INTERNATIONAL MARKET STRUCTURE AND THE IMPACTS OF MARKET DISTORTIONS FROM DOMESTIC SUBSIDIES: THE U.S. COTTON CASE

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Abstract

This analysis uses a residual demand elasticity model to measure market power of the international cotton market. The results indicate that China dominates the cotton price with a significant market power in China compared to all the cotton exporters. Those test results combined with a partial equilibrium model of the international cotton market are used to study the welfare consequences of U.S. cotton subsidy policies for major cotton exporters under alternative assumptions about global market structure. The results indicate that the effects of U.S. subsidies on world cotton price are much smaller under imperfectly competitive international markets than those under completely competitive market scenarios.

Introduction

Cotton is the primary *natural* fiber accounting for around 40 percent of the world's annual textile fiber production and has served as a source of economic growth, especially when combined with textile and apparel production (MacDonald, 2000). Cotton provides income to millions of farmers in both industrial and developing countries worldwide. For example, 1-2 million households produce cotton in West Africa, with up to 16 million people deriving income from cotton indirectly (Hussein, Perret, and Hitimana, 2005). Cotton provides 3-5% of GDP in Benin, Burkina Faso, Mali, and Chad, and the cotton export share of total exports are 51.4%, 37.6%, 36.2%, 25% and 11.2% for Burkina Faso, Benin, Chad, Mali, and Togo, respectively, further illustrating the importance of cotton to these economies (Hussein, Perret, and Hitimana, 2005).

Because of the reliance of developing countries on cotton, allegations were levied against the U.S. and other developed countries that their domestic and export subsidies caused significant impacts on world markets by encouraging excess production and trade and depressing world prices. Following these arguments, Brazil, with the support of Australia and the Western and Central African (WCA) countries, filed a petition challenging the U.S. cotton programs at the September, 2002 meeting of the World Trade Organization (WTO) Settlement Body. Brazil alleged that U.S. cotton subsidies were depressing world prices and were injurious to their farmers and the WCA countries [Benin, Burkina Faso, Chad and Mali] also claimed to be losing export earnings of US$ 1 billion a year, including both direct and indirect costs, as a result of the subsidies paid by the US and the EU (BBMC, 2003).

The issue of U.S. cotton subsidies has been studied and debated since it was first raised by Brazil in 2002 (ICAC, 2002; Sumner, 2003; Goreux, 2004; Pan et al., 2006). The empirical estimates, summarized in Table 1, vary with type of analytical model, time period analyzed, and key assumptions, but world price effect estimates of removing U.S. cotton programs on global prices ranged from $\pm$ 2% to $\pm$ 11%. Table 1 also provides estimated effects of the complete removal of all domestic subsidies, export subsidies and tariffs across countries (FAPRI 2002; Poonyth et al. 2004; Pan et al. 2007a).

A key feature of all these modeling efforts is the assumption of a perfectly competitive global market structure. However, at least one analysis (Ethridge, 2007) raises questions about the validity of that assumption. Because the U.S. is the dominant exporter of cotton and China is the dominant importer, the possibility that oligopoly and/or oligopsony power to influence prices may exist. Size alone does offer the opportunity, but does not guarantee the exertion of market power. There is no empirical evidence of the

impacts of changes in market structure on the global cotton market and/or the impacts of market structure on the distribution of the effects of U.S. policy. This paper extends previous studies by beginning to develop an understanding of how alternative market structures alter

Table 1. Literature Summary of the Effects of Trade-Distorting Support on the World Cotton Price

Study	Method	World Price Effects of Removing U.S. subsidies (Domestic Support and Export Subsidies)	World Price Effects of Removing all Trade Distorting Support (Domestic Support, Tariffs, and Export Subsidies)
FAPRI (2002)	Partial Equilibrium		+11.44% average from 2002/2003 to 2011/12
Goreux (2004)	Partial Equilibrium		+12% in 2000/01
ICAC (2003)	Partial Equilibrium		+70% in 2001/02 and +15% in 2002/03
Pan, et al. (2004)	Partial Equilibrium	+2.14% in 2005/06 to +0.86% in 2013/14	
Pan et al (2007)	Partial Equilibrium		Average +10.79% between 2006/07 and 2010/11
FAO (Poonyth et al. 2004)	Partial Equilibrium		+3.1% from baseline average (1996-2000)
Reeves, Vincent, and Quirke (2001)	Partial Equilibrium		+2.2% in 1999
Summer (2003)	Partial Equilibrium	+12.6% in 1999-2002 and +10.8% in 2003-2007	
IMF (Tokarick, 2003)	Partial Equilibrium		+2.8% and +2.0% (remove production subsidies only)

Source: Pan et al. (2007a)

the impact of U.S. farm programs on global cotton markets by establishing the impacts under the three scenarios—perfect competition, a large exporter/importer international market, and monopsony.

The potential impact of alternative market structure assumptions on modeling results is not one simply of academic interest. Rather, major conclusions in an international dispute (and the subsequent penalty phase estimates of damages) were based primarily on estimates from models that may or may not be based on valid assumptions. Understanding the impact of market structure assumptions, therefore, is of paramount policy importance for future dispute resolution/policy formation processes.

Global Cotton Market Structure

The central condition for enabling market power to influence market prices is that there are a sufficiently small enough number of sellers/buyers that any entity in the market is able to impact the price. There may or may not be a dominant entity (much larger or more influential than the rest) and the conditions enable the exertion of market power rather than dictate it. In recent years, cotton mill use has become more concentrated in several countries: China (43%), India (15%), Pakistan (10%), Turkey (4 %), and US (4%). As a result, China imports around 31% of global cotton trade, while Pakistan and Turkey each import around 10%. Exports are slightly less concentrated with the US (36%), India (17%), Uzbekistan (11%), Brazil (7%), Western and Central African countries (6%), and Australia (3%) (USDA 2008). The trend toward buyer concentration is a manifestation of expanded textile capacity in China and Southeast Asia, particularly since the expiration of the Multi Fiber Agreement. China's dominance in that industry has increased with a strong growth in restricted categories in 2007, while China's share of global imports had already reached 40-50% in non-restricted categories (Emergingtextile, 2008). The concentration in international cotton markets may mean that previous analyses of the global cotton market yielded biased estimates. The issue is important because structure impacts market behavior (conduct), which in turn

affects market outcomes (performance). Other studies have also recognized that there are possible strategic reasons for government intervention based on imperfect competition (Corden, 1991). The potential role of market structure and strategic behavior in international markets is not new, but often forgot in applied analyses. Also, the market impact of state trading agencies in cotton are a priority item in the next round of WTO negotiations (e.g, China's cotton imports are still controlled by several state owned companies (FAS, 2008)).

Economic Analysis of Domestic Price Supports

To analyze how the world cotton sector would be impacted by the complete elimination of US domestic support mechanisms under different market structures, a multi-country, partial equilibrium model based on comparative advantage considerations was constructed. The analysis considers three different market structure scenarios under which all the U.S. domestic price subsidies directly affecting cotton supply and demand are examined: "open competitive markets" with U.S. cotton programs, "large exporter/importer" (U.S. as a dominant exporter [upward sloping excess supply function with all other suppliers as price takers] and China as a dominant importer [downward sloping excess demand function with all other importers as price takers]), and "monopsony" (China as a monopsony buyer) with U.S. cotton programs.

Viewing the U.S. as an oligopoly seller was considered, but rejected because U.S. behavior is inconsistent with oligopoly; an oligopolist would restrict the quantities of cotton offered for sale in order to increase prices and capture oligopoly rents. Instead, the U.S. policy attempts to increase the amount of cotton on the world market, thereby theoretically lowering price. The U.S., however, is a large exporter of cotton and therefore may have some influence on price, but U.S. policies are not consistent with the exertion of market power. China uses its Tariff Rate-Quota on cotton as well as acting as a state-trading enterprise/single desk trader in order to exercise its market power, which results from the combination of its relatively dominant size in the world market and its managing imports through central trading and import quotas, thereby lowering its cotton import price (and supporting its internal cotton price), consequently lowering world price.

For simplification in the following conceptual analysis, we assume there are two countries/regions, which are relatively large (Importer and Exporter). The model of domestic price support presented here follows that of familiar three-panel diagrams of two-region, partial equilibrium static world trade models (Pan, et al 2006). In the competitive market scenario, the three panels of Figure 1 depict price-quantity graphs based on supply and demand interactions in the domestic markets of the U.S. (Figure 1a), and China, the major importing country (Figure 1c), as well as the trade market between the two (Figure 1b). All other countries are assumed to be price takers in the trade market, so that world price is determined by the dominant importer and exporter (not true, but useful for the conceptual analysis of forces at work in the world market). S_u and D_u represent initial supply and demand functions in the U.S. and S_c and D_c represent initial supply and demand functions in China, ES_1 and ED_1 represent initial excess supply and excess demand in the world market. The intersection of ES_1 and ED_1 functions derived from the two regions indicate the free competitive market equilibrium world market price (P_W) in the absence of trade interventions, and the domestic prices in the two countries are equal to the world price.

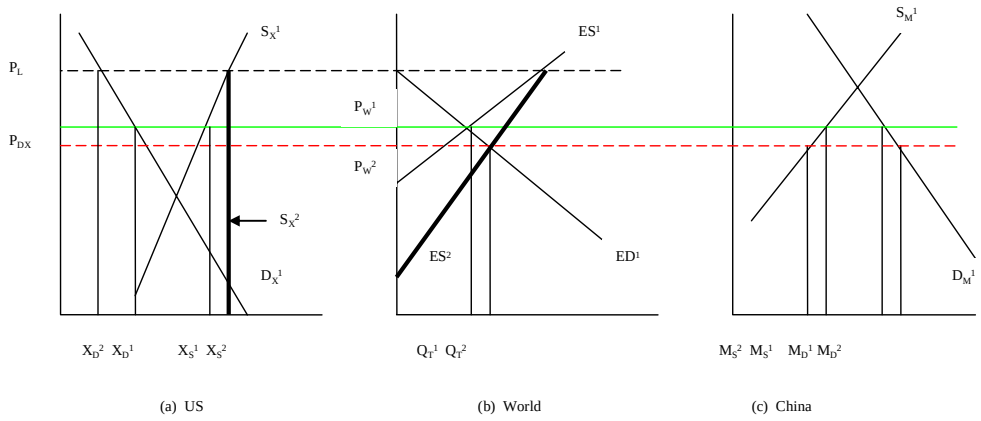
When the U.S. cotton program is imposed on this system, the target price and counter-cyclical payments serve to create a new U.S. "kinked" supply curve, X_4S_U. This results in an increase in the excess supply curve to in the trade market to a kinked curve, $ES_2\,ES_1$, kinked at P_L. Consequently, the world market price declines to P_{W1} and an increase in world trade. This is the theoretical argument used in the WTO case and the point where most analyses of the trade effects of policy stop.

Next, consider the impact of China exercising its monopsony power in the world cotton market. Through its central authority, policy makers would achieve this through setting its import tariff (through the TRQ). To simplify the analysis, we adopted the graph presentation presented by Enke (1944).

On the right side of Figure 2, D_d is the Chinese cotton domestic demand, S_d is the Chinese domestic supply and S_f is the imports. S_d+S_f is a combination of foreign and domestic supplies (AC-BC=DC). In the left side of the diagram, MC_f is the marginal cost of importation. The main idea here is that China is benefited

by importing cotton only when the marginal cost of the "last" unit from aboard is just equal to the supply price asked by domestic producers for their marginal output. One of the equilibrium prices is AQ_1, Chinese total consumption is OQ_1, domestic production is OQ_2 and imports Q_2-Q_1. However, the marginal cost of the imported supply is greater than its unit cost. Because China has the monopsony market power in the cotton market, the Chinese government would regulate the consumption, production and imports so that the least marginal cost to the economy of obtaining cotton (S_d+MC_f) is equal to its marginal value in consumption (D_d). Therefore, China would impose an import tariff IH to force lower its import level at Q_4-Q_3 (or they could simply restrict imports directly)[1], domestic production at OQ_4, and domestic consumption at OQ_3.

Figure 1. Effects of US Cotton Programs on World Cotton Price under Competition Market



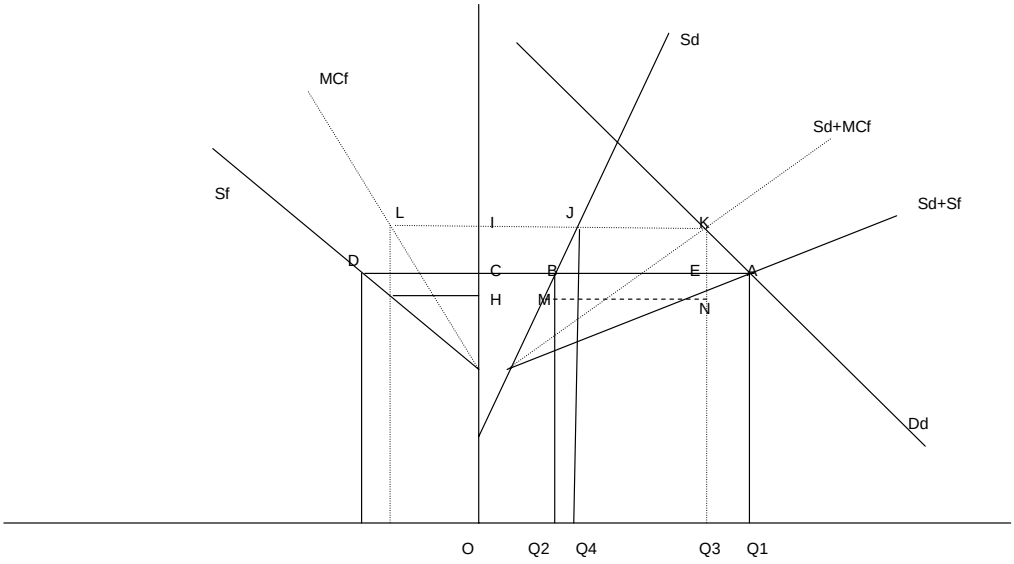
A main point is that if the hypothesis that China is exerting monopsony power in the market, there is an additional impact on the global price of cotton (in addition to the influence of U.S. cotton programs).[2] This

[1] While they have nominally increased import quotas and adopted other market-access provisions in relation to the accession into the WTO, they still control import flow through rejecting shipments for "contamination" and other non-tariff/quota control measures. They can accomplish this due to the single-desk status of imports.

[2] Technically speaking, if China is a pure monopsony, there would be no impact of U.S. programs because China would set the world price. We recognize that the Chinese monopsony is the extreme case and serves as the "minimum" impact of U.S. policies.

result implies that while there are clearly effects from domestic subsidies on world markets, those effects are unambiguously altered by the import policies of large importers with oligopsony/monopsony power in the market. The relative impact of these different effects is an empirical question.

Figure 2. Effects of Monopsony on World Cotton Price



Source: Enke (1944).

Methods

Cotton Market Power Test

With the first development of the residual demand elasticity (RDE) to measure market power of a single firm in an imperfect market by Baker and Bresnahan (1988), the residual demand elasticity (RDE) model is broadly used to measure market power in an imperfect market: Goldberg and Knetter (1999) adopted the model to measure the degree of competition in segmented export markets; Carter et al. (1999) tested the world wheat market using the model. The RDE model generally assumes that each country behaves as a firm and that parameters can be interpreted as share-weighted industry averages for all firms within one country; Poosiripinyo and Reed (2005) applied the RDE model to the Japanese chicken meat market; Song, Marchant, and Reed and Xu (2007) to test U.S.-China market power of soybean trade. To evaluate whether there is market power in the cotton trade market, following their approaches, we assume that both China and U.S. are the primary actors in the market. A two-country partial equilibrium trade model is applied to U.S.-China cotton trade. The specific equations include:

$$(1)\ P_{US}^{XPT} = \beta_0 + \beta RS_{US}^{CH} + \beta_1 INC_{US} + \beta_2 T + \beta_3 XPT_{US}^{OTH} + \beta_4 P_{US}^{SOYM} + \beta_5 STK_{US} + \varepsilon_{US}$$

$$(2)\ P_{CH}^{IMP} = \alpha_0 + \alpha RD_{CH}^{US} + \alpha_1 INC_{CH} + \alpha_2 T + \alpha_3 IMP_{CH}^{AN} + \alpha_4 IMP_{CH}^{IN} + \alpha_5 IMP_{CH}^{OTH} + \alpha_6 P_{CH}^{SOYM} + \alpha_7 WTO_{CH} + \varepsilon_{CH}$$

$$(3)\ P_{CH}^{IMP} = d_0 + d_1 P_{US}^{XPT} + \varepsilon_{US}$$

(4) $RD_{CH}^{US} = RS_{US}^{RW}$

where $P_{US}^{XPT}, RS_{US}^{RW}, INC_{US}, T, XPT_{US}^{OTH}, P_{US}^{corn}, STK_{US}, \varepsilon_{US}$ is the logarithm of U.S. cotton export price to China ($/mt); U.S. residual cotton supply for China (mt); U.S. personal disposable income ($); time trend; U.S. cotton exports to the other countries (mt), U.S. corn price ($/mt), U.S. cotton beginning stocks (bales), and error term, respectively. $P_{CH}^{IMP}, RD_{CH}^{US}, INC_{CH}, IMP_{CH}^{AU}, IMP_{CH}^{IN}, IMP_{CH}^{OTH}, P_{CH}^{corn}, WTO_{CH}, \varepsilon_{CH}$ is the logarithm of China's cotton import price from the United States ($/mt); China's cotton import quantity from the United States; China's personal disposable income ($); China' s cotton import from Australia (mt); China's cotton import from India (mt); China's import from other countries (mt); corn price in China; a dummy variable for Chinese world trade organization membership (equaling 0 before 2002 and 1 otherwise) and error term, respectively. All the α, β, δ 's are parameters to be estimated.

Estimation of the policy effects

A partial equilibrium world fiber model was used to estimate the effects of U.S. cotton subsidy programs on the world market. This model incorporates the regional supply response of cotton, different competing goods in different producing regions, substitutability between cotton and competing fibers, and the linkage between raw fiber and textile sectors (Pan et al., 2004). The China and U. S. textile models include supply, demand, ending stocks, and market equilibrium for cotton and man-made fibers. Cotton A-index, Chinese domestic cotton price, U.S. cotton textile price index, U.S. non-cotton price index, U.S. farm price, and polyester prices are endogenously solved in the models by respectively equalizing world exports and imports, Chinese domestic cotton supply and demand, U.S. cotton and non-cotton textile supply and demand, U.S. domestic cotton supply and demand, and man-made fiber supply and demand.

Chinese cotton mill use was estimated following a two-step process in which total textile fiber mill use is first estimated as a residual of textile fiber consumption and the net trade of textile fiber, followed by allocations among various fibers such as cotton, wool, and man-made fibers (represented by polyester) based on their relative prices. The U. S. cotton and non-cotton textile mill use was solved endogenously with the domestic textile demand and textile net trade (net imports). All these equations were estimated based on the cotton textile price index, non-cotton textile price index, cotton domestic price, and non-cotton domestic price.

U.S. cotton production was modeled using separate acreage and yield equations. Cotton production is a function of last year's cotton net returns and the relative net return(s) of competing crops. As part of the total U.S. cotton supply, imports and exports are functions of domestic price, international price (A-index), exchange rates, tariff rates, and quota restrictions. Similarly, the U.S. man-made fiber model is modeled using capacity and utilization. The capacity and utilization equations are estimated by the man-made fiber price and petroleum spot price.

Western and Central African countries and other countries were assumed to be price takers in the cotton market. The elasticties used in the study are presented in Table 2 (Pan et al., 2006). The short run elasticities of cotton acreage response range from 0.10 to 0.54, with Mexico having the highest value. The long-run acreage response elasticities range from 0.21 to 1.15, with the highest in Australia. These elasticties have been used in several studies such as Chinese currency evaluation (Pan et al., 2007b) and cotton in a free trade scenario (Pan et al., 2007a).

To analyze the different scenarios, we adjusted the model based on the following two assumptions: Chinese domestic cotton price determine world price (A-index) in monopsony case; world cotton import and export determine world cotton price under the open, competitive market case.

Table 2. Cotton Price Transmission and Supply Elasticities

Country	Income Elasticities	Price Elasticities	
	Textiles	Cotton	Polyester
US	0.15	-0.24	0.07
Australia	0.13	-0.05	0.00
South Korea	0.11	-0.57	0.24

Taiwan	0.11	-0.50	0.35
Japan	0.14	-0.57	0.37
EU-15	0.12	-0.39	0.15
Mexico	0.58	-0.27	0.10
Brazil	0.53	-0.15	0.12
China	0.69	-0.57	0.16
India	0.56	-0.44	0.10
Pakistan	0.52	-0.28	0.18
Africa	0.55	-0.74	0.24
World	0.30	-0.28	0.15

Source: Pan et al. (2004)

Results and Discussion

Empirical Estimation of Cotton Market Structure

Table 3 reports the parameters of the simple two country partial equilibrium model estimated by the SAS Seemingly Unrelated Regression (SUR) method. For the U.S. inverse residual cotton supply function, only the U.S. cotton residual supply for China, U.S. corn price, and time trend variable is statistically significant. The estimated parameter of the U.S. cotton export to China is the price flexibility of the U.S. cotton inverse residual supply function. It can be used to measure the market power of Chinese cotton importers. The $\beta = 0.05$ implies that the marketing margin for Chinese cotton importers (the difference between the Chinese domestic cotton price and the cotton import price from the U.S.) is 5.04% of the import price from the United States or other countries plus tariffs and transaction cost of Chinese cotton importers.

For the Chinese inverse demand function, Chinese disposable income per capita, time trend and Chinese domestic corn price are statistically significant. However, the results did not support any significant effects from major cotton exporters such as U.S., Australia, and India. The empirical results show that the price flexibility of China's residual demand, which can be used to measure the market power of all cotton exporters, is not statistically significant and the price flexibility of U.S. residual supply, which can be used to measure the market power of China's cotton importers, is 5%, indicating that China's cotton importers do have stronger market power relative to all the cotton exporters.

Because Chinese cotton importers have stronger market power over all the cotton exporters, Chinese cotton importers can exercise their market power to maximize their import profits by working with all the cotton exporters to diversify their cotton suppliers to reduce price risk.

Estimation of Policy Effects

Table 4 presents estimated effects of the U.S. cotton programs (Target price, direct payments, and loan rate) on the world A-index, Chinese cotton import expenditures, and export income in the U.S. and WCA countries under different market structure assumptions. The results represent the percentage changes in the selected variables between (a) a market in the current U.S. cotton program in effect and (b) removing those programs. For example,

Table 3. Estimation Results of the Two-country Partial Equilibrium Model

Equation	Variable	Parameter	Standard Error
US	Intercept	18.64	10.48
	RSQ^{US}	0.05*	0.02
	INC_{US}	-1.17	1.04
	T	0.002	0.008
	XPT_{US}^{CH}	-0.016	0.02

	P_{US}^{corn}	0.34*	0.12
	STK_{US}	-0.18*	0.10
China	Intercept	0.29*	2.70
	RD_{CH}^{US}	0.02	0.02
	INC_{CH}	0.93*	0.47
	T	-0.03*	0.01
	IMP_{CH}^{AC} [illegible]	0.007	0.01
	IMP_{CH}^{th}	-0.005	0.02
	IMP_{CH}^{OTH}	0.03	0.02
	P_{CH}^{corn}	0.17*	0.07
	WTO_{CH}	0.10	0.08
Price Relationship	Intercept	2.82*	0.63
	P_{US}^{NET}	0.61*	0.09

* 10% significance level

eliminating the U.S. cotton program, but keeping the competitive market assumption would raise world price (A-index) by 8.1% in 2008/09, 6.9% in 2009/10, etc., and by an average of 4.76% over the 5-year projection period; it would decrease China's imports by an average .22%, decrease U.S. export income by 1.62%, and raise WCA export income by 3.13%. On the other hand, adopting the assumption that China is exercising monopsony power (through its TRQ), the U.S. program elimination has no effect on any of the selected indicators.

The intermediate results in Table 4 reflect the assumption that China and the U.S. are both large (importer and exporter, respectively), which simply means that both are influencing world price, but are not acting strategically. Recognizing the fact that China is a large country importer (downward sloping excess demand function) decreases the estimated average impact of U.S. cotton programs on world price from 4.76% to 2.11%. We know that China is a large importer, so the openly competitive market results place too much emphasis on U.S. programs. The net result of U.S. programs must be less than or equal to 2.11%, on average, by consequence. We know that China is not a pure monopsonist, so the impact of U.S. programs must be greater than 0%. Given that the previous results above show that China is exerting market power while the United States is not, one can deduce that the impacts of the U.S. programs on world cotton price is closer to the 0% result than the 2.11%. While more specific estimates of the effects are difficult to obtain because they would require specific estimates on strategic behavior, these results bracket the impacts of U.S. programs at a level well over half of what would be presented under a competitive market assumption.

Overall, these simulated results indicate that price effects of eliminating the U.S. cotton programs would have a larger impact on world prices, trade flows and export earnings in a structurally competitive global market than in a market structure in which China excises its monopsonistic/oligoposonistic power. The results further suggest that removal of U.S. commodity programs would gain more benefits for WCA countries under complete competitive market than a monopsony market. More realistic assumptions about market structure, then, show much more modest impacts of U.S. programs on other cotton-producing regions than those presented to the WTO.

Table 4. The Effects of US Commodity Programs on World A-Index and Trade Income, Expenditure

		2008/09	2009/10	2010/11	2011/12	2012/13	Average
A-Index				Cents per Pound			
	Effects of U.S. Program Removal Under Completely competitive market	8.10%	6.94%	3.77%	3.31%	1.69%	4.76%
	Effects of U.S. Program Removal Under Large Exporter/Importer	3.25%	3.27%	2.11%	0.95%	0.95%	2.11%

Effects of U.S. Program removal Under Monopsony Market	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
China Import						
Effects of U.S. Program Removal Under Completely competitive market	-0.55%	-0.25%	-0.12%	-0.11%	-0.08%	-0.22%
Effects of U.S. Program Removal Under Large Exporter/Importer	-0.22%	-0.05%	-0.02%	0.00%	0.00%	-0.06%
Effects of U.S. Program removal Under Monopsony Market	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
U.S. Export Income						
Effects of U.S. Program Removal Under Completely competitive market	-2.94%	-1.95%	-1.10%	-1.09%	-1.01%	-1.62%
Effects of U.S. Program Removal Under Large Exporter/Importer	-1.21%	-1.12%	-1.10%	-0.90%	-0.82%	-1.03%
Effects of U.S. Program removal Under Monopsony Market	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%
WCA Countries Export Income						
Effects of U.S. Program Removal Under Completely competitive market	4.98%	4.37%	2.80%	2.21%	1.28%	3.13%
Effects of U.S. Program Removal Under Large Exporter/Importer	1.81%	1.60%	1.35%	1.31%	1.23%	1.46%
Effects of U.S. Program removal Under Monopsony Market	0.00%	0.00%	0.00%	0.00%	0.00%	0.00%

Conclusion

In this study, we first use the residual demand elasticity model to measure market power in the international cotton market and then evaluate the effects of cotton subsidy programs on the cotton market based on different market structure assumption. The results of market power estimation support the proposition that the international cotton market is imperfectly competitive. China is shown to exert market power over key cotton exporters including the United States.

The effects of cotton subsidy programs have been a topic during the last several years. Most of the studies agree that these programs cause the world cotton price to decline, *ceteris paribus*. However, the magnitudes of the effects are a significant area of debate. This study indicates that the removal of trade restrictions in the world cotton markets would increase global net welfare. The magnitude would depend on the market structure assumption: the effects would be much smaller under imperfectly competitive market structure than the effects under completely competitive market scenarios. The results further suggest that the effect of market structure on world cotton price is bigger than the US commodity programs itself. Although the cotton case has been concluded, the results in the study can provide further direction for the policy evaluation and WTO disputes in different commodity markets.

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