Cotton is an important cash crop in many developing economies, supporting the livelihoods of millions of poor households. In some countries it contributes as much as 40 percent of merchandise exports and more than 5 percent of GDP. The global cotton market, however, has been subject to numerous policy interventions, to the detriment of nonsubsidized producers. This examination of the global cotton market and trade policies reaches four main conclusions. First, rich cotton-producing countries should stop supporting their cotton sectors; as an interim step, transfers to the cotton sector should be fully decoupled from current production decisions. Second, many cotton-producing (and often cotton-dependent) developing economies need to complete their unfinished reform agenda. Third, new technologies, especially genetically modified seed varieties, should be embraced by developing economies; this would entail extensive research to identify varieties appropriate to local growing conditions and the establishment of the proper legislative and regulatory framework. Finally, cotton promotion is needed to reverse or at least arrest cotton’s decline as a share of total fiber consumption.
The cotton market has been subject to considerable interventions, from subsidies in the United States, the European Union, and China to taxation in Africa and Central Asia. During 2002 support to the cotton sector by major players reached almost $6 billion, more than a quarter of the global value of production. This support coincided with the lowest nominal prices since 1972 (and possibly the lowest in history in real terms).

Low prices combined with high domestic support gave rise to the so-called cotton problem. In India a minimum price guarantee mechanism was triggered for the first time in many years, resulting in an estimated $0.5 billion in government support to the cotton sector in 2002 (ICAC 2003). Some Francophone African governments
introduced cotton support when the price received by growers was less than the cost of producing cotton. Brazil initiated a World Trade Organization (WTO) consultation process claiming losses due to subsidies by the United States (WTO 2002). Four West African cotton-producing countries—Benin, Burkina Faso, Chad, and Mali—pressed for removal of support to the cotton sector through the WTO, and Burkina Faso asked for financial compensation for low-income cotton-producing countries to offset the injury caused by support (WTO 2003).

Understanding these actions and likely reactions requires understanding the market setting and trade policies of the global cotton market. This article examines the global balance, price trends, and price variability in the cotton market and looks at the policies of major cotton producers and their likely impact on the cotton market. It also explores the policy reform initiatives in several East and West African cotton-producing countries and describes a number of policy alternatives for dealing with the cotton problem.

The Market Setting

More than two-thirds of the world’s supply of cotton is produced by developing economies. Cotton production totaled 20 million tons in 2001, up from 10.2 million tons in 1960 and reflecting an annual growth rate of 1.8 percent. Most of this growth was in China, where production tripled, and India, where it doubled. Turkey, Greece, and Pakistan also significantly increased their production (appendix table A.1). Australia, which produced only 2,000 tons of cotton in 1960, averaged 650,000 tons during the late 1990s. Francophone Africa produced less than 100,000 tons in the 1960s and now produces 10 times as much. In other countries production shares fell. The United States and the Central Asian republics of the former Soviet Union, the two dominant cotton producers during the 1960s, have maintained their output levels at about 3.5 and 1.5 million tons, but their shares fell by half. A number of Central American countries that used to produce almost 250,000 tons of the fiber now produce almost none.

About a quarter of the area allocated to global cotton production is currently under genetically modified varieties, accounting for 35 percent of world production and 31 percent of world exports. In the United States, where genetically modified cotton was first introduced in 1996, it accounts for three-quarters of the area planted to cotton. Other major producers of genetically modified cotton are South Africa (90 percent of its cotton area), Australia (82 percent), Mexico (60 percent), China (54 percent), Argentina (25 percent), and India (5 percent). If the conversion to genetically modified cotton continues at current rates, as much as half of world’s cotton will be of genetically modified origin in less than five years (see box 1 on the economics of genetically modified cotton).
Box 1. The Economics of Genetically Modified Cotton

Genetically modified cotton, a result of technological advances in the 1990s, has the potential to reduce the cost of production and increase the profitability of the early adopters of this technology. Research has shown that on balance, genetically modified cotton growers are much better off than conventional cotton growers.

Growers pay a premium for the pest-resistant seed, in effect purchasing insurance along with the seed. If insects attack the crop, growers benefit from lower costs (not having to spray). In the United States, where adoption of genetically modified cotton is high, the average number of pesticide applications against bollworms fell from 4.6 in 1992–95 to 0.8 in 1999–2001. Furthermore, growers are likely to experience higher yields because spraying always involves suboptimal elements and hence yield losses. Yields increases from switching to genetically modified cotton have ranged from 19 percent (China) to 80 percent (India). In developing economies there might also be health benefits because small growers spray with hand-held devices, and thus reductions in spraying would imply lowering the risk of poisoning. If insects do not attack, the grower simply loses the premium (the cost difference between conventional and genetically modified cotton).

There are two types of genetically modified cotton: Bt cotton and herbicide-tolerant cotton. Bt (Bacillus thuringiensis) is a naturally occurring soil bacterium that has been used as a biological pesticide for many years. The gene that produces the insect toxin has been transferred from the bacterium to the cotton plant. Because the plant produces its own toxin, the grower does not need to apply pesticides. Herbicide-tolerant cotton has been genetically modified to resist a herbicide that would otherwise kill both weeds and the cotton plant. Consequently, the herbicide can be applied without destroying the plant.

Producing genetically modified cotton is a complicated process, which is why most cotton-producing developing areas have not embraced the technology. First, the legal and regulatory framework must be established, which includes selection of the company to undertake trials, pricing issues, copyright of genetic material, duration of license, and whether growers will be allowed to recycle seeds or have to purchase the seeds every year. The second stage involves field trials, for adapting varieties to local conditions. There are about 35 genetically modified cotton varieties in the United States and 22 in China, for example, each designed for particular pest populations and growing conditions. The third stage involves adoption by the cotton growers.

Genetically modified cotton was first grown in the United States in 1996. A number of cotton-producing countries have introduced the technology since then, including China, India, and Mexico in the Northern Hemisphere and Argentina, Australia, and South Africa in the Southern Hemisphere. Other countries are in the process of approval or at the trial stage, including Brazil, Indonesia, Israel, Pakistan, Turkey, and Zimbabwe. Major producers that have not used or approved of genetically modified cotton (as of 2003) are the producers in the European Union, Central Asia, and Francophone Africa (except Burkina Faso, which is conducting trials) (Cotton Outlook 2004).

Four groups are likely to be most affected by the use of genetically modified seeds: the companies that manufacture the seeds, the farmers that use them, the farmers that do not use them, and consumers. Falk-Zepeda and others (2000) estimate that of the $215 million in annual surplus generated during 1996–98 because of the switch from conventional to genetically modified cotton varieties in the United States, farmers’ net incomes increased by $105 million and the seed companies received $80 million. Increased cotton output reduced world prices, generating about $45 million of gains to consumers (both in the United States and elsewhere), but cotton farmers in other countries who did not use genetically modified cotton lost an estimated $15 million because of lower cotton prices. The methodology of these welfare effects was based on a standard economic surplus model developed by Alston and others (1995).

Cotton consumption is driven by the size of the textile industries of the dominant cotton consumers. China, the leading textile producer, absorbed more than a quarter of global cotton output during the late 1990s. Other major textile producers are India, Turkey, and the United States, which together with China account for three-quarters of global cotton consumption. Several East Asian countries have recently emerged as important cotton consumers. Indonesia, the Republic of Korea, Taiwan (China), and Thailand, which together consumed only 130,000 tons in 1960 (1.2 percent of global consumption), absorbed 1.5 million tons in 2002 (7.2 percent of global consumption).

Between 1960 and 2000, cotton demand grew at the same rate as population (1.8 percent a year), implying that per capita cotton consumption has remained stagnant (figure 1). Over the same period per capita consumption of synthetic fibers grew at a steady rate of 2.2 percent a year, causing cotton’s share in total fiber consumption to fall from 60 percent in 1960 to less than 40 percent in 2000 (figure 2). The increasing share of chemical fibers reflects substantial reductions in production costs, new uses, quality improvements giving them properties similar to those of cotton, increased use in sportswear and clothing for extreme weather conditions, and active promotion programs by the industry.

One-third of cotton production is traded internationally. The four dominant exporters—the United States, Uzbekistan, Francophone Africa, and Australia—account for more than two-thirds of world exports. Four major producers—China, India, Pakistan, and Turkey—import cotton to supply their textile industries (appendix table A.2). The eight largest importers account for more than half of world

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**Figure 1.** Cotton Consumption, 1960–2002

[Graph showing cotton consumption from 1960 to 2002 with a note about per capita consumption and synthetic fibers share.]

*Source: ICAC (various issues, Cotton: Review of the World Situation).*

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cotton imports. The four East Asian textile producers—Indonesia, Thailand, Taiwan (China), and the Republic of Korea—accounted for 22 percent of world cotton imports in 2002, up from 3 percent in 1960.

Real cotton prices have declined over the past two centuries, although with temporary spikes. The reasons for the long-term decline are similar to those for most primary commodities: reduced production costs as a result of technological improvements on the supply side and stagnant per capita consumption and competition from synthetic products on the demand side. Between 1960–64 and 1999–2003, real cotton prices fell 55 percent, in line with the 50 percent decline in the broad agriculture price index of 22 commodities (figure 3).

Reductions in the costs of production have been associated primarily with a doubling of yields, from 300 kilograms per hectare in the early 1960s to more than 600 kilograms per hectare in 2000, a 1.8 percent annual increase. Behind this doubling in yields has been the introduction of improved varieties and expansion in the use of irrigation and chemical fertilizers. Additional diffusion of genetically modified technology and of precision farming, introduced during the 1990s, is expected to further reduce the costs of production. Substantial technological improvements have also taken place in the textile industry, so that the same quality of fabric can now be produced with lower-quality cotton, a trend in many other industries whose main input is a primary commodity.

Prices for cotton, as for most primary commodities, have been volatile (Cashin and McDermott 2001; Deaton 1999). The degree of volatility, however, has changed considerably during the past 40 years. Table 2 presents one intrayear and two interyear measures of cotton price volatility for three periods between

Figure 2. Cotton’s Share in Total Fiber Consumption and Polyester to Cotton Price Ratio, 1960–2002

1960 and 2002. The periods were selected on the basis of what are considered the two most important postwar structural breaks in commodity prices: the 1973 oil-induced commodity price boom and the 1985 shift in U.S. commodity policies from public stockholding to price-based support instruments. All measures consistently show that cotton prices were at least twice as volatile during 1985–2002 as during 1960–72, but half as volatile as during 1973–84. Valdés and Foster (2003) found similar results for price variability of corn, rice, sugar, and wheat, and Sarris (2000) for wheat and maize.

Real cotton prices declined during these three periods by an annual average of 1.48 percent, 3.16 percent, and 1.54 percent (see table 2). Thus not only have prices been twice as volatile in 1985–2002 as in 1973–84, they have also declined twice as fast.

The Policy Setting

Cotton has been subject to numerous market and trade interventions. Townsend and Guitchounts (1994) estimate that in the early 1990s, more than two-thirds of cotton was produced in countries that had some type of taxation or subsidization policy. The International Cotton Advisory Committee (ICAC 2002, 2003a), which has been monitoring assistance to cotton production since 1997, finds that at least eight countries have consistently supported cotton production—Brazil, China, Egypt, Greece, Mexico, Spain, Turkey, and the United States (table 3). In 2002—the year in

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**Figure 3.** Real Price Indices, 1960–2003 (1980 = 1.0)

Source: World Bank (various issues, Commodity Price Data).
Table 2. Cotton Price Trends and Variability, 1960–2002

<table>
<thead>
<tr>
<th>Period</th>
<th>Interyear variability</th>
<th>Intrayear variability</th>
<th>Trend (annual average)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Based on trend</td>
<td>Based on first</td>
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</tr>
<tr>
<td></td>
<td>regression (a)</td>
<td>differences (b)</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960–72</td>
<td>11.7</td>
<td>3.7</td>
<td>4.8</td>
</tr>
<tr>
<td>1973–84</td>
<td>39.6</td>
<td>12.8</td>
<td>19.7</td>
</tr>
<tr>
<td>1985–2002</td>
<td>25.7</td>
<td>7.0</td>
<td>12.1</td>
</tr>
<tr>
<td>Change (%)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1960–72 to 1973–84</td>
<td>238</td>
<td>246</td>
<td>310</td>
</tr>
<tr>
<td>1960–72 to 1985–2002</td>
<td>120</td>
<td>89</td>
<td>152</td>
</tr>
</tbody>
</table>


Note: Price variability is complicated because of nonstationarity, which typically invalidates standard statistical testing procedures. To ensure that the results do not reflect nonstationarity biases, the table reports three measures of variability. Similarly, estimates of price trends should be interpreted with caution.

\(a\)Defined as variation around a linear trend using annual data.

\(b\)Defined as variation of the first difference, often referred to as the z-statistic.

\(c\)Defined as variation of each monthly observation around the annual average.

\(d\)Derived from three separate trend regressions.

Table 3. Estimated Government Assistance to Cotton Producers, 1997–2002

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Millions of U.S. dollars</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>1,163</td>
<td>1,947</td>
<td>3,432</td>
<td>2,149</td>
<td>3,937</td>
<td>3,075</td>
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<tr>
<td>China</td>
<td>2,013</td>
<td>2,648</td>
<td>1,534</td>
<td>1,900</td>
<td>1,217</td>
<td>800</td>
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<tr>
<td>Greece</td>
<td>659</td>
<td>660</td>
<td>596</td>
<td>537</td>
<td>735</td>
<td>718</td>
</tr>
<tr>
<td>Spain</td>
<td>211</td>
<td>204</td>
<td>199</td>
<td>179</td>
<td>245</td>
<td>239</td>
</tr>
<tr>
<td>Turkey</td>
<td>—</td>
<td>220</td>
<td>199</td>
<td>106</td>
<td>59</td>
<td>57</td>
</tr>
<tr>
<td>Brazil</td>
<td>29</td>
<td>52</td>
<td>44</td>
<td>44</td>
<td>10</td>
<td>—</td>
</tr>
<tr>
<td>Mexico</td>
<td>13</td>
<td>15</td>
<td>28</td>
<td>23</td>
<td>18</td>
<td>7</td>
</tr>
<tr>
<td>Egypt</td>
<td>290</td>
<td>—</td>
<td>20</td>
<td>14</td>
<td>23</td>
<td>33</td>
</tr>
<tr>
<td>Percent of world price</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>18</td>
<td>46</td>
<td>77</td>
<td>46</td>
<td>97</td>
<td>67</td>
</tr>
<tr>
<td>China</td>
<td>27</td>
<td>45</td>
<td>35</td>
<td>34</td>
<td>24</td>
<td>13</td>
</tr>
<tr>
<td>Greece</td>
<td>121</td>
<td>142</td>
<td>118</td>
<td>101</td>
<td>187</td>
<td>160</td>
</tr>
<tr>
<td>Spain</td>
<td>114</td>
<td>151</td>
<td>130</td>
<td>151</td>
<td>253</td>
<td>197</td>
</tr>
<tr>
<td>Turkey</td>
<td>—</td>
<td>19</td>
<td>31</td>
<td>10</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Brazil</td>
<td>4</td>
<td>8</td>
<td>6</td>
<td>4</td>
<td>2</td>
<td>—</td>
</tr>
<tr>
<td>Mexico</td>
<td>4</td>
<td>5</td>
<td>18</td>
<td>15</td>
<td>22</td>
<td>15</td>
</tr>
<tr>
<td>Egypt</td>
<td>53</td>
<td>—</td>
<td>7</td>
<td>9</td>
<td>7</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: ICAC (2003a, b); U.S. Department of Agriculture (various years); EC (2003).

—, not available.
which support was highest—assistance to cotton producers reached $3.6 billion in the United States, $1.2 billion in China, and almost $1 billion in the European Union. Producers in Brazil, Egypt, Mexico, and Turkey received a combined total of $110 million. India also supported its cotton sector in 2002 with an estimated $0.5 billion.

This section analyzes cotton policy interventions in the United States, European Union, China, and Uzbekistan. The countries were selected for their large share in global output or their high degree of policy intervention, so that any change in their policies is likely to significantly affect the global cotton market. Not reviewed here are other major cotton producers that do not have substantial market distortions, such as India, Pakistan, and Turkey. Policy interventions and reforms of cotton producers in Africa are reviewed in the next section. Although the policy interventions in these counties do not significantly affect the world cotton market, they do affect their own economies and the welfare of a large number of poor households that are directly or indirectly associated with the cotton industry.3

The United States

Cotton subsidies in the United States were introduced as part of Depression-era commodity programs. Although specific provisions change every four or five years with each new farm bill, their chief objective has remained largely unchanged: to transfer income from taxpayers (and consumers) to commodity producers.

The main channels of support to U.S. cotton producers have been price-based payments, decoupled payments, crop insurance, and countercyclical payments. U.S. cotton users and exporters also receive some support. Price-based payments (also known as loan rate payments) are designed to compensate cotton growers for the difference between the market price and the target price when the world price falls below the target price. Decoupled payments (called direct payments in the 2002 Farm Bill) are predetermined annual payments based on historical areas allocated to cotton production. They were introduced with the 1996 Farm Bill to compensate for losses resulting from the elimination of deficiency payments. Countercyclical payments were introduced in 1998 (called emergency payments) to compensate for losses due to low commodity prices; they became permanent under the 2002 Farm Bill. When domestic prices exceed world prices, cotton exporters and domestic end-users receive payments (also known as export subsidies or Step 2 payments) so that U.S. exporters maintain their competitiveness. Implicitly, cotton exporters receive another subsidy through the export credit guarantee program, which insures importers of U.S. cotton against potential defaults. There are numerous
other publicly funded programs that affect the cotton market, including research and extension services and subsidized irrigation.

The U.S. cotton program is complex and expensive. It was twice subject to audit by the U.S. General Accounting Office (U.S. GAO 1990, 1995). Perhaps the best summary of the program’s complexity and costs is the 1995 audit (U.S. GAO 1995, p. 3), which notes:

The cotton program has evolved over the past 60 years into a costly, complex maze of domestic and international price supports that benefit producers at great cost to the government and society. From 1986 through 1993, the cotton program’s costs totaled $12 billion, an average of $1.5 billion a year. Moreover, the program is very complex, with dozens of key factors that interact and counteract to determine price, acreage, and payments and to restrict imports. The severe economic conditions and many of the motivations that led to the cotton program in the 1930s no longer exist. . . . The [U.S.] Congress could, for example, reduce or phase out payments over a number of years, perhaps over the life of the next [1996] farm bill.

The report also notes that cotton subsidies reach a surprisingly small number of cotton growers (see also Arax and Wartzman 2003).

According to U.S. Department of Agriculture data, in 1996/97, the first season of the 1996 Farm Bill, support to U.S. cotton growers reached $759 million. Almost $600 million of it went for decoupled payments and the rest as an insurance subsidy. In 1997/98 support was $1.2 billion. When prices began declining, emergency assistance measures came into play, raising support to $1.9 billion in 1999, $3.4 billion in 1999/2000, $2.1 billion in 2000/01, and $3.9 billion in 2001/02 (table 4).

<table>
<thead>
<tr>
<th>Table 4. Budgetary Transfers to U.S. Cotton Sector, 1995/96–2002/03 (millions of U.S. dollars)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coupled payments</td>
</tr>
<tr>
<td>Production flexibility contracts/direct payments</td>
</tr>
<tr>
<td>Emergency/countercyclical payments</td>
</tr>
<tr>
<td>Insurance</td>
</tr>
<tr>
<td>Step-2</td>
</tr>
<tr>
<td>Total</td>
</tr>
</tbody>
</table>

Source: U.S. Department of Agriculture (various years).
The European Union

During the 1960s and 1970s Greece and Spain together were producing 130,000 tons of cotton a year. With accession to the European Union (EU), cotton growers in these two countries became eligible for Common Agricultural Policy funds. Cotton production grew by an annual average of 7.3 percent, exceeding 400,000 tons a year during the 1990s. Support to EU cotton producers is based on the difference between the world market price and a support price. The policy also influences the quantity produced by specifying a maximum for which assistance will be provided—the equivalent of 255,000 tons for Greece and 82,000 tons for Spain.5

Between 1996 and 2000, the budgetary expenditure on the cotton sector ranged between €740 and €903 million, implying that on average, EU cotton producers received more than twice the world price of cotton (see table 3). EU cotton producers received support even in periods of high prices, because the budgetary allocation to the cotton sector must be disbursed. For example, EU cotton producers received about the same level of support in 1995 and 2002, although cotton prices were twice as high in 1995 as in 2002.

The European Union has implemented a number of adjustments to its cotton program including a 1999 reform that effectively imposed a cap on the budgetary expenditures allocated to the industry (EC 2000). A major reinstrumentation of the EU cotton program will take place in 2006. Under the Luxembourg Council’s decision of April 22, 2004 (based on the September 2003 proposal), an estimated €700 million is expected to fund two support measures, with 65 percent of the support taking the form of a single decoupled payment and 35 percent taking the form of an area payment (EC 2003).

Eligibility for the decoupled payment is limited to growers who produced cotton during the three-year period 1999–2001. The area payment will be given for a maximum area of 380,000 hectares in Greece, 85,000 hectares in Spain, and 360 hectares in Portugal and will be proportionately reduced if total claims exceed the maximum area allocated to each country. To receive decoupled payments, cotton growers must keep the land in good agricultural use. To receive area payments they must plant (not necessarily produce) cotton. Karagiannis (2004) estimates that the reformed regime is likely to reduce EU cotton production between 10 and 25 percent (depending on the assumed values of the elasticities).

China

China’s cotton sector became fully government controlled in 1953 following the introduction of the first five-year plan (Zhong and Fang 2003). The central planning policies adopted then were similar to those of the Soviet Union and remained in place for the next 35 years. The central government set production targets and procurement
quotas (all primary processing facilities were owned by cooperatives). Some changes took place in 1978 when the government substantially raised the price of cotton and supplied more fertilizer. Market-oriented reforms were introduced in 1980 when the communal production system was partially abolished and individual farmers were given land use rights. Cotton production increased considerably in response to both the 1978 and the 1980 policy changes.

Currently, China intervenes in its cotton sector through price support measures (a reference price typically set above world prices), subsidies to transportation and marketing, and public stockholding. China also imposes a 3 percent tariff on cotton imports up to 0.86 million tons (and 90 percent for volumes above that amount). ICAC estimates that support to the cotton sector from 1998 to 2003 ranged from $0.8 billion to $2.6 billion. Huang and others (2004) estimate that in 2001 the nominal rate of protection for cotton averaged 17 percent.6

In 1999 the government announced reform measures that included creating a cotton exchange to facilitate domestic trading, reducing prices paid to producers, and lowering stocks. In September 2001 further reforms were announced (Zhong and Fang 2003). First, the internal cotton market will be open to cross-regional trade. Second, various enterprises will be allowed to buy cotton directly from producers with the approval of the provincial government. Third, primary processing operations will be separated from marketing cooperatives, in effect making them commercial enterprises.

To some extent the reform efforts have achieved their stated objectives. China currently operates a cotton exchange that trades future contracts (Shuhua 2003). Its publicly held stocks declined from 3.5 million tons in the two-year period 1998–99 to 2 million tons in 2001–2002. Estimated support to the cotton sector declined from $2.4 billion to $1 billion between the two periods, according to ICAC figures (cotton prices during these two periods averaged $1.30 and $1.04 a kilogram.) Furthermore, the 2003 import quota was extended to 1.9 million tons to meet domestic demand requirements.

Uzbekistan

Before 1991 Uzbekistan’s cotton sector was fully under state control. Most cotton was consumed by textile mills in Russia or shipped to Eastern European countries under barter arrangements. Following the collapse of the Soviet Union, Uzbekistan began exporting its cotton under conventional trading practices. Until 1996, some cotton still went to Russia under barter trade terms.

Most aspects of the marketing and trade of cotton still closely resemble pre-1991 arrangements. Numerous entities are involved in all postproduction activities, including the state company responsible for all primary processing, the state trading
organizations responsible for exports, and the Ministry of Foreign and Economic Relations, which handles financial transactions. Other entities include the state company responsible for domestic and international transportation of cotton, the organization responsible for quality monitoring, and customs.

Cotton growers appear to be heavily taxed both directly, through the lower prices paid by the state company that purchases cotton and indirectly through the (likely misaligned) exchange-rate regime. A recent government report concluded that only a third of the world price of cotton reaches producers (Uzbekistan 2003). However, when subsidized inputs and environmental costs are accounted for, the sector may not be as heavily taxed as the numbers suggest. Inputs are provided at nonmarket (and most likely subsidized) prices, and cotton production has been associated with the expansion of irrigation that caused the drying up of the Aral Sea, by many accounts the worst environmental tragedy of the twentieth century.

Implications of Cotton Policies

Numerous models have evaluated the impact of cotton policies on the cotton market, with considerable variation in results. In turn, these impacts have resulted in several reactions by adversely affected countries.

Impact of Trade Interventions

The ICAC, for example, concluded that average cotton prices would have been 30 percent higher without direct subsidies during the 2000/01 season. The study, based on a short-run partial equilibrium model, acknowledged that although removal of subsidies would result in lower production in the countries that provided them (and hence higher prices in the short term), the impact would be partially offset by production shifts to nonsubsidizing countries in the medium to longer term.

Goreux (2003), who extended the ICAC model by replacing the base year with 1998–2002 average subsidies, estimates that without support the world price of cotton would have been 3–13 percent higher in those five years, depending on demand and supply elasticities. Gillson and others (2004), using subsidy data for 1999 and a model similar to Goreux’s, estimate that removal of subsidies by the United States, the European Union, and China would raise the world price of cotton 18 percent.

Reeves and others (2001), using a simple computable general equilibrium model, find that removal of U.S. and EU production and export subsidies would induce a 20 percent reduction in U.S. cotton production and a 50 percent reduction in U.S. cotton exports, with much higher reductions for the European Union.
They also estimate that without support, world cotton prices would have been 10.7 percent higher during the 2001/02 season. The Food and Agriculture Policy Research Institute (FAPRI 2002) finds that under global liberalization (removal of trade barriers and domestic support in all commodity sectors), the world cotton price would increase over the baseline scenario by an average of 12.7 percent over a 10-year period. Based largely on FAPRI’s data and assumptions, Sumner (2003) estimates that the world price of cotton would have been almost 13 percent higher had there been no U.S. cotton subsidies during the marketing years 1999–2002.

Based on a partial equilibrium model, Tokarick (2003) finds that multilateral trade liberalization in all agricultural markets (including cotton) would induce a 2.8 percent increase in the world price of cotton and a $95 million annual increase in welfare. Poonyth and others (2004) estimate that removal of cotton subsidies (as reported in the WTO notifications) would increase the world price of cotton between 3.1 percent and 4.8 percent, depending on assumptions about demand and supply elasticities. In contrast, Shepherd (2004) and Pan and others (2004) find a negligible impact of subsidies on the world price of cotton.

The highly divergent results for these models reflect in part the structure of the models and the assumed elasticities. Several other factors also influence the results. First, there are differences in the level and structure of support. For example, some models assume that China supports its cotton sector and model its removal; others do not. Second, there are differences in the underlying scenarios. Some models assume liberalization in all commodity markets, whereas others assume liberalization only in the cotton sector. Third, the models use different base years and so different levels of subsidies. For example, support in the United States was three times as high in 1999 as in 1997. Setting all the differences aside, however, and taking a simple average over all models shows that world cotton prices would have been about 10 percent higher without support. Applying a simple average to the Francophone Africa cotton-producing countries shows that these countries lost approximately $150 million annually in export earnings due to the subsidies.

Not all models report results on the gainers and losers from the removal of cotton subsidies. In that respect, the most complete analysis is offered by the FAPRI model, which finds the largest gains in trade for Africa, with an expected average increase in exports of 12.6 percent (table 5). Exports increase by 6.0 percent for Uzbekistan and by 2.7 percent for Australia, whereas exports from the United States decline by 3.5 percent. The most dramatic impact is on the production side. The European Union’s cotton output would decline by more than 70 percent—not a complete surprise considering that the European Union’s cotton output during the late 1990s was three times higher than it was before Greece and Spain joined.
Some Ramifications of Cotton Policies

The high level of support to U.S. cotton growers and its impact on world markets have resulted in several reactions. Two, in particular, have had important policy implications: the Brazil–U.S. cotton dispute in the WTO and the West African cotton-producing countries’ joint cotton initiative proposal to the WTO requesting compensation (see table 6 for the events leading up to and following these cases).

Brazil versus the United States. On September 27, 2002, Brazil requested consultation with the United States regarding U.S. subsidies to cotton producers. On March 18, 2003, the Dispute Settlement Body of the WTO established a panel to examine the issues, and on April 26, 2004, the WTO issued an interim ruling in favor of Brazil. The final ruling (issued on September 8, 2004) concluded that “the United States is under the obligation to take appropriate steps to remove the adverse effects or . . . withdraw the subsidy” (WTO 2004c, p. 351).

Brazil argued that U.S. cotton subsidies were inconsistent with provisions of the Agreement on Subsidies and Countervailing Measures, the Agreement on Agriculture, and the General Agreement on Tariffs and Trade 1994 and were causing “serious prejudice to the interests of Brazil” because of a “significant price depression and price suppression” (WTO 2002, p. 3). It claimed that the United States provided domestic support to cotton during 1999–2002 in excess of the support decided during the 1992 marketing year under the peace clause (article 13) of the

### Table 5. Projected Effects of Removal of Distortions 2003/04–2011/12 (percentage changes over baseline)

<table>
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<tbody>
<tr>
<td><strong>World price</strong></td>
<td>15.6</td>
<td>13.7</td>
<td>13.0</td>
<td>12.2</td>
<td>11.7</td>
<td>12.7</td>
</tr>
<tr>
<td><strong>Exports</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Africa</td>
<td>12.1</td>
<td>15.1</td>
<td>14.0</td>
<td>13.1</td>
<td>12.3</td>
<td>12.6</td>
</tr>
<tr>
<td>Australia</td>
<td>3.9</td>
<td>3.0</td>
<td>2.7</td>
<td>2.3</td>
<td>2.1</td>
<td>2.7</td>
</tr>
<tr>
<td>United States</td>
<td>−8.4</td>
<td>−6.6</td>
<td>−4.0</td>
<td>−1.5</td>
<td>0.9</td>
<td>−3.5</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>5.4</td>
<td>6.9</td>
<td>6.7</td>
<td>6.4</td>
<td>6.2</td>
<td>6.0</td>
</tr>
<tr>
<td>World</td>
<td>3.9</td>
<td>5.6</td>
<td>6.2</td>
<td>6.7</td>
<td>7.3</td>
<td>5.8</td>
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<td><strong>Production</strong></td>
<td></td>
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<tr>
<td>United States</td>
<td>−18.3</td>
<td>−7.9</td>
<td>−5.9</td>
<td>−4.1</td>
<td>−2.3</td>
<td>−6.7</td>
</tr>
<tr>
<td>European Union</td>
<td>−77.4</td>
<td>−77.7</td>
<td>−78.3</td>
<td>−78.8</td>
<td>−79.0</td>
<td>−70.5</td>
</tr>
<tr>
<td>Uzbekistan</td>
<td>3.1</td>
<td>4.7</td>
<td>4.6</td>
<td>4.4</td>
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<tr>
<td>Africa</td>
<td>4.5</td>
<td>7.5</td>
<td>7.1</td>
<td>6.7</td>
<td>6.3</td>
<td>6.0</td>
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</table>

*Source: FAPRI (2002).*
### Table 6. Timeline of the Cotton Problem

<table>
<thead>
<tr>
<th>Date</th>
<th>Key event</th>
<th>Comments</th>
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<tbody>
<tr>
<td>July 8–9, 2002</td>
<td>The International Cotton Advisory Committee and the World Bank sponsor the</td>
<td>Cotton policy-related issues were debated by a diverse group of participants. Panels included representatives from cotton-producing countries (both government officials and private sector), NGOs, ambassadors, and representatives from various international organizations.</td>
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<tr>
<td></td>
<td>conference “Cotton and Global Trade Negotiations” in Washington, D.C.</td>
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<tr>
<td>September 27, 2002</td>
<td>Brazil requests consultations with the United States on cotton subsidies</td>
<td>Brazil argued that the U.S. cotton subsidies “caused serious prejudice to the interests of Brazil . . . [because of a] significant price depression.” It also argued that the U.S. subsidies induced a 41% increase in U.S. cotton exports and a 12.6% reduction in the world price of cotton. Brazil claimed an estimated injury well in excess of $600 million for marketing year 2001 alone. The case was financed by the Brazilian cotton producers.</td>
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<tr>
<td>September 27, 2002</td>
<td>Oxfam publishes “Cultivating Poverty: The Impact of U.S. Cotton Subsidies”</td>
<td>The report was influential because it contrasted poor West African cotton producers with their counterparts in the United States. It noted that “U.S. cotton farmers receive more in subsidies than the entire GDP of Burkina Faso . . . and . . . three times more in subsidies than the entire USAID budget for Africa’s 500 million people.”</td>
</tr>
<tr>
<td>May 16, 2003</td>
<td>Benin, Burkina Faso, Chad, and Mali launch the “cotton initiative”</td>
<td>The initiative demanded that countries discontinue subsidizing their cotton sectors and that until subsidies are removed, nonsubsidizing countries should be compensated. The initiative was aided by the Geneva-based NGO IDEAS.</td>
</tr>
<tr>
<td>September 10–13, 2003</td>
<td>The cotton initiative becomes an intensely debated (and controversial) topic</td>
<td>The initiative was facilitated by the director general of the WTO who “urged ministers to consider the proposal seriously.” Many countries were sympathetic to the initiative. By some accounts, the inability to make progress on the initiative was partially responsible for the failure to reach agreement in Cancun.</td>
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<tr>
<td>March 23–24, 2004</td>
<td>The WTO sponsors the African Regional Workshop on Cotton in Cotonou, Benin</td>
<td>Because of numerous practical difficulties, it was decided that the initiative would be dealt with at two levels: development (compensation) and trade (subsidies). The development component was the subject of the Cotonou workshop.</td>
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</tbody>
</table>
April 26, 2004
The WTO panel issues its interim ruling in favor of Brazil

In its interim ruling, the WTO panel decided in favor of Brazil; it concluded that the U.S. cotton subsidies were inconsistent with provisions of the Agreement on Agriculture. The United States publicly announced that it will appeal the ruling.

May 31–June 1, 2004
FAO holds cotton expert consultations in Rome

Experts from international organizations and the academic community held a consultation on cotton. The discussion focused on the reasons why cotton models have reached such diverse conclusions.

July 5–6, 2004
The European Union sponsors the EU-Africa Cotton Forum

The European Union sponsors the EU-Africa Cotton Forum to discuss the trade and development perspective.

August 1, 2004
The WTO General Council reaches a decision on the frameworks to proceed with multilateral trade negotiations

According to the decision, all trade-related aspects of cotton will be dealt with within the context of agricultural negotiations. The decision also emphasized that the theme should be addressed “ambitiously, expeditiously, and specifically.” The General Council instructed the director general to consult with the relevant international organizations to direct additional resources to cotton-dependent countries.

November 19, 2004
The WTO establishes the Subcommittee on Cotton

The WTO establishes the Subcommittee on Cotton to facilitate the exchange of information among bilateral and multilateral donors with a view to promoting the so-called July framework decision (July package).

January 28, 2005
The Development Assistance Committee of OECD convenes a briefing on cotton

The committee convenes a briefing on cotton as a followup of the Cotonou Workshop, which assessed progress on the development aspects of the cotton initiative.

Source: Compiled by the author.
Agreement on Agriculture (figure 4). Brazil further claimed that the export subsidies (export credit guarantees, two-step payments) violated the Agreement on Agriculture.

Using the econometric model developed by FAPRI, Brazil showed that the U.S. subsidies induced a 41 percent increase in U.S. cotton exports, reducing the world price of cotton by 12.6 percent and causing an estimated injury to Brazil of more than $600 million for 2001 alone. Since the United States appealed the ruling, any U.S. steps to meet Brazil’s demands are likely several years away.

The ruling was issued against the background of the ongoing critical agriculture negotiations, the expiration of the peace clause, the more assertive stance taken by the G-20, and the West African sectoral initiative on cotton (see following section). The ruling has numerous implications for the WTO and the Doha Development Agenda and for developing countries and international institutions (Baffes 2004c):

- As the first case of a developing country challenging an Organisation for Economic Co-operation and Development (OECD) farm subsidy program in the WTO, it may set a precedent. If further cases follow, there may be a shift in the focus of WTO activities from negotiation to litigation. The ruling also coincides with the expiration of the peace clause and thus may open the floodgates for other domestic subsidy cases.
- The way to avoid a significant increase in such disputes is to make significant progress in the Doha Development Agenda. Hence, the ruling may help agencies
such as the EU Commission and the U.S. Trade Representative’s Office confront
domestic protectionist lobbies.

- The ruling strengthens the claims of many developing countries that OECD subsidies depress world prices.
- This dispute spotlights the importance of models analyzing the effects of subsidies on world prices and export shares, making model developers more accountable for the analysis. The ruling reveals the importance and weaknesses of current measures of support and the differences in WTO, U.S., and EU definitions of “decoupled support.”

**West African Cotton Sector Initiative.** On May 16, 2003, four West African cotton-producing countries (Benin, Burkina Faso, Chad, and Mali) submitted a joint proposal to the WTO demanding removal of support to the cotton sector by the United States, China, and the European Union and compensation for damages until full removal of support. The West African countries were aided in this move, often referred to as the cotton initiative, by IDEAS, a Geneva-based nongovernmental organization (NGO) funded by the Swiss government.

The four countries argued that subsidies cost them an estimated $250 million in export earnings during the 2001/02 marketing season—$1 billion when the indirect effects of these subsidies were considered (cotton prices averaged $0.82 a kilogram in October 2001, the lowest since November 1972 with the exception of August 1986; figure 5). Because the standard WTO remedies (compensation through supplementary concessions or imposition of countervailing duties) were not feasible, the proposal called for “transitional…financial compensation…to offset the injury caused

![Figure 5. Monthly Cotton Prices, January 1985–December 2004 (US$ per kilogram)](image)

*Source:* World Bank (various issues, Commodity Price Data).

by support of production and export.” The compensation would be proportional to the subsidies, declining and ending as the subsidies were reduced and abolished. The proposal argued that the direct and indirect effects of support for cotton production should be taken into account when determining compensation and that “the unit amount and the total amount of subsidies should be taken into account when dividing the compensation among countries which subsidize production” (WTO 2003, p. 7).

The cotton initiative received considerable attention during the Cancun Ministerial Meetings. The director general of WTO urged ministers to consider the proposal seriously. Although numerous countries were sympathetic, there were doubts whether it would benefit the Doha Development Agenda to treat one commodity differently than others. Furthermore, it soon became apparent that direct compensation was unlikely. The inability to deal effectively with the initiative was one reason for the failure to reach agreement in Cancun.

It was finally determined that although the trade part of the request (subsidies) fell within WTO’s mandate, the development part of the request (compensation) should be handled by the multilateral institutions in coordination with the concerned governments. To that end, at a WTO-sponsored conference on March 23–24, 2004, in Cotonou, Benin, both bilateral and multilateral donors reaffirmed their willingness to deal with the development part of the cotton initiative.

On August 1, 2004, the WTO General Council reached a decision to proceed with multilateral trade negotiations, emphasizing that the theme should be addressed “ambitiously, expeditiously, and specifically.” The director general was instructed to consult with international organizations, including the Bretton Woods institutions, the FAO, and the International Trade Center, to direct existing programs and any additional resources toward development of the economies where cotton is of vital importance.

Cotton Reforms in Sub-Saharan Africa

During the late 1980s and early 1990s, a number of African cotton-producing countries undertook substantial policy reforms. Part of a comprehensive reform agenda, these policy reforms were triggered by sudden and often unpredictable political and economic shocks (Akiyama and others 2003). The reforms also reflected an evolution in thinking about the role of agriculture in economic development. Some economists had questioned such policies even earlier. Johnson (1947) argued that prices should not be used to achieve economic objectives. Friedman (1954) questioned the benefits of managing commodity price variability. Johnston and Mellor (1961) highlighted the negative impact of prourban economic policies on agriculture. These arguments were given an institutional voice by the World Bank through a series of publications, including the World Development Reports of 1983 and 1985 (World Bank 1983, 1985) and a series of country case studies by Krueger and others
The change in philosophy was further reinforced by the increasing evidence of the inefficiencies of interventionist policies, especially as embodied in the state enterprises that handled most commodity marketing and trade.

**Eastern and Southern Africa**

Cotton was introduced in Eastern and Southern Africa early in the twentieth century. Production increased consistently until the early 1970s, when it peaked at 400,000 tons a year. Political and macroeconomic instability and the inefficiencies of state enterprises, which had accumulated huge debts, were becoming increasingly detrimental to smallholders. In some countries the cotton sector experienced outright collapse, leaving policy reforms as the only feasible alternative.

The structure of the cotton sector (like that of other commodity sectors) looked remarkably similar in almost all countries: A single government-owned marketing agency was responsible for most aspects of marketing and trade, including provision of credit and purchased inputs. These government enterprises had both a legal monopsony and a legal monopoly, making it easy to apply such policies.

At least six cotton-producing countries in Eastern and Southern Africa initiated reforms during the late 1980s and early 1990s: Ghana, Mozambique, Tanzania, Uganda, Zambia, and Zimbabwe (Poulton and others 2004). These countries account for 85 percent of the region’s cotton production. Ghana was the first to undertake reforms. In 1985 it liquidated the assets of its government cotton agency, opening the sector to competition. Mozambique, another early reformer, began to reorganize its cotton sector in 1989. Tanzania and Uganda introduced reforms in 1994, and Zambia and Zimbabwe did so a year later.

Although in most cases the cotton reforms were part of a comprehensive reform agenda (including reforms at the macroeconomic level), reforms were also triggered by country- or sector-specific circumstances. Uganda’s cotton sector was in complete collapse following the political and macroeconomic instability of the 1980s. The situation was not as severe in Tanzania, but the huge debts accumulated by the cooperative unions along with the inefficiencies of the cotton board made it evident that the private sector should be engaged in marketing activities. Like Uganda, Mozambique introduced reforms after the end of a period of civil conflict during the 1980s. Reforms in Zambia and Zimbabwe meant privatization of the state cotton enterprises.

The impact of the reforms varied, depending on the state of the sector prior to the reforms, the depth of the reforms, and how the reform process was executed. Positive outcomes included an increase in producers’ share of prices, prompter payments, and increased entrepreneurial activity (Shepherd and Farolfi 1999; Baffes 2001; Akiyama and others 2001; Poulton and others 2004). On the negative side, the provision of public services, including research and extension, deteriorated. With the dismantling of state enterprises with monopolistic powers, credit recovery rates
worsened, in turn reducing input use. But despite the well-documented reduction in input use and the unsuccessful credit recovery mechanisms, a supply response did take place. Ten-year average cotton production in Eastern and Southern Africa following reforms (a measure of postreform supply response) has been higher than during any 10-year period in the history of the sector (figure 6).

**Francophone Africa**

The cotton industry in Francophone Africa was pioneered by the French state-owned Compagnie Française de Développement des Fibres Textiles (CFDT), along with various national cotton companies. The national cotton companies had a legal monopsony in cotton, and most had a monopoly on primary processing, marketing, and supplying inputs. They would announce a base buying price before planting, sometimes supplementing that price with a second payment (payable the following season) based on the company’s financial health. Cotton growing expanded rapidly, from 225,000 tons in 1980 to almost 1 million tons in 2001. Growers used inputs well adapted to local conditions to produce high yields of cotton of consistent quality (Lele and others 1989).

Despite apparent successes, the system exhibited several weaknesses. Prices to producers were very low, often no more than 40 percent of border prices. The absence of competition in domestic markets and the involvement of the state cotton companies in the provision of services allowed costly operating inefficiencies to develop, absorbing a large share of export prices.
The determination of annual cotton prices reflected, at least in part, the relative bargaining power of producers, governments, managers of the state-owned cotton companies, and the CFDT. Uniform pricing of cotton and farm inputs across all areas of a country meant that transport costs were not properly taken into account in decisions about where to grow cotton. Uniform pricing regardless of the season and planned delivery schedules to primary processing facilities severely limited growers’ choices for managing inventories. Finally, the system did not respond flexibly to changes in world market conditions. For example, in the mid-1980s and early 1990s, low world prices and an overvalued currency led to the de facto bankruptcy of a number of state cotton companies. The companies had to be supported by injections of money from national governments and the donor community.

During the past several years, in conjunction with the Agence Française de Développement, the World Bank has held intensive discussions with the governments and other stakeholders in West and Central Africa, including state cotton enterprises, CFDT, and input suppliers. Two broad reform proposals emerged from these discussions: retaining the state cotton companies but reforming and regulating them, and introducing free entry and competition (Baffes 2000). The first proposal included setting prices appropriate to a competitive environment; giving producers equity in the national cotton companies and more influence over key decisions, especially price setting; subcontracting input provision and transportation to private firms; and eliminating subsidies on sales of cotton lint and cotton seed to domestic textile firms and oil mills. The second proposal included opening the sector to competitive entry at all levels and hence linking domestic prices to international prices; maintaining and strengthening research, extension, and phytosanitary regulations, areas in which the government has an essential role; strengthening farmers groups and facilitating their participation in voluntary contract-farming arrangements; freeing the cotton industry from sector-specific taxation and subjecting it only to economywide taxes; and increasing the efficiency of regional ginneries by harmonizing reforms of cotton trade across West African cotton zones.

Some recent reforms in Francophone Africa point to the future direction of institutional changes in the region’s cotton sector (Badiane and others 2002; Goreux 2003). In Burkina Faso, for example, the state cotton company still holds a monopsony on cotton purchases, but producers acquired 30 percent of the company’s shares in 1999. In Côte d’Ivoire, part of the state cotton company was split into three private companies of comparable size in 1998; following a two-year transition period, the two new private companies began operating independently. Since then, however, the reform process in Côte d’Ivoire has been derailed by political instability, as it has in Zimbabwe.

In Benin, reforms started earlier, with input provision being privatized in 1992 and private operators entering the ginning sector in 1995. Reforms have made significant progress since then under the strong leadership of farmers and ginner organizations.
The private sector, led by producer organizations, today plays a lead role in financing and setting priorities for research in the sector. It has taken complete control over extension services. More important, it has established an innovative mechanism to recover input credit and manage payment to producers. However, recognizing the benefits of more gradual reform, stakeholders in Benin have preferred to retain some aspects of the monopoly-monopsony system while the capacities of local producer organizations are being strengthened. For instance, producer prices are still announced in advance of planting and are still uniform across the country.

Mali is the only other Francophone country where noticeable efforts are being made to reform the cotton sector, following the near-bankruptcy of the state cotton company a few years ago. There are plans to allow new primary processing operators to set up plants in two production zones. In addition, discussions are under way to restructure the state cotton company and possibly move toward privatization in the near future.

**Solving the Cotton Problem**

The price prospects for cotton (and consequently the export shares of low-cost producers, including many African countries) could be improved considerably if developed countries substantially reduced or eliminated support and if the benefits of world price changes are fully transmitted to producers—not always the case (Baffes and Gardner 2003). A second-best alternative is to provide support in a nondistorting manner. One type of support with minimal distortionary effects—decoupled support—has regained popularity recently. Income transfers under decoupled mechanisms are based on past production and prices and thus would be expected to have only a small impact on current production decisions (Baffes and Meerman 1998). Decoupled support is a particularly interesting alternative for cotton because EU and U.S. support is in the form of domestic measures, and so a change does not require changing the sources of funding as it would in the case of border measures.

The United States took a step in the right direction with the introduction of decoupled payments under the 1996 Farm Bill, but the introduction of emergency payments in 1998 and their legitimization under the 2002 Farm Bill eliminated all good intentions. The European Union took concrete steps with the recent cotton reform but fell short of fully decoupling cotton subsidies and setting a timetable for the complete elimination of support. China is less clear in that only recently have the streamlining of support measures and their potential decoupling from production decisions entered into policy discussions (Jinglin 2003).

On the demand side, all producers need to engage in cotton promotion. Two signs are encouraging. First, cotton final consumption in the United States has been increasing for a decade. The United States has an active cotton-promotion program,
with an annual budget of about $60 million (Jacobson and Smith 2003). Its main feature is raising consumer awareness of cotton through the “Seal of Cotton” campaign. Skelly (2003) reported a strong correlation between the program’s advertising campaign and cotton’s market share in the United States. Second, under a recent cotton promotion initiative, ICAC established the International Forum for Cotton Promotion (IFCP) in 2003 to encourage and facilitate national market-development programs organized by associations and commercial organizations in individual countries and funded from domestic resources. The IFCP is expected to serve as a clearinghouse for the exchange of ideas and strategies to be implemented by national organizations and to facilitate the establishment and expansion of national demand-enhancement efforts. Although it is too early to assess performance, this promotion initiative is certainly a step in the right direction.

A number of developing countries, especially in Sub-Saharan Africa, launched policy reforms in the 1990s. Although not a panacea, the reforms have been successful by most accounts. Generally, cotton growers in countries where reforms have been sustained have received a higher share of fob prices and received payments more promptly. Supply responses have been greater as well. In an environment of declining commodity prices, these are not trivial achievements. However, in some cases, reforms have not been completed (Tanzania), have been reversed (Zimbabwe), or have been too slow (West Africa). In Uzbekistan reform has not even begun.

Farmers’ incomes could be enhanced by increasing on-farm productive efficiency, especially by adapting genetically modified seed technology (FAO 2004). In the United States, where genetically modified seeds account for almost two-thirds of the area allocated to cotton, the gains have been enormous—an estimated $215 million a year during 1996–98, half of it captured by farmers (Falk-Zepeda and others 2000). In China, where genetically modified cotton is used extensively by smallholders, the costs of production declined by 20–25 percent, effectively doubling the net income of cotton growers (Pray and others 2001). Pray and others (2002) also estimate that pesticide use declined by a quarter following introduction of genetically modified cotton. In Australia genetically modified cotton requires half the amount of chemicals used for conventional cotton (Campbell 2003).

In an assessment of the economic, environmental, and social benefits of genetically modified cotton, Edge and others (2001) conclude that there is no downside risk from genetically modified cotton other than the cost of the technology fee. Cabanilla and others (2003) estimate that the failure by the Francophone African countries to use genetically modified cotton technology may have cost as much as $68 million a year in Mali, $53 million in Benin, $41 million in Burkina Faso, and $39 million in Côte d’Ivoire. The FAO (2004, p. 56) noted that the economic benefits of genetically modified cotton can be significant: “In several cases the per hectare savings, particularly from Bt cotton, have been large when compared
with almost any other technological innovation introduced over the past few decades.”

Numerous other recommendations and policy alternatives have also been discussed in the context of the cotton problem, including development of downstream industries in cotton-producing countries, diversification out of cotton, introduction of organically grown cotton, and price stabilization. Development of downstream industries, such as textiles and clothing, is unlikely to address any of the difficulties cotton growers face. In the absence of domestic trade restrictions, cotton will be traded at world prices regardless of the location of textiles. The only gains to producing textiles in a cotton-producing area might be the potential savings from reduced transportation costs. Therefore, any recommendations for creating textile industries should be based on the profitability prospects of the textile industry rather than on the location of cotton production.

Diversification from cotton to other primary commodities, advocated by some, would also not address the problems faced by cotton growers. Most commodities face the same conditions as those affecting the cotton market: declining prices in the longer term due to technological innovation, strong competition from synthetic products, and low (or zero) per capita demand growth. Competition from synthetic products is a characteristic of numerous primary commodities—natural rubber competes with synthetic rubber, coffee and tea compete with soft drinks, jute and sisal compete with plastic products. Therefore, switching from cotton to, say, coffee does not address any of the problems faced by cotton growers. Diversification into new sectors should be based on the relative profitability of sectors.

Organic cotton is often advocated as a solution for cotton growers. Certainly, this market niche should be fully explored. Myers and Stolton (1999) report that in 1997, about 8,150 tons of certified organic cotton fiber was produced worldwide—2,600 tons in the United States, 1,175 tons in India, 1,800 tons in Turkey, 1,570 tons in Africa, and 845 tons in Latin America. But significant expansion into organic cotton faces several difficulties, especially on the demand side, for at least three reasons. First, there is “distance” in the consumer’s eyes between the primary product (cotton) and the final product (cloth). Second, purchasing clothing (as opposed to consuming, say, beverages) requires paying attention to a host of factors before the final decision is made (examining the brand, color, style, size, type and origin of cotton, other content, care instructions). Adding to that congested list information on whether cotton is of organic origin may, in effect, add inconvenience. Third, organic products are typically associated with health-related benefits that do not apply to nonfood products, such as cotton.

Finally, supply controls and stabilization schemes to reduce interyear price variability have failed miserably (see Gilbert’s 1996 “obituary” for international commodity agreements). The International Natural Rubber Organization, which administered the last UN-backed commodity agreement, collapsed in 1999 following the
East Asian financial crisis. The Association of Coffee Producing Countries, which pursued various export retention schemes in order to boost coffee prices, met a similar fate and was eventually dissolved in February 2002, just as robusta coffee prices reached their lowest level in recent history (Baffes and others 2004).

Intrayear price variability, by contrast, can be mitigated with the use of market-based instruments, such as futures and options contracts (Larson and others 2004). But there are a number of problems with these instruments, especially in the cotton market. These are very expensive tools, and apart from the New York Board of Trade (NYBOT), no exchange trades cotton futures contracts with sufficient liquidity (Baffes and Kaltsas 2004). Because the NYBOT contract in based on U.S. cotton, it exposes potential non-U.S. users to high basis risk (low correlation between its price and spot prices of cotton of other origin; Baffes and Ajwad 2001). To be fully hedged, any cotton producer who wants to hedge would have to buy a separate contract for exchange rate risk because the NYBOT contract is traded in U.S. dollars.12

The “Problem” in a Nutshell

The global cotton market may be one of the most obvious examples of the case of policymakers in industrial countries succumbing to the pressures of powerful domestic protectionist lobbies to the detriment of poor smallholders in developing economies. The importance of dealing effectively with cotton subsidies goes far beyond the cotton sector. As the Cancun failure illustrates, the cotton problem has been viewed as a key test to the successful outcome of the Doha Development Agenda, which has been envisaged to reflect the interests and needs of developing countries—hence the change from Doha Round to Doha Development Agenda.

At a global level the cotton problem has become a high-profile issue. The cotton initiative became a priority item in the WTO’s decision to proceed with the multilateral trade negotiations (the so-called July package; WTO 2004c), and in November 2004 the WTO established the Subcommittee on Cotton to facilitate the exchange of information among bilateral and multilateral donors (WTO 2004b). In September 2004 the WTO’s Dispute Settlement Body upheld its earlier ruling on the Brazil versus the United States cotton case, effectively reconfirming that cotton subsidies are too high and that two of them are illegal. Now, it is the policymakers’ turn to ensure that the Doha Development Agenda delivers its promised benefits.

Policymakers in both industrial and low-income cotton-dependent countries are facing four key challenges in the context of the cotton problem. First, agricultural support policies in important cotton-growing countries inflate production and depress world prices, reducing the income of nonsubsidized producers. These policies should be eliminated, and in the meantime any remaining support should be fully decoupled from current production decisions.
Second, in many developing economies (especially in Africa and Central Asia) where cotton is an important source of rural incomes, reforms to restructure the cotton sector and increase its efficiency remain incomplete. Fully implementing reforms should be the immediate focus of policymakers. After all, even if cotton prices increase as a result of market forces or the elimination of subsidies, poor producers will not benefit if the increase is absorbed by bankrupt state enterprises, debt-ridden cooperatives, or corrupt public officials. Furthermore, serious reform efforts will signal the willingness of these countries to participate in the creation of a sound global trading environment.

Third, cotton producers in many developing economies face the challenge of embracing genetically modified seed technology to compete effectively with their competitors who have already embraced such technologies and are reaping the cost advantages and yield gains. That would entail extensive field trials to develop varieties suitable to local growing conditions, as well as putting in place the appropriate legal and regulatory framework—challenging processes requiring attention at the policymaking level.

Finally, cotton faces intense competition from chemical fibers, especially since technological improvements in the early 1970s brought the prices of synthetics down to cotton’s levels. In an era of globalization and intense competition, producing cotton is just the beginning. Increasing cotton’s share of fiber consumption requires aggressive promotion programs by both the public and the private sectors.

Notes

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1. The so-called cotton problem has received widespread attention. Between July 2002, when the joint International Cotton Advisory Committee (ICAC)—World Bank conference highlighted the policy issues of the cotton market, and August 2004, following WTO General Council’s decision on multilateral trade negotiations, the Financial Times published more than 20 articles with exclusive focus on cotton, followed by the Guardian (10 articles) and the Wall Street Journal (7 articles). Numerous articles on cotton were published by the Washington Post, the New York Times, and The Economist. A google.com search on June 8, 2004, returned 10,900 sites that mentioned “cotton subsidies” compared with 3,610 sites on “sugar subsidies,” 2,040 sites on “corn subsidies,” 1,880 sites on “wheat subsidies,” and 650 sites on “rice subsidies.” The Harvard Business School used the Brazil versus United States dispute on cotton subsidies as a case study for one of its international economics courses.

2. Although protection takes the form of domestic support, there are some border restrictions taking the form mainly of import tariffs and tariff-rate quotas. Because these restrictions are applied mostly by cotton-exporting countries, they do not significantly affect the cotton market. Import tariff rates for 2003 were 20 percent in Zimbabwe, 10 percent in India, 10 percent in Uzbekistan, 7.5–10 percent in Brazil, 7.5 percent in Argentina, and 5 percent in Egypt. Countries with tariff rate quotas included
China (3 percent within quota, 90 percent outside quota; tariff rate quota for 2003 was 856,250 tons but was extended to 1.9 million tons when the rate was filled) and the United States (4.4 cents a kilogram within quota and 31.4 cents a kilogram outside quota; tariff rate quota for 2002 was 73,207 tons while cotton imports totaled 6,295 tons).

3. Interventions in the textile and clothing industry, such as the Agreement on Textiles and Clothing and the textile provisions of the Africa Growth and Opportunity Act, are not reviewed here because these agreements do not greatly affect the global demand for cotton. For example, by current estimates full liberalization of textiles and clothing will induce a mere 1 percent increase in the world price of cotton (Reeves and others 2001).

4. Whether the direct payments that replaced the decoupled payments (also known as production flexibility contracts) are truly decoupled is subject to debate. Because farmers were allowed to update base acreage and yields after 2002, output was effectively linked to current production decisions. See Baffes and de Gorter (2004) for more details on this issue.

5. The maximum guaranteed quantity for which assistance is provided applies at the country level not at the individual producer level. When this restriction is translated into a grower basis, it not only creates administrative complexities but also leads to misallocation of resources, because there is no well-defined mechanism for allocating quotas. Karagiannis and Pantzios (2002), for example, argue that this system failed as a surplus-containment mechanism while resulting in farm income losses.

6. Not all analysts agree that China subsidizes its cotton. Fang and Beghin (2003), for example, estimate that between 1997 and 2000 the nominal protection coefficient for cotton averaged 0.80, implying that China taxes its cotton sector. The different views on the nature and degree of intervention reflect the complexities of China’s agricultural policies as well as the unreliability of the data.


8. By most accounts, Uganda is considered one of the most successful cotton reformers. But not by all. How Uganda is viewed depends on how the numbers are interpreted. Uganda’s cotton sector reached a peak of 87,000 tons in 1970. The sector collapsed and output dropped to 2,000 tons in 1987, a 97.7 percent decline. Cotton output has averaged about 30,000 tons the last few seasons, implying a 65 percent decline from 1970 but a 1,500 percent increase from 1987.

9. Although some researchers have concluded that the quality of commodities deteriorated after the reforms (Gibbon 1999; Shepherd and Farolfi 1999; Larsen 2003) Baffes (2004b) and Gilbert and Tollens (2003), who looked at the postliberalization quality issue for cotton in Tanzania and cocoa in Cameroon, found no such evidence.

10. But even that argument may not be valid. Most textile products use both cotton and synthetic fibers. So either a textile industry will be located in a cotton-producing area and incur the costs of transporting synthetic fibers, or it will be located in a synthetic fiber-producing area and incur the costs of transporting cotton. Because East Asia accounts for most global synthetic fiber supplies, most textile industries would be expected to be located in East Asia—which is largely the case.

11. Diversification out of commodities into industrial products has often been advocated. Industrialization attempts in developing economies (especially in Africa) have been introduced many times in the past with mixed outcomes at best (Easterly 2001).

12. Despite the difficulties, the World Bank, the European Union, and the African Development Bank are working, on a project to examine the feasibility of introducing market-based risk management tools in West and Central Africa. They are expected to explore the potential for a pilot in Benin and Burkina Faso through the Commodity Risk Management Group, which serves as the secretariat for the International Task Force on Commodity Risk Management. The task force comprises representatives of producer groups, private sector providers of risk management instruments, donors, NGOs, and international institutions, all of which share a commitment to a market-based approach to managing risks in commodity production and processing in developing economies.
Appendix: Cotton Production and Trade Statistics

Table A.1 Global Balance of the Cotton Market, 1960–2003 (thousands of tons)

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Source: ICAC (various issues).
—, not applicable.
\(^a\)Includes Benin, Burkina Faso, Cameroon, Central Africa Republic, Chad, Côte d’Ivoire, Guinea, Madagascar, Mali, Niger, Senegal, and Togo.
\(^b\)Data are for the Soviet Union through 1990.
\(^c\)Data are included with those for Pakistan through 1970.
Table A.2 Global Cotton Trade, 1960–2003 (thousands of tons)

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Source: ICAC (various issues).
—, not applicable.
#Data are for the Soviet Union through 1990.

References


