

MEASURES OF GOVERNMENT SUPPORT TO THE COTTON SECTOR**Alejandro Plastina****Armelle Gruere****Andrei Guitchounts****International Cotton Advisory Committee****Washington, D.C.****Abstract**

Government measures in the cotton sector are the subject of a heated international debate. Two international organizations estimate the magnitude of government measures in cotton-producing countries: the International Cotton Advisory Committee (ICAC) and the Organisation for Economic Co-Operation and Development (OECD). The purpose of this study is to compare ICAC's report on government measures with OECD's report on estimates of total support to the cotton sector, and analyze whether these reports complement or substitute for one another. While the OECD's report focuses on transfers received by agricultural producers and consumers due to government interventions, the ICAC's report focuses on outlays made by governments to support the cotton sector. Both reports provide valuable information and contribute to the understanding of the magnitude of government measures in the cotton sector, and in that sense they should be considered as complementary reports.

Justification

The Secretariat of the International Cotton Advisory Committee (ICAC) was instructed by member governments at the 57th Plenary Meeting of the ICAC in 1998 in Santa Cruz, Bolivia, to document government measures affecting cotton production, ginning and trade, to facilitate discussion of the subject within the ICAC. A report on the level of direct assistance provided by governments to the cotton sector through production programs, border protection, export programs and crop insurance programs has been published annually since 1999. However, other government measures, such as implicit transfers from taxpayers to producers through subsidized interest rates on working capital loans, are not accounted for in the ICAC's report.

The OECD has developed a standard methodology to measure the total transfers associated with agricultural policies, including transfers to producers individually, transfers to consumers individually, and transfers of general services to agriculture collectively. The OECD periodically reports these measures of support to agriculture for all its member countries/areas, as well as for some non-member countries. The list of covered commodities comprises 41 commodities, including cotton. Estimates for each country are based on particular subsets of the complete list of commodities. Cotton is only included in OECD's estimates for Australia and Turkey among OECD member countries and for Brazil and China (Mainland) among non-member countries.

Objective

The purpose of this study is to compare ICAC's report on government measures with OECD's report on estimates of total support to the cotton sector, and analyze whether these reports complement or substitute for one another

Materials and Methods**ICAC Estimates of Government Measures in Cotton**

The Secretariat has compiled and produced documents on government regulations periodically since 1958. Starting in 1999, the Secretariat published annually a Report on Government Measures which lists the measures applied by member governments that affect production, ginning and trade of cotton and provides estimates of the overall assistance to the cotton industry. To the extent possible, the same information is provided for non-member governments with relatively large cotton sectors.

The Report provides estimates of the level of direct assistance provided by governments to the cotton sector through production programs, export programs, crop insurance and border protection. Production programs account for coupled income and price support programs, but exclude credit and other types of assistance such as de-coupled income support. Estimates are expressed in terms of total assistance in current US\$ million and average assistance

per pound produced in current US cents/lb. To facilitate inter-country comparisons, these estimates are also reported as a proportion of local prices in this article.

Estimates of direct assistance through production programs in the United States under the 2002 Farm Bill included direct payments, counter-cyclical payments, loan deficiency payments, as well as certificate exchange gains and marketing loan gains. Counter-cyclical payments substituted market loss assistance payments under the 1996 farm bill. The U.S. export programs comprise subsidies to exporters and consumers through the Step 2 program and export credit guarantees. Another form of government support to cotton production in the USA is provided through subsidized crop insurance to protect producers against crop yield losses caused by natural disasters. More than 90% of planted cotton acreage was enrolled in the program in some years. The total cost of crop insurance to the government is calculated as the subsidized premiums plus net losses (indemnities over premiums) through time.

Estimates of direct assistance through production programs in Spain and Greece are calculated as payments under the EU Common Agricultural Policy. Since 2006/07, estimates include only coupled (or production aid) payments, and exclude decoupled (or income aid) payments.

Estimates of direct assistance through production programs in China (Mainland) include current direct subsidies to producers for using high-quality planting seeds and expenditures incurred in maintaining a minimum price policy in earlier years, including the procurement price, the cost of ginning, packaging, storage and transportation of cotton. The Secretariat uses the price differential between the CC index (an index of mill-delivered cotton in China (Mainland)) and the FC Index L (an index of imported cotton arriving in Chinese main ports) adjusted to include value added tax, port charges and transportation to mills as an estimate of the support to Chinese domestic cotton prices that results from border protection. Until 2002/03, China (Mainland) also subsidized exports through direct payments made by the central government to exporting agencies, calculated as the difference between international market prices and the internal cost of buying, ginning and transporting cotton to an export location.

Estimates of direct assistance through production programs in Turkey include the current premium paid by the government to producers for lint coming from certified seeds, as well as procurement support in earlier years.

Estimates of direct assistance through production programs in Brazil include direct subsidies paid to producers based on guaranteed prices, and earlier expenditures on government purchases with guaranteed prices.

Estimates of direct assistance through production programs in Mexico include expenditures in price support mechanisms and earlier outlays per hectare of planted cotton.

Estimates of direct assistance through production programs in Colombia and Benin include expenditures on the minimum price mechanism, while in Argentina, Cote d'Ivoire and Mali they include outlays to farmers as a result of emergency assistance.

Estimates of direct assistance through production programs in Egypt include outlays in price support mechanisms and subsidies to traders for abrupt variations in prices of extra-long staple cotton in 2004. Egypt also provided support to cotton exports in 2003/04.

Estimates of direct assistance through production programs in India include write-offs of debt held by farmers towards commercial and cooperative banks, and disbursements required by minimum procurement price mechanisms. India also provided direct assistance to cotton exporters to compensate them for higher transportation costs in 2004/05.

At the aggregate level, the average direct assistance to the cotton sector through production programs, measured in current US cents per pound of cotton lint produced, followed a declining trend from 17 cents in 1997/98 to 5 cents in 2007/08, going through peaks of 25 US cents per pound in 1998/98 and 2005/06. Several factors influence the provision of production subsidies, such as international cotton and input prices, exchange rates, climatic issues, and fiscal solvency among others. Direct assistance through production programs in the United States, Spain, Brazil, Mexico, Turkey, and Colombia followed increasing trends over the observed period, while direct assistance through production programs in Greece, China (Mainland), and Egypt followed decreasing trends (Table 1a). The relative magnitude of subsidies in local cotton production is measured as the ratio of subsidies to the local market value of

cotton production (Table 1b). Local cotton prices are used in the calculation of the market value when available, while the Cotlook A Index is used in other cases. Production subsidies represent, on average, 31% of the market value of cotton produced in the countries under consideration. However, the production subsidies-to-market value ratio ranges from 7% (2007/08) to 45% (2005/06) over the period. The country with the highest average ratio is Spain (157%), followed by Greece (127%), the United States (33%) and Colombia (27%). The average production subsidies-to-market value ratio in Turkey and Brazil are, respectively, 14% and 6%.

Direct assistance to upland cotton provided by the US government through export programs, measured in US cents per pound exported, followed a declining trend between 1997/98 and 2005/06, ranging from 2 to 6 US cents per pound (Table 2). The US support program to upland cotton exports was discontinued in 2006/07. Direct assistance to Pima cotton provided by the US government through export programs followed a downward trend through 2003/04 to 2007/08, ranging from 3 to 53 US cents per pound. However, it increased fivefold between 2006/07 and 2007/08. Direct assistance provided by the Chinese government through export programs followed an increasing trend between 1997/98 and 2002/03, from 10 to 14 US cents per pound. In 2002, export subsidies were dismantled in China (Mainland) (Shui 2005).

Since 2005/06, the ICAC Secretariat has reported the estimated level of assistance provided by China (Mainland) to the cotton sector through border protection. This kind of assistance decreased from 14 US cents/lb in 2005/06, to 9 US cents/lb in 2006/07, to 3 US cents/lb in 2007/08.

The total level of assistance provided by governments to the cotton sector through production, border protection and export programs measured in US cents per pound of cotton produced in the world, presents a strong negative correlation with cotton prices ($\rho = -0.83$) (Figure 1). The ratio of total production and export subsidies to the total value of world cotton production ranged between 5% (2007/08) and 31% (2001/02), averaging 19% over the 1996/97 - 2007/08 period. The ratio of border protection, total production and export subsidies to the total value of world cotton production decreased from 25% in 2005/06 to 17% in 2006/07, to 7% in 2007/08.

In 2008 the Secretariat published for the first time estimates of the level of assistance provided by the US government to the cotton sector through crop insurance programs. The average assistance amounted to 2.7 US cents per pound between 1997/98 and 2007/08, and only in 2005/06 the collected insurance fees outweighed the outlays.

OECD Methodology

The OECD started publishing measures of support to agriculture in 1987, with a focus on “subsidy equivalent” estimates according to a methodology defined in 1982. In 1999, the focus was changed to “support estimates” according to a new classification of measures. The 1999 methodology classified the total transfers associated with agricultural policies (Total Support Estimate, TSE) into three categories: transfers to producers individually (Producer Support Estimate, PSE), transfers to consumers individually (Consumer Support Estimate, CSE), and transfers of general services to agriculture collectively (General Services Support Estimate, GSSE). Starting in 2007, to reflect the way in which agricultural policies are gradually shifting away from direct commodity-linked support to other forms of support, the Producer Support Estimate (PSE) is no longer calculated for individual commodities. Instead, the total PSE is broken down into four categories reflecting the potential flexibility given to farmers’ production decisions within the various policy measures: single commodity transfers, group commodity transfers, all commodity transfers, and other transfers to producers. Among single commodity transfers, OECD reports the transfers from taxpayers to agricultural producers from policy measures based on current output of a specific agricultural commodity, called Payments based on output. However, these payments do not include the operational costs of acquiring, holding and disposing of public stocks, which are a budgetary cost to implement market price support policy but do not provide support to farmers over and above market price support. The latter operational costs are included in the TSE, but not in the PSE, and since OECD no longer reports TSE by commodities, estimates of those operational costs are no longer available in OECD reports. Those operational costs are included in the estimates of direct assistance through production programs on ICAC’s reports. Payments based *on output*, therefore, cannot be compared to the *level of direct assistance provided by governments to the cotton sector through production programs* reported by the ICAC Secretariat.

The PSE is an indicator of the annual monetary value of gross transfers from consumers and taxpayers to support agricultural producers, measured at the farm gate, arising from policy measures which support agriculture,

regardless of their nature, objectives or impacts on farm production or income. The PSE measures the annual monetary transfers to farmers from three broad categories of policy measures that:

- Maintain domestic prices for farm goods at levels higher (and occasionally lower) than those at the country's border (*market price support*).
- Provide payments to farmers based on, for example, the quantity of a commodity produced, the amount of inputs used, the number of animals kept, the area farmed, a historical (fixed) reference period, or farmers' revenue or income (*budgetary payments*).
- Provide implicit budgetary support through tax or fee reductions that lower farm input costs, for example for investment credit, energy and water (*budgetary revenue foregone*).

The same level of total PSE is obtained using the 1999 and the 2007 methodologies; the only difference is how the total PSE is broken down into different categories in each methodology. A crucial point to emphasize is that support not only comprises budget payments that appear in government accounts (which is often the popular understanding of support), but also budgetary revenues foregone, and the gap between domestic and world market prices for farm goods – market price support. Although farm receipts (revenue) are increased (or farm expenditure reduced) by the amount of support, the PSE is not in itself an estimate of the impact on farm production or income.¹ The Producer Single Commodity Transfers (**Producer SCT**) measures the annual monetary value of gross transfers from policies linked to the production of a single commodity such that the producer must produce the designated commodity in order to receive the payment.

The General Services Support Equivalent (GSSE) is an indicator of the annual monetary value of gross transfers to general services provided to agriculture collectively, arising from policy measures that support agriculture, regardless of their nature, objectives and impacts on farm production, income, or consumption of farm products. These payments for eligible private or public general service are provided to the agricultural sector collectively and not individually to farmers. They include, among other payments, payments for collective agri-environmental action and taxpayer transfers to improve agricultural production through research and development, agricultural training and education; to control quality and safety of agricultural inputs and the environment; to assist marketing and promotion; and to meet the costs of depreciation and disposal of public storage of agricultural products.

The Consumer Support Equivalent (CSE) is an indicator of the annual monetary value of gross transfers to (from) consumers² of agricultural commodities, measured at the farm gate level, arising from policy measures that support agriculture, regardless of their nature, objectives or impacts on consumption of farm products. The CSE includes explicit and implicit consumer transfers to producers of agricultural commodities, measured at the farm gate (first consumer) level and associated with: market price support on domestically produced consumption (*Transfers to producers from consumers*); and transfers to the budget and/or importers on the share of consumption that is imported (*Other transfers from consumers*); and is net of any payment to consumers to compensate them for their contribution to market price support of a specific commodity (*Transfers to consumers from taxpayers*); and the producer contribution (as consumers of domestically produced crops) to the market price support on crops used in animal feed (*Excess feed cost*). When negative, transfers from consumers measure the implicit tax on consumption associated with policies to the agricultural sector. Although consumption expenditure is increased (reduced) by the amount of the implicit payments (taxes), this indicator is not in itself an estimate of the impacts on consumption expenditures.

The Total Support Equivalent (TSE) is an indicator of the annual monetary value of all gross transfers from taxpayers and consumers arising from policy measures that support agriculture, net of the associated budgetary receipts, regardless of their objectives and impacts on farm production and income, or consumption of farm products. The TSE is calculated as the sum of the PSE, the GSSE and the transfers from taxpayers to consumers (in CSE).

For reporting purposes, each estimate is expressed in absolute monetary terms and in relative terms (as a percentage of the value of gross farm receipts). The monetary value of the indicators is influenced by the size of the country's cotton sector, as well as the country's rate of inflation. Support expressed as a percentage of the value of gross farm receipts shows the amount of support irrespective of the sector size and the inflation rate.

Additionally, OECD reports the Nominal Protection Coefficients and the Nominal Assistance Coefficients for producers and consumers. The Producer Nominal Protection Coefficient (**Producer NPC**) is the ratio of the average price received by producers (at farm gate), including payments per ton of cotton, to the border price (measured at farm gate). The Producer NPC can be interpreted as an estimate of the nominal rate of market protection for producers, or the rate of the implicit export subsidy necessary to export any quantity produced. The Consumer Nominal Protection Coefficient (**Consumer NPC**) is the ratio of the average price paid by consumers (at farm gate) and the border price (measured at farm gate). The Consumer NPC can be interpreted as the average rate of the implicit import tax applied in the domestic market. The Producer Nominal Assistance Coefficient (**Producer NAC**) is the ratio of the value of gross farm receipts including support to gross farm receipts (at farm gate) valued at border prices (measured at farm gate). By construction, the Producer NAC can take any value greater than or equal to one: when the Producer NAC is equal to one, gross farm receipts are entirely derived from the market without any support; the higher the value of the Producer NAC, the lower is the share of gross farm receipts derived from the market and the higher the share of gross farm receipts derived from support. The Consumer Nominal Assistance Coefficient (**Consumer NAC**) is the ratio of the value of consumption expenditures on cotton valued at farm gate prices to the value of consumption expenditures on cotton valued at border prices. The Consumer NAC is an indicator of the relation between the actual expenditure by primary consumers of cotton and the expenditure that would have been necessary if it had been conducted entirely at world market prices without any budgetary support to consumers. If greater than one, the Consumer NAC indicates that consumers could have spent less income in their purchases of cotton had the government measures affecting consumers not been in place.

The latest data on support to the cotton sector published by OECD cover the periods 1986-2007 for Australia, 1995-2005 for Brazil, 1993-2005 for China (Mainland), and 1986-2007 for Turkey.

Cotton lint consumption exceeded cotton production in **Brazil** over the period 1994/95-1999/00, and in 2001/02, and cotton production exceeded cotton consumption in 2000/01, and over the period 2002/03-2004/05 (Table 6). As indicated by the Producer NPC, the nominal rate of market protection for producers has been positive for all years but 1995/96, averaging 4%. The Producer NPC followed an increasing trend between 1995/96 and 2002/03, and declined afterwards.

In 1996/97, 1999/00, 2002/03 and 2003/04, consumer prices were higher than border reference prices, resulting in an average Market Price Support for cotton producers of 1.9 US cents/lb over the four seasons. The Consumer NPC indicates that consumers paid, on average, prices 5% higher than border reference prices over those four seasons; but paid prices equal to border reference prices in other seasons. Only in 2002/03 and 2003/04 the Market Price Support in Brazil was partially financed by transfers from taxpayers to producers³ (11% and 29%, respectively, of MPS), while transfers from consumer to producers represented 100% of MPS in 1996/97 and 1999/00.

In 1999/00, despite facing a 3% implicit import tax rate, Brazilian cotton consumers received total transfers that more than offset the cost of the implicit tax, resulting in total consumer expenditures being 1% lower than what would have been required in the absence of government measures (CNAC=0.99). In 1996/97, 2002/03 and 2003/04, consumers could have spent less income in their purchases of cotton had the government measures affecting consumers not been in place. Besides 1999/00, Brazilian consumers also enjoyed savings stemming from government measures (CNAC <1) in 1997/98, 2000/01, 2001/02, and 2004/05, averaging 4% of total expenditures (1.2 US cents per pound) compared to a situation with no government support. The fact that Consumer and Producer NPC are different for all years but 1995/96 indicates that producers received government payments on current output almost every year.

According to OECD data, consumption exceeded production in **China (Mainland)** over the period 1994/95-2005/06, except for 2004/05 (Table 7).⁴ The Producer NPC fluctuated between 0.74 and 2.04 over the observed period, with a mean of 1.2, showing great variability in the difference between domestic prices and border reference prices. The Chinese textile industry enjoyed lower domestic prices than border prices in 1995/96-1998/99, 2002/03-2003/0, and 2005/06, while domestic prices were higher than border prices in 1993/94-1994/95, 1999/00-2001/02, and 2004/05. The minimum level of Market Price Support was registered in 2001/02 at -6.7 US cents per pound of cotton produced (i.e. cotton producers could have received 6.7 US cents/lb more had they sold their cotton at border prices), while the maximum was registered in 2003/04 at 41.7 US cents per pound (i.e. 51% of the price received by producers were market transfers from consumers to producers due to the price policy in place). The Producer NPC equals the Consumer NPC in each year, indicating that producers did not receive government payments on current

output. The Consumer NAC is very similar to the Consumer NPC for all years, indicating that the magnitude of budgetary transfers to consumers from taxpayers is relatively small compared to the magnitude of market transfers to producers from consumers.

According to OECD data, cottonseed consumption exceeded production in **Turkey** over the period 1985/86-1992/93, while cottonseed production exceeded consumption over the period 1993/94-2006/07.⁵ Over the 22 year period, producer support was positive (Producer NPC>1) in only 2 seasons, 1992/93 and 2006/07, when budgetary payments on output more than offset the negative Market Price Support prevalent throughout the entire period. Budgetary payments on output to producers also existed in 1998/99 through 2005/06, averaging 6 US cents/lb over the 10 seasons, but were lower than the market transfers from producers to consumers in those other seasons. The average Producer NPC amounted to 0.79, indicating that producers only received –on average– 79% of the border reference price over 22 years. The Consumer NPC averaged 0.30 over the 22 years, indicating that seed cotton consumers paid, on average, only 30% of the border price. The minimum CNPC was observed in 1995/96 at 8%, and the maximum in 2001/02 at 69%. The low CNPC and PNCP seem to indicate a problem in the calculation of the border reference price: while quantities produced and consumed as well as producer and consumer prices refer to seed cotton, border reference prices seem to refer to cotton lint (Figure 1).

The Producer Percentage Single Commodity Transfers for cotton in **Australia** indicates that only in 1986-1988 did producers received some of their gross farm receipts as transfers from consumers and taxpayers due to policy measures related to cotton (Table 9). However, the share of those transfers was 4.3% in 1986, 2.1% in 1987 and 1.7% in 1988, and all transfers occurred through market price support mechanisms. The units of measurement of the level of production over the period 1986-2007 are not clear, and cannot be compared to ICAC data.

Conclusions

The ICAC Secretariat reports on the outlays made by governments to implement measures of support to the cotton sector through production, export, crop insurance and border protection programs. The OECD Secretariat reports on the gross value of transfers received by cotton producers and consumers according to their origin (taxpayers', consumers', or producers' monies), the share of transfers to producers in gross farm receipts, and the consumer and producer nominal protection level with respect to border prices.

The methodologies used by ICAC and OECD are substantially different, preventing any direct comparison of the results. While OECD's report focuses on transfers received by agricultural producers and consumers, ICAC's report focuses on outlays made by governments to support the cotton sector. In that sense, both reports should be considered as complementary information rather than as substitutes.

As a final note, none of the reports provide estimates of the economic impact of the support on the cotton sector or the social costs of the support.

Endnotes

¹ The PSE differs from the World Trade Organization's Aggregate Measurement of Support (AMS) used in multilateral trade negotiations in that: (1) the purpose of the PSE is to monitor and evaluate progress in agricultural policy reform, whereas the AMS is the basis for a legal commitment to reduce domestic support in the WTO Agreement on Agriculture; (2) the PSE covers all transfers to farmers from agricultural policies, whereas the AMS covers only domestic policies deemed to have the greatest production and trade effects (amber box), and excludes trade policies that are covered under the WTO market access and export subsidy disciplines, as well as blue box and green box policies, and certain trade distorting policies (e.g. input subsidies) when the level of domestic support is smaller than a specified de minimis level; (3) market price support in the PSE is measured at the farm gate level using actual producer and border prices for commodities in a given year, whereas in the AMS market price support is calculated by the difference between annual prices fixed by policy makers and world prices in the base period (OECD 2004).

² Consumers are defined by OECD as the first purchasers of the agricultural commodities.

³ Transfers from taxpayers to producers are implicitly calculated and include budgetary outlays on export subsidies, export credits and price support mechanisms.

⁴ ICAC data indicate that production exceeded consumption in China (Mainland) in 1994/95, 1995/96, 1997/98, and 1998/99.

⁵According to ICAC data, consumption exceeded production in Turkey over the period 1985/86-1990/91, and production exceed consumption over the period 1991/92-2006/07. OECD's and ICAC's consumption and production data differ significantly over the entire period.

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