odi Briefing Paper

July 2004

DEVELOPED COUNTRY COTTON SUBSIDIES AND DEVELOPING COUNTRIES: UNRAVELLING THE IMPACTS ON AFRICA

The picture in brief

Cotton trade and production are highly distorted by policy. More than one-fifth of world cotton producer earnings during 2001/02 came from government support to the sector. Support to cotton producers has been greatest in the US, followed by China and the EU. Cotton subsidies encourage overproduction, which is then sold on the world market. This has depressed world cotton prices, damaging those developing countries which rely on exports of cotton for a substantial component of their foreign exchange earnings. A number of West and Central African countries raised the issue of the abolition of cotton subsidies at the WTO in May 2003. Cotton subsidies also form the basis of a WTO dispute brought by Brazil against the US in which the panel ruled, on 26 April 2004, in favour of Brazil.

It seems plausible that countries paying the most subsidies do most damage. Models developed to investigate the impact of cotton subsidies have found that US support, by virtue of its absolute magnitude, is particularly damaging and responsible for most of the reduction in cotton-earning potential in developing countries. This has been used as an argument for reducing or postponing cuts in subsidies to European farmers, as these appear to have less impact on developing countries. Our study,[*] through a careful examination of the nature of the cotton market, suggests that under certain assumptions subsidies by smaller subsidisers (such as the EU) may be disproportionately harmful to some suppliers, notably to West and Central African countries. This is especially damaging to them since they have the potential to increase supply.

The importance of cotton production and trade to developing countries

Production of cotton and poverty

More than 70 countries produce and export cotton, while many developed and developing countries depend on imports of cotton lint for their spinning and textile industries. World production in 2001/02 was 18.6 million tonnes, down from 19.6 million tonnes in 1995/96, when cotton prices were 50% higher. Eight countries are responsible for 81% of global output: China; the USA; India; Pakistan; Uzbekistan; Turkey; Brazil; and Australia. Cotton is a minor component of economic activity in industrialised countries, accounting for only 0.12% of total merchandise trade, but its production plays a major role in some Least Developed countries in West and Central Africa. In Benin, Burkina Faso, Chad, Mali and Togo cotton accounts for 5-10% of GDP, more than one-third of total export receipts and over two-thirds of the value of agricultural exports. Even in Côte d'Ivoire and Cameroon (both classified as developing, not Least Developed), which are among the largest

*The full report is at: www.odi.org.uk/publications/cotton_report/

Figure 1: World cotton prices (A Index constant $ 1995)
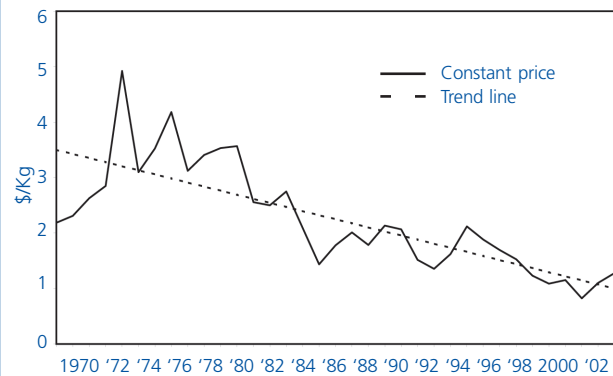
Source: Data from ICAC and World Bank Development Indicators (2003)

African cotton producers, cotton production accounts for 1.7% and 1.3% of GDP. Cotton is also a major component of total exports for a number of non-African developing countries. Cotton exports in Uzbekistan, Tajikistan and Turkmenistan account for 45%, 20% and 15% of total merchandise exports and make a significant contribution to GDP in these countries (8% in Uzbekistan and Tajikistan; 4% in Turkmenistan).

In a low income economy where the majority of the poor live in rural areas, an increase in income from export cash crop production is widely recognised to be one of the best short-term measures to alleviate poverty. This is both because the direct increases in income can be widely distributed within the rural population (including to large numbers of households who fall below recognised poverty lines) and because the consumption patterns of smallholder cash crop producers mean that much of their additional income is spent on locally produced goods and services, hence generating large multiplier effects that benefit other poor households. Cotton is a relatively labour intensive crop, so there may also be additional employment generated as production expands in response to higher prices. In addition, in many African countries cotton production is concentrated in poorer regions. Therefore, higher cotton incomes can contribute to poverty reduction in areas where economic opportunities are particularly meagre. Two less positive aspects of the cotton story are: firstly, the problem of moderate to high and sometimes inappropriate pesticide application (with consequences both for human health and for the surrounding environment), which is likely to be exacerbated as seed cotton prices rise; and secondly, the fact that men often control the proceeds from cotton production, even though much of the labour input is provided by women (hence, the direct welfare benefits from an increase in prices could be very unequally divided within households).

Trade flows in cotton

Around a quarter of world production enters into world trade and average import tariffs for cotton are low (5.3% in 2001).

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The past decades have been characterised by major changes in trade flows as a result of a geographical shift in international cotton yarn and fabric production. Asia has become the leading importer of cotton in line with its expansion in spinning and textiles. China's textile industry has been the dominant purchaser in recent years, taking up more than a quarter of global cotton output. Other major users are the EU, India, the US and Turkey, which take half of cotton output. A number of East Asian countries have emerged as important cotton buyers. Indonesia, Thailand, Korea and Taiwan used 130,000 tonnes of cotton in 1960, rising to 1.5 million tonnes in 2002.

Some of the largest cotton producers, such as China, India, Pakistan and Turkey, scarcely export as their production is almost entirely for domestic use. In 2001, exports amounted to 5.4 million tonnes, of which the five largest exporters – the US, Uzbekistan, Australia, Greece and Brazil – contributed 70%. West and Central African countries accounted for 10% of total cotton exports in 2001.

Most traded cotton lint is handled by trading companies. These have a key position between producers (ginning companies) and spinning mills. Traders offer purchasing services when producers want to sell, provide bulk cotton supplies to spinning mills, and arrange transport to destination. Although some consolidation in the trading sector has occurred during the last decade, trade is far less concentrated than in the trade of other agricultural commodities, for example cocoa and coffee. According to the latest survey, at least 25 government organisations, 9 cooperatives and 442 private companies are engaged in international trade in cotton lint (ICAC, 2002). In 2000, the 19 largest trading companies handled 39% of world cotton production.

World cotton prices and the market for cotton

Recent trends in world cotton prices

World cotton prices have been unstable and falling. The price of cotton expressed in constant US dollars fell in the 2001/02 crop year to its lowest annual level in thirty years (see Figure 1). There are a number of reasons for this: unpredictable changes in production and exports from India, Pakistan and China; reductions in the costs of production; long-term inroads of synthetic fibres; and subsidies granted by key cotton-producing countries.

Quality characteristics of world cotton

Cotton fibre exhibits considerable variations in quality, some of which are associated with seed variety and with crop management practices, others with post-harvest practices and with ginning. It is possible to obtain premiums and discounts on the world price for cotton: for higher or lower grades owing to characteristics of the fibre; and for market criteria, including timing of shipments and forms of sales.

The quality and market differences are often related to national origin. In general, fibre quality is a combination of physical and microbiological attributes like length, fineness, maturity, strength, colour and impurity content. Distinctions based on staple length, strength and micronaire are closely related to national-origin characteristics of cotton. In addition, traders/spinners may prefer cotton from particular national origins. Cotton from countries which can regularly supply lint, and from which transport costs are low, without the likelihood of port hold-ups, often attracts a premium. Exports of cotton from Australia to Indonesia, for example, often secures a higher price because shipping is quick (often less than seven days), reliable and cheap (especially if 'empty return containers' are available).

In contrast, even short distance intra-African shipments are often subject to delays and higher costs.

Traditionally, cotton lint from West and Central Africa has been of either high-medium or medium quality. On average, this commands a 9.3% quality premium above the Cotlook A Index price (the closest thing to a recognised world price), part of which derives from a very low count of knotted and short-fibre content. Further, the region's lint has a reputation for (relatively) low levels of contamination.

Substitutability of cotton from different national origins

Within staple length categories, substitutability among national origins rises as staple lengths fall. This is because fewer countries produce cotton of a longer staple length and spinners are more concerned at higher staple lengths to maintain blend consistency. In general, even within staple length categories, there is some cost to switching between similar lint of different national origin: changing settings on spinning machines involves some trial and error.

However, where a sufficient price differential emerges most spinners will switch the source of their cotton. In this regard, some spinners are perceived as being more conservative than others in their national choices. For example, Thailand is viewed as being conservative as compared with China and India, which are perceived by traders to be more price sensitive.

Subsidies

Government support to the cotton sector

Cotton prices have been depressed by government support to cotton producers, notably in the US, China and the EU. In 1999/2000, domestic support in the eight countries which provided the greatest assistance to their cotton sectors affected 52% of world cotton production.

Figure 2 summarises government assistance to cotton production. For 1999/2000 the average level of assistance across all subsidising countries was US$0.58 per kilogram (equivalent to 48% of the world price). Interventions by Brazil, Mexico and Egypt have only a minor impact on the world cotton market. They have relatively low levels of assistance and their production amounts to a small proportion of world output.

Challenges to subsidies

In 2003, Brazil was the first country to make a formal complaint under the WTO dispute mechanism about US subsidies, contending that these depressed world prices and were injurious to Brazilian cotton growers, while significantly increasing the US share of the global cotton market. Brazil maintained that

Figure 2: Government assistance to cotton producers*

	1999/2000	2001/02	1999/2000	2001/02
	US$ per kilogram		Assistance US$ million	
US	0.75	0.47	2065	2300
China	0.43	0.23	1534	1200
EU	1.39	1.37	844	700
Greece	1.36	1.30	638	n.a.
Spain	1.50	1.67	2.6	n.a.
Turkey	0.24	n.a.	198	
Brazil	0.07	n.a.	44	
Mexico	0.20	n.a.	28	150
Egypt	0.09	n.a.	20	
Total			**4733**	**4350**

*Direct support to producers
Source: Valderrama (1999); ICAC (2000)

Figure 3: Summaries of research on the effects of cotton subsidies

Study	Method	World price effects of removing all cotton subsidies
FAPRI (2002)	Partial equilibrium	+11.44% in 2002 (removal of all trade distortions)
Goreux (2003)	Partial equilibrium	+12% in 2000/01 (removal of all subsidies)
ICAC (2002)	Partial equilibrium	+29.7% in 2000/01 +74.2% in 2001/02
ICAC (2003)	Partial equilibrium	+70% in 2001/02 +15% in 2002/03
Tokarick (2003)*	Partial equilibrium	+2.8% (removal of all support) +2.0% (removal of subsidies only)
Quirke (2001)	General equilibrium	+13.4% in 1999 (removal of US and China subsidies)
ODI (2004)	Partial equilibrium	+18% in 2000/01 (single market, uniform supply elasticity) +20% in 2000/01 (fragmented market, uniform supply elasticity) +22% in 2000/01 (single market, differentiated supply elasticity) +28% in 2000/01 (fragmented market, differentiated supply elasticity)

* 'Tokarick uses 2000 as the base year and assumes import demand elasticities equal to -0.75 and export supply elasticities equal to 1.5. For countries which have subsidies in place, such as the US, he assumes a domestic demand elasticity of -0.56 and a domestic supply elasticity of 0.41. Direct income transfers are not modelled and only price-distorting support is considered.
For further references see the full report: www.odi.org.uk/publications/cotton_report/

the US had doubled the level of subsidies to its farmers since 1992, so that cotton subsidies were not covered by the immunity granted under the Peace Clause of the WTO's Agreement on Agriculture. This clause protected countries using subsidies from being challenged under other WTO agreements, as long as the level of domestic support for a commodity remained at or below 1992 levels. Central to the legal challenge were direct payments to US farmers under the 1996 and 2002 Farm Bills, as well as payments under emergency supplemental appropriation bills. The US government argued that direct payments are de-coupled (not linked to current production), not trade distorting and should not have been counted when compared to 1992 levels of support.

On 16 May 2003, Burkina Faso, on behalf of Benin, Mali and Chad, presented the WTO's Trade Negotiations Committee with a new proposal for cotton entitled *Poverty Reduction: Sectoral Initiative in Favour of Cotton*. The initiative called for two decisions to be taken at the Cancún Ministerial meeting in September 2003:

- The establishment of a 'mechanism for phasing out support for cotton production with a view to its total elimination', which would provide for 'substantial and accelerated reductions in each of the boxes of support for cotton production'; and,
- The establishment of transitional measures for Least Developed countries: 'until cotton production support measures have been completely eliminated, cotton producers in Least Developed countries should be offered financial compensation to offset the income they are losing, as an integral part of the rights and obligations resulting from the Doha Round'.

According to the proposal – supported by 13 other West and Central African countries – the elimination of subsidies for cotton production and export is their 'only specific interest' in the Doha Round.

The proposal failed with the rest of the Cancún agenda, but on 26 April 2004, Brazil won a landmark victory at the WTO when it was ruled that the US had violated WTO obligations by granting excessive subsidies to its cotton growers between 1999 and 2002, depressing prices at the expense of Brazilian and other growers. The interim decision determined that some US de-coupled payments did provide an incentive for production, and thus were trade-distorting. The decision in favour of Brazil has apparently accepted the principle that it is possible to calculate the damage from subsidies even if they are formally decoupled. The ruling could start a domino effect affecting other agricultural support provided by other developed countries (such as the EU) in cotton and other sectors (such as sugar). The US will appeal against the ruling, but few appeals succeed completely, and future cases would only need to prove damage, not an increase in support, because the Peace Clause expired at the end of 2003.

Impact of distortions on developing countries

Many studies have attempted to measure the impact of cotton subsidies on world cotton prices and production (see Figure 3). It is difficult to draw direct comparisons because the analyses adopt different methodologies, examine the impacts on a different set of countries, and use different reference years to estimate the effects of subsidy removal. Some simulations which assume that all commodity prices are liberalised, not just cotton, are not directly comparable because of both growth and relative price effects. However, the results do serve to provide an initial insight into the magnitude of likely impacts: most studies predict an increase in the world price of cotton of 11% or more.

Our research (ODI, 2004) finds that the results are sensitive to the assumptions made about the market. There could be price increases of 18-28% depending on different assumptions regarding the structure of the cotton market and supply elasticities, and earnings increases for all developing countries of US$610 million to US$3,250 million. West and Central African countries could gain between US$94 million and US$360 million in cotton production earnings (from an initial level of US$963 million).

The structure of the market problem

With the exception of ODI (2004), the studies in Figure 3 assume a single, unitary market for cotton in which buyers choose among essentially homogeneous consignments of lint from different producing countries on the basis primarily of price. However, the assumption of a single market for cotton may not be correct, especially in the short run, to the extent that national origin is important in world cotton trade, related to the quality or market characteristics discussed above. Once spinners have hit on a particular blend of different lint types that suits the product that they are making, they like to stay with it if they can. Modifying the blend to incorporate a new national origin is done only if there are large price or supply changes. This tends to produce 'stickiness' in the world cotton market.

To illustrate the potential effect of 'stickiness', ODI (2004) makes projections on the basis of no substitution among suppliers (fragmented market) as well as complete substitutability (single market).

Our research shows the overall impacts of complete subsidy removal on supply are smaller and the distribution of the

Figure 4: Production of Cotton in West and Central Africa after the elimination of subsidies

% change in Cotton Production Earnings ($ millions increase in parentheses)

Structure of Market Elasticity of supply	Single Uniform	Fragmented Uniform	Single Differentiated	Fragmented Differentiated
Benin	28%	15%	36%	20%
Burkina Faso	28%	17%	39%	25%
Cameroon	28%	18%	39%	27%
Central African Republic	28%	13%	36%	16%
Chad	28%	15%	36%	25%
Congo	28%	0%	36%	0%
Côte d'Ivoire	28%	15%	39%	21%
Gambia	28%	3%	36%	3%
Ghana	28%	10%	36%	12%
Guinea	28%	0%	36%	0%
Guinea-Bissau	28%	5%	36%	5%
Liberia	28%	27%	36%	34%
Mali	28%	5%	39%	7%
Niger	28%	3%	36%	3%
Nigeria	28%	2%	36%	3%
Togo	28%	37%	39%	57%
Total	28%(271)	10%(94)	37%(360)	14%(134)

resulting benefits less favourable to poorer countries if the market is fragmented.

World: Under the single market assumption cotton production from subsidised sources falls by 12%. Under the fragmented market assumption subsidised cotton supply falls by only 6%. The varying reduction in cotton supply from previously subsidised producers leads to a price increase in the world market (single market assumption) or varying price rises in the country markets in which these producers operate (fragmented market assumption). For the latter, price increases are larger for country markets which used to consume high proportions of subsidised production.

West and Central Africa: The smaller reduction in world production means that West African production does not expand to the same extent in the fragmented (3%) as in the single market (9%). The impact of the removal of EU support to the cotton sector, however, has a greater impact under the fragmented market assumption. EU subsidies account for 38% of the loss of earnings in West and Central Africa under the fragmented market assumption, but only 9% under the single market assumption. The loss of earnings attributable to EU subsidies as a percentage of West and Central African current cotton earnings is 4%, with a fragmented markets, instead of 2%.

The supply elasticities problem

Another assumption that needs to be made is of the supply elasticity for cotton: analysts typically use 0.5. This is based on ICAC/FAO estimates of 0.47 (for the US) and is applied uniformly across all countries. The assumption of uniformity is a heroic one and analysis of the principal suppliers suggests that it is wrong.

World: An alternative set of supply elasticities was generated for major cotton producing countries likely to benefit from reform. We find that Brazil and West and Central African countries have higher supply elasticities (typically 0.6). In contrast, current water shortages in Australia and Central Asia suggest that the potential for any supply increase in these countries would be limited (assumed 0). Under both market structures, the equilibrium market price is achieved at a significantly higher level than under the assumption of a uniform supply elasticity, with both cotton production and earnings in non–subsidising countries increasing to a greater extent as a result.

West and Central Africa: The large increases in production which have occurred in West and Central Africa over the last decade suggest that they could respond to higher prices. Therefore, under both the fragmented and single market assumptions, the alternative set of supply elasticities produces a greater impact from cotton subsidy withdrawal on West and Central African production and export earnings, than does the assumption of identical elasticity of 0.5 across all countries – see figure 4. Using differentiated supply elasticities, we estimate that developed countries' subsidies cause losses to West and Central African earnings of 14% or 37%, depending on whether the market is fragmented or single.

While higher prices directly increase incomes and reduce poverty, higher production because of higher supply elasticities for cotton production does not necessarily translate fully into poverty reduction impacts. This is because additional cotton production may occur at the expense of production of competing crops rather than representing new output from previously underemployed resources; hence the net livelihood benefit is reduced. In some countries, however, the organisation of the cotton production and marketing system assists producers to access finance and inputs for cotton production when these are not available for other crops. Here, there may be a higher net livelihood benefit.

Policy implications

This study generates three policy implications:

First, under all the assumptions in all the studies, subsidies by the US and the EU depress the world price of cotton and reduce the income of developing countries, particularly those Least Developed countries most dependent on cotton for their foreign exchange earnings. Reducing these subsidies, whether through national action, trade negotiations, or dispute settlements, would increase the income of poor countries and poor people within them.

Second, EU subsidies may be more damaging to developing countries, and to West and Central Africa in particular, than their share in total export subsidies would suggest because cotton production in Greece and Spain actively competes with cotton production from developing countries in third markets and the subsidies Greek and Spanish farmers receive per unit of cotton production are the highest in the world.

Third, if markets are 'sticky' in the short-term, although they will respond eventually to higher prices, West and Central African countries would have an important opportunity for temporary gains from the removal of EU subsidies.