.88	76.90	79.06	81.35	83.25	85.35	87.61	79.93
	Net Effect	0.31%	0.56%	0.68%	0.32%	0.19%	0.06%	-0.05%	-0.14%	0.24%
					Million Pounds					
Textile Net	Base	3522.46	3729.55	3874.30	3941.47	3997.67	4028.52	4060.82	4081.13	3904.49
Imports	Safeguard	3510.17	3708.34	3849.81	3930.14	3990.76	4025.80	4063.95	4088.23	3895.90
	Net Effect	2.83%	3.13%	3.78%	4.02%	3.94%	3.81%	3.73%	3.59%	3.60%
Mill Use	Base	8914.45	8288.62	8018.81	7840.57	7688.74	7641.84	7559.24	7476.44	7928.59
	Safeguard	8917.14	8291.94	8020.41	7840.57	7689.51	7642.60	7558.48	7474.19	7929.36
	Net Effect	0.30%	0.04%	0.02%	0.00%	0.01%	0.01%	-0.01%	-0.03%	0.01%
Textile	Base	12436.62	12018.28	11892.80	11781.80	11686.66	11670.46	11620.15	11557.76	11833.07
Consumption	Safeguard	12427.97	12000.42	11870.49	11771.33	11679.73	11668.15	11622.44	11563.44	11825.50
	Net Effect	-0.07%	-0.15%	-0.19%	-0.09%	-0.06%	-0.02%	0.02%	0.05%	-0.06%

Table 7. Safeguard Agreement Effects on the World Cotton Market

		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Average
		Cents Per Pound								
A-index	Base	69.34	70.74	71.52	71.98	72.47	73.32	74.05	74.83	72.28
	Safeguard	68.70	69.96	70.72	72.28	72.69	73.62	74.46	75.34	72.22
	Net Effect	-0.91%	-1.12%	-1.11%	0.42%	0.30%	0.42%	0.55%	0.68%	-0.10%
		Million Bales								
World Trade	Base	41.39	42.01	43.34	44.55	45.36	46.11	46.97	48.21	44.74
	Safeguard	41.31	41.86	43.19	44.56	45.36	46.13	47.00	48.27	44.71
	Net Effect	-0.21%	-0.35%	-0.35%	0.01%	0.01%	0.04%	0.07%	0.11%	-0.08%
World Production	Base	113.87	119.21	123.01	127.36	130.15	133.21	137.07	141.10	128.12
	Safeguard	113.87	119.00	122.57	126.77	129.71	132.84	136.75	140.85	127.79
	Net Effect	0.00%	-0.18%	-0.36%	-0.46%	-0.34%	-0.28%	-0.24%	-0.18%	-0.25%
World Mill Use	Base	115.99	118.36	121.56	125.63	128.76	132.05	135.13	138.64	127.02
	Safeguard	115.91	118.19	121.28	125.34	128.44	131.73	134.83	138.37	126.76
	Net Effect	-0.07%	-0.15%	-0.23%	-0.23%	-0.25%	-0.24%	-0.22%	-0.19%	-0.20%

Table 8. Safeguard Agreement Effects on the Cotton Markets of the U.S. and China

		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Average
U.S.					Cents per Pound					
Farm Price	Base	52.70	54.53	55.65	58.14	59.58	61.31	61.99	62.24	58.27
	Safeguard	52.34	53.85	54.99	58.08	59.72	61.54	62.28	62.62	58.18
	Net Effect	-0.66%	-1.24%	-1.19%	-0.10%	0.23%	0.37%	0.47%	0.60%	-0.19%
					1000 Bales					
Production	Base	21914.60	21865.56	21942.24	22048.83	22048.09	22088.83	22162.71	22299.56	22046.30
	Safeguard	21914.60	21861.23	21933.51	22040.05	22048.09	22088.83	22164.92	22304.01	22044.40
	Net Effect	0.00%	-0.02%	-0.04%	-0.04%	0.00%	0.00%	0.01%	0.02%	-0.01%
Exports	Base	15993.19	16315.60	16831.43	17248.50	17281.06	17104.16	17341.79	17452.84	16946.07
	Safeguard	15978.92	16294.75	16816.46	17251.91	17282.78	17105.86	17345.24	17456.31	16941.53
	Net Effect	-0.09%	-0.13%	-0.09%	0.02%	0.01%	0.01%	0.02%	0.02%	-0.03%
China					Yuan per Pound					
Price	Base	7.31	7.25	7.61	6.97	7.70	8.14	8.37	8.21	7.69
	Safeguard	7.19	7.09	7.48	6.96	7.71	8.17	8.42	8.27	7.66
	Net Effect	-1.64%	-2.15%	-1.76%	-0.03%	0.11%	0.35%	0.61%	0.78%	-0.47%
					1000 Bales					
Production	Base	27302.72	29103.03	300017.71	32175.75	33184.70	34355.55	36202.78	38137.94	32560.02
	Safeguard	27302.72	29034.81	29878.76	31985.71	33025.14	34204.67	36058.52	38008.20	32437.32
	Net Effect	0.00%	-0.23%	-0.46%	-0.59%	-0.48%	-0.44%	-0.40%	-0.34%	-0.37%
Imports	Base	16560.97	17500.06	19339.51	21632.70	23003.12	24132.68	25074.15	26480.22	21715.43
	Safeguard	16549.46	17413.16	19183.47	21442.73	22849.75	23984.46	24933.36	26358.83	21589.40
	Net Effect	-0.07%	-0.50%	-0.81%	-0.88%	-0.67%	-0.61%	-0.56%	-0.46%	-0.57%
Mill Use	Base	43971.33	45427.58	47955.62	52080.51	54807.53	57221.57	59588.23	62506.91	52944.91
	Safeguard	43932.09	45333.79	47797.03	51879.87	54572.55	56967.95	59332.37	62252.61	52758.53
	Net Effect	-0.09%	-0.21%	-0.33%	-0.39%	-0.43%	-0.44%	-0.43%	-0.41%	-0.34%

Table 9. Safeguard Agreement Effects on Major Cotton Exporters and Importers

		2006/07	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	Average
Exporters					1000 Bales					
Australia	Base	2966.60	3020.37	2978.35	3017.25	3088.21	3196.12	3358.19	3573.82	3149.86
	Safeguard	2959.37	3006.59	2974.33	3019.88	3089.40	3198.94	3362.14	3574.87	3148.19
	Net Effect	-0.24%	-0.46%	-0.14%	0.09%	0.04%	0.09%	0.12%	0.03%	-0.06%
Brazil	Base	2196.50	2912.32	3125.58	3362.28	3724.71	3916.18	4048.90	4243.64	3441.26
	Safeguard	2194.37	2911.48	3124.07	3363.91	3725.79	3916.94	4049.68	4244.47	3441.34
	Net Effect	-0.10%	-0.03%	-0.05%	0.05%	0.03%	0.02%	0.02%	0.02%	0.00%
Uzbekistan	Base	4564.95	4600.23	4615.12	4697.11	4718.62	4702.85	4692.29	4724.75	4664.49
	Safeguard	4562.70	4596.63	4316.31	4699.40	4736.70	4726.52	4720.16	4755.73	4676.39
	Net Effect	-0.05%	-0.08%	-0.04%	0.05%	0.38%	0.50%	0.59%	0.66%	0.25%
Western Africa	Base	3674.51	3818.46	3962.24	4094.19	4167.24	4236.41	4311.41	4369.57	4079.25
	Safeguard	3672.33	3818.08	3957.95	4095.39	4168.47	4239.32	4319.49	4376.93	4080.99
	Net Effect	-0.06%	-0.01%	-0.11%	0.03%	0.03%	0.07%	0.19%	0.17%	0.04%
Importers										
Turkey	Base	3545.66	3498.57	3469.04	3462.67	3467.61	3438.26	3414.41	3369.96	3458.27
	Safeguard	3542.85	3489.65	3454.57	3449.33	3459.61	3435.61	3415.73	3374.52	3452.73
	Net Effect	-0.08%	-0.25%	-0.42%	-0.39%	-0.23%	-0.08%	0.04%	0.14%	-0.16%
Pakistan	Base	1564.53	1613.89	1650.93	1695.72	1814.21	1968.84	2148.73	2149.58	1825.80
	Safeguard	1555.61	1602.50	1642.63	1704.82	1822.41	1975.23	2154.65	2155.50	1826.67
	Net Effect	-0.57%	-0.71%	-0.50%	0.54%	0.45%	0.32%	0.28%	0.28%	0.01%
Mexico	Base	1604.56	1564.17	1492.27	1446.23	1371.22	1331.52	1310.58	1310.58	1428.89
	Safeguard	1605.37	1565.59	1494.54	1448.73	1374.16	1333.70	1311.92	1311.11	1430.64
	Net Effect	0.05%	0.09%	0.15%	0.17%	0.21%	0.16%	0.10%	0.04%	0.12%

Table 10. Average Economic Gains and Losses Due to the Safeguard Agreement

			2006/07-2008/09	2009/10-2013/14	2006/07-2013/14
U.S.			Million $US		
Producer	Cotton	Base	869.85	771.85	808.60
		Safeguard	743.88	814.51	788.02
		Difference	-125.96	42.66	-20.58
	T&A	Base	-1706.71	-1177.85	-1376.17
		Safeguard	-1058.25	-1077.97	-1070.57
		Difference	648.46	99.88	305.60
Consumer		Base	5289.37	5065.41	5149.39
		Safeguard	5289.00	5065.34	5149.21
		Difference	-0.37	-0.07	-0.18
Government Expenditure	Safeguard	Base	-888.29	- 888.29	-793.40
		Safeguard	-748.96	-823.39	-795.48
		Difference	139.33	-29.99	33.50
China					
Producer	Cotton	Base	2119.23	2956.98	2642.82
		Safeguard	1844.37	2949.31	2534.96
		Difference	-274.85	-7.67	-107.86
	T&A	Base	1851.62	6509.27	4762.65
		Safeguard	1271.29	6667.55	4643.95
		Difference	-580.32	158.28	-118.70
Consumer		Base	8021.21	15652.06	12790.49
		Safeguard	6891.39	15242.22	12110.66
		Difference	-1129.82	-409.84	-679.84

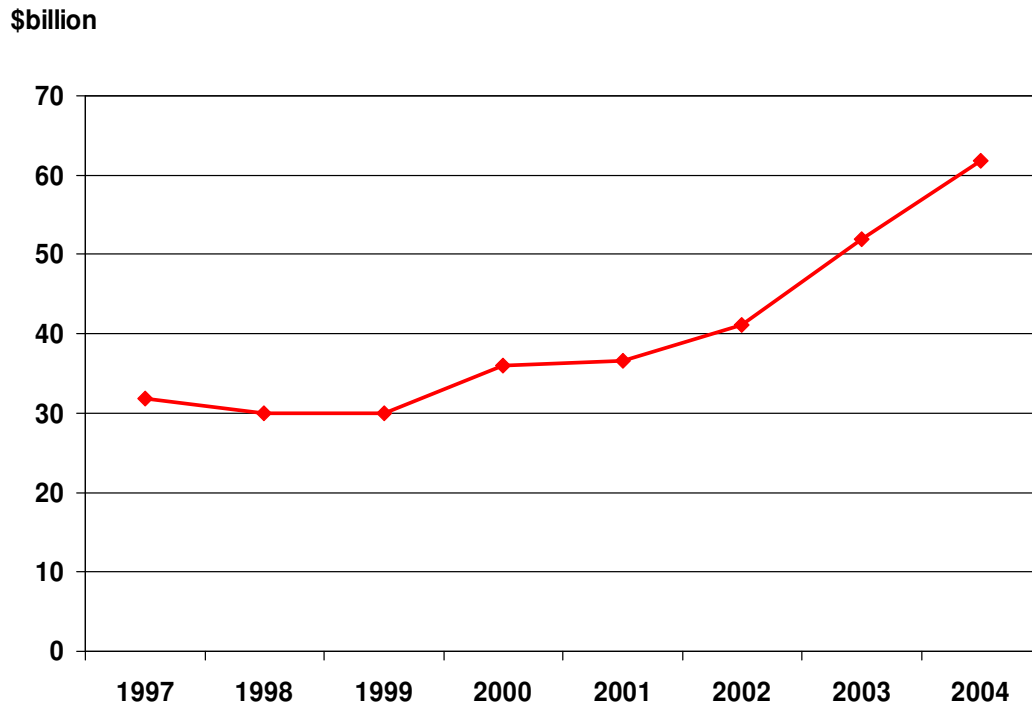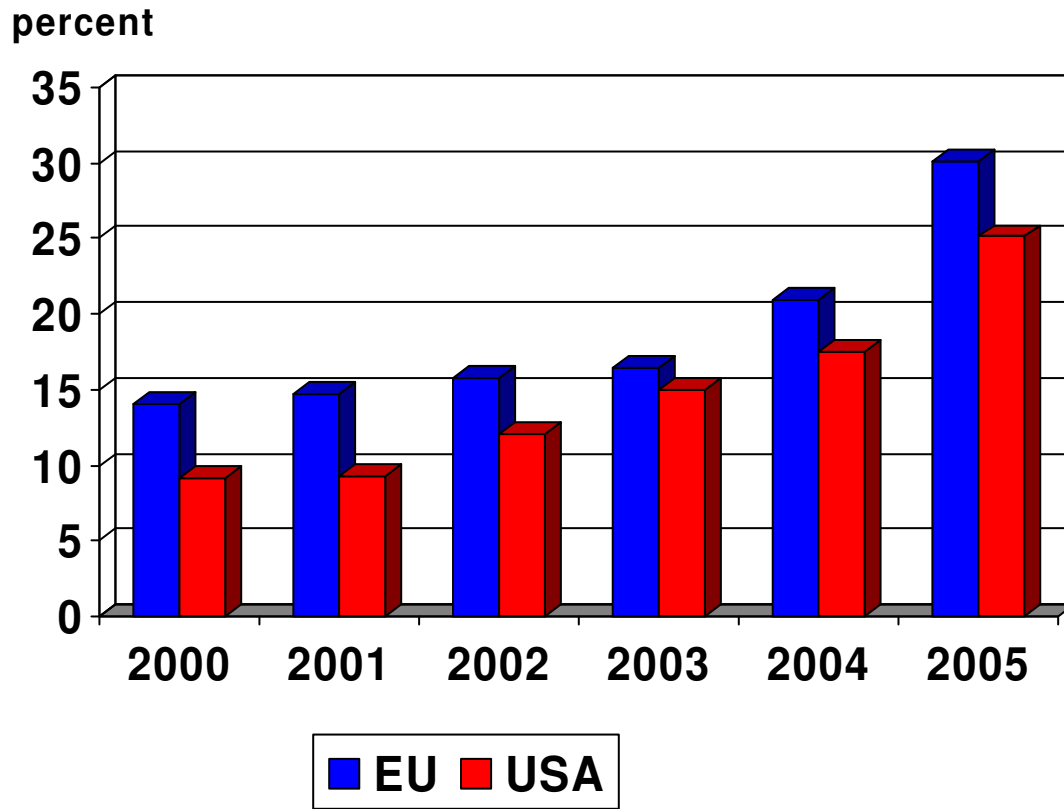Figure 1. China's Clothing Exports

$billion

Figure 2. China's Share of the Domestic Textile and Apparel Import Market

percent

Source: http://europa.eu.int/comm/trade/issues/sectoral/industry/textile/pr281105_en.htm
and USDA ERS website)

Figure 3. Linkage between CGE model and PE model

| CGE Model | → | Textile Fiber Production
Textile Fiber Net Trade | → | World Fiber PE Model |

EU Textile Trade
Chinese and US textile and Cotton productions, trades, and their domestic consumptions