

Distortions to Agricultural Incentives in Colombia

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Background

The population of Colombia in 2005 was around 41 million. The annual rate of population growth accelerated from 2 percent in the 1940s to almost 3.4 percent in the 1950s, it fell to 2.8 percent between 1964 and 1985 and it fell sharply to 1.3 percent in the 1985-2005 period. This development was accompanied by a rapid increase in the urban population due to rural-urban migration, increasing the urban share of the total population from around 30 percent in the late 1930s to 73 percent in 2005.

The evolution of the level of poverty in Colombia is variable. The headcount measure of poverty decreased from 52 percent to 50 percent between 1990 and 1994, but this was followed by a sharp rise to reach its highest level of 57 percent in 2002. Poverty decreased again during the 2003-05 period to 49 percent. Poverty in the rural sector remains high: 68 percent of the Colombian rural population lives below the poverty line and 15 percent live in conditions of extreme poverty (Montenegro 2006).

Between 1950 and 2005 employment grew steadily in Colombia. According to the Household Survey, the level of total employment in 2005 reached 18 million. Of this, rural employment accounted for 4.7 million.

Total gross domestic product (GDP) expanded at an annual average rate of 3.9 percent per year between 1965 and 2005, while per capita income increased 1.7 percent per year during the same period. There were, however, important variations between sectors. The highest rate of growth was reported in the mining sector — an average annual rate of growth of 6.9 percent — followed by the service sector with 4.2 percent. The industrial and agricultural sectors grew more slowly, at rates of 3.0 percent and 3.1 percent, respectively.

As a consequence of the different the rates of sectoral growth, the share of agriculture in total GDP fell from an average of 28 percent during the 1965-70 period to 13 percent during the 2000-05 period. The share of manufacturing also decreased, from 18 to 16 percent

over that period. By contrast, the share of the service sector increased from 51 to 65 percent and the mining sector increased from 2.8 percent to 6 percent over the same period.

From 1965 to 2005 the real value of total exports increased at an annual average rate of 5.3 percent while imports grew 6.4 percent per year. In general, foreign trade increased in relation to the value of domestic production and consumption: the ratio of total exports to production increased from 8.4 percent during 1965-75 to 11 percent in 2000-05; and the share of total imports to consumption grew from 8.7 percent to 12.2 percent. There were important differences among sectors: exports from the agricultural sector increased at a rate of 3.7 percent while manufacturing exports grew at 7.5 percent per year. In the case of imports, the growth rates were 6.3 percent and 6.7 percent, respectively.

In terms of commercial policies, three periods can be identified. The 1950-66 period is characterised by the dominance of import substitution policies whereby the government tried to protect domestic production and achieve self-sufficiency. The 1967-89 period is characterised by a more open economy approach to commercial policy during which the government reduced the anti-export bias with the aim of promoting exports and growth of the manufacturing sector. The magnitude of foreign trade began to increase steadily in this period. Trade liberalization was adopted during 1990-92, generating a rapid increase in imports. Initially exports maintained their trend, but from 1996 exports grew more rapidly than imports.

With respect to exchange rate policies, before 1967 there was a policy of fixed exchange rates with sporadic devaluations. This included multiple exchange rates, especially for coffee exports. This policy resulted in a chronic overvaluation of the peso, thus discriminating against exports. In 1967 a crawling peg system was adopted and the exchange rate was unified. This led to a depreciation of the peso and the promotion of exports (García 1981, Thomas 1985, Krueger, Schiff and Valdés 1990). The rate of crawl varied according to changes in domestic and external circumstances. There were periods of rapid devaluation (e.g. 1972-73, 1984-86) and periods of revaluation of the peso (e.g. the coffee boom of 1975-82). In general, the period 1967-90, in spite of the exchange rate policy, was characterized by the overvaluation of the peso. Between 1991 and 1993, as part of the process of liberalization, a free market for foreign currency was implemented progressively: control by the Central Bank of the currency market was abolished as was the crawling peg system. However, the overvaluation of the peso continued to be a key characteristic of the post-liberalization period. The evolution of the real exchange rate is shown in Figure 1.

Although a parallel market for foreign exchange coexisted with the official market, the level of the exchange rate in the parallel market was lower than the official rate in 19 out of the 27 years for which data are available (**Table 1**). An exception is the 1980s, when the rate of exchange in the parallel market averaged around 1.2 percent higher than the official rate. That was reversed from 1991, due mainly to the large inflow of foreign exchange arising from the illegal drug market. As a result, since then the parallel exchange rate averaged 6 percent below the official rate.

The agricultural sector in Colombia's development

Agriculture has been the single most important sector of the Colombian economy. Nonetheless, its contribution to total gross domestic product has been declining steadily, from 27 percent in the 1965-79 period to an average of 20 percent in the 1980s, 16 percent in the 1990s and just 13 percent in the 2000-05 period.

Agricultural exports were the main source of foreign exchange for Colombia until the mid-1980s, accounting for 54 percent of the total value of exports of goods and services. The share was reduced to 31 percent in 1987-99 and to 20 percent in 2000-05. Until 1987, coffee was the most important export product, accounting for 44 percent of total exports; thereafter, however, its share began to decline and was just 7 percent on average in 2000-05. Meanwhile, non-coffee agricultural exports averaged 10 percent of total exports in 1965-89, and that share increased to an average of 15 percent during 1991-2005. With coffee's share of agricultural exports falling from four-fifths to one-third over the past four decades, other exports that grew in importance include cut flowers (accounting for one-quarter of agricultural export earnings during recent years), fruits (mainly bananas) with a one-sixth share, and sugar with a one-eighth share.

Agricultural imports were relatively small over the period 1965 to 2005, accounting for between 7 and 4 percent of the total value of imports of goods and services. Four groups of products accounted for two-thirds of the total value of agricultural imports: cereals (mainly maize and wheat) with a 43 percent share, oilseeds with 11 percent, and fruits and vegetables each accounting for 6 percent. These shares remained reasonably stable over time. According to the most recent estimates by the Ministry of Agriculture, around 61 percent of agricultural

output, excluding livestock, is exportable, 6 percent import-competing and 33 percent nontraded.

The share of crop production in the total value of agricultural production declined over time from 70 percent in the late 1960s to 56 percent in the 2000-04 period, during which time the share of animal production increased to 44 percent of total agricultural production. Among Colombia's crops, coffee was the single most important product accounting on average for 12 percent of the total value of agricultural production, and its share remained relatively stable over the period. The share of non-coffee crops declined from an average of 53 percent in the 1970-92 period to 46 percent in the 1993-2005 period. Perennial crops were the most important commodities, accounting for 28 percent of total agricultural production, the most relevant being plantain, sugar cane and flowers. Annual crops accounted for the remaining 18 percent, with rice, potato and maize the main products. The share of beef and milk accounted on average for 26 percent of total value of agricultural production. The remaining 14 percent was explained mainly by the rapid increase in the share of poultry meat production.

Colombia has 114 million hectares of land and nearly 12 percent of the country's land (14 million hectares) has soils with arable potential. In 2004, the country used 38 million hectares for cattle-raising and 4 million hectares for growing crops. Within the latter, 53 percent of the cultivated area was used for perennial crops. The country is surrounded by coastline and has a range of climates, allowing a wide variety of crops to be grown. Cereals such as corn, wheat and barley, together with coffee and sugar cane, are grown in the highland areas; rice, bananas, cotton, palm oil and tobacco are grown in the Caribbean coastal area. Cattle-raising is the main form of agriculture on the eastern plains, and rubber and tropical timber are produced in the tropical forests in the southeast.

The information available on land distribution shows that land ownership is concentrated in the hands of a small number of large farms that occupy most of the available land. According to 1988 data, 47 percent of farmers with less than ten hectares occupied 10 percent of the land, while 15 percent of farmers with more than 500 hectares occupied 32 percent of the land (Ministerio de Agricultura -DNP 1990). The Gini coefficient for the rural sector declined from 0.86 to 0.84 between 1960 and 1988, before increasing again to 0.88 in 2000 (Fajardo 2002). The inequality in land distribution is closely related to two different types of production: commercial agriculture — characterized by large modern farms selling

their product in organized markets — on the one hand, and on the other peasant agriculture with small labor-intensive farms located far from markets.

Market interventions in the agricultural sector

Government intervention in agriculture was high during the period we analyze (1960 to 2005). It included a wide variety of instruments and led to the protection of importables and the taxation of exportables for most of the period. In addition, notwithstanding a few occasions when sporadic devaluations occurred, the overvaluation of the peso discriminated against the export sector.

Agricultural pricing policies were established to guarantee a minimum level of income to producers and to stimulate agricultural production. Different mechanisms were used over the years and across commodities. The main instruments were: minimum support prices, price compensations and direct price controls, procurement agreements, monopoly marketing and importing of grains by the state marketing agency IDEMA, public mechanisms for the administration of agricultural contingencies, quantitative restrictions on imports (quotas, prohibition of certain imports, prior licensing), tariffs and import surcharges on imports, price band systems, export permissions, and export subsidies (tax credit certificate CAT-CERT and Plan Vallejo CERT).

The government also intervened in agricultural input markets. Credit was subsidized to various degrees. From 1992, subsidized credit was only available for small farmers. The implicit subsidy is estimated as the difference between the interest rate charged on agricultural loans and the market rate of interest. In 1993 the Incentive to Rural Capitalization (ICR) was created to include large farmers who did not qualify for credit subsidies. Another source of subsidized credit to finance exports was through Proexpo — whose funds came from a tax on imports; but since 1995 that subsidy has been eliminated. Except for fertilizers, agricultural inputs (e.g. insecticides, herbicides, concentrates, seeds, and machinery) were subject to a licensing regime, tariffs and import surcharges until 1990. In 1991 tariffs were reduced and import restrictions were eliminated. Urea fertilizer was subsidized during the mid-1970s until the late 1980s, but since 1990 it has been subject to import tariffs.

In this study, we estimate nominal rates of assistance for eleven agricultural commodities in Colombia. The eleven commodities are representative of Colombian

agriculture. They include: coffee, sugar and beef (exportables); wheat, rice, maize and soybean (importables); and cotton, sorghum, palm oil and milk (which have a mixed history of importable, exportable and non-tradable). Eight of the eleven products fall under the price band system. When the primary agricultural product is not tradable, as in the case of sugar cane, parchment coffee, cotton seed, paddy rice and palm fruit, the product's trade status is determined according to the status of the corresponding lightly processed commodity. The share of the selected products in total agricultural production, valued at distorted prices and quantities, is on average 55 percent (**Table 2**).

Coffee

Colombia exports a lightly processed coffee product (green coffee). The primary product itself, parchment coffee (pergamino coffee) is not tradable,¹ although we classify it as an exportable product.

Coffee has been subjected to several policy measures. Exports were taxed for most of the period. The proceeds from exports of coffee had to be surrendered to the Central Bank at a surrender price (reintegro) based on the international price. The surrender price was usually lower than the world price, with the difference between them accruing to the Central Bank. Export quotas, set by the by the International Coffee Organization, were in place until 1985. Permission to export was granted to private exporters after evidence of payment of a retention quota was presented. The retention quota was established 1958. Initially, the retention quota was a fixed amount of parchment coffee equivalent to a proportion of the green coffee exported. Payment of the retention quota was to the National Coffee Fund (Fondo Nacional del Café, FNC), whose chief purposes were to stabilize prices, promote coffee production, and develop and retain foreign markets for Colombian coffee. In 1993 the retention quota was set as a proportion of the international price: it varied directly with fluctuations in the international price of coffee.

Until 1967, coffee was also taxed by a lower rate of exchange for coffee exports. This differential was abolished in 1967 and replaced by an ad valorem tax, initially set at 26 percent of the minimum surrender price. Half of the revenues of this tax went to the government and half to the National Coffee Fund (FNC). Over the years the ad valorem tax declined and was finally abolished in 1993. Between 1977 and 1980, a discount on currency

¹ It is subject to a very simple process at the farm level (cleaning, selecting and drying) to obtain green coffee that is sold to the National Coffee Federation, to wholesalers and traded internationally.

exchange certificates was introduced for coffee and some other exports. Between 2002 and 2005 a contribution equivalent to 5 percent of the international price was established for exports of coffee to solve the financial disequilibrium of the National Coffee Fund.

In the domestic market there was a support price for coffee to guarantee a minimum level of producer income. In 2001, with the decline in international coffee prices, the government established a direct price support to coffee growers (Apoyo Gubernamental a la Caficultura AGC) that depended on the world price and the exchange rate.

Taxes and contributions on coffee exports were shared between the government and the FNC. The FNC returned a proportion of their revenues to producers through several programs such as research and development, technical assistance, rural housing, education, and infrastructure. When estimating the nominal rate of assistance (NRA) in this study (see below), we assume that 50 percent of taxes collected by the FNC in a given year are reinvested in the coffee sector in the same year, and therefore the domestic producer price increases by this amount (García and Montes 1989).

Sugar

Colombia has exported sugar at above the free international market price to destinations where the country had preferential access. For example, as a member of the Sugar Exporters Association, it enjoyed access to the high-priced US market, albeit for a quota-restricted quantity of exports. Sugar received export subsidies (CERT) from 1967 and export credit subsidies until 1991. But the country imports much more sugar than it exports, even though the domestic industry is highly protected from import competition. It is thus classified as an import-competing product. Together the barriers to imports and the opportunity to get preferential access to foreign high-priced markets has been beneficial to producers but has had an adverse impact on consumers. In addition, safeguards from preferential imports to Colombia have been used recently.

In the domestic market, sugar was subject to direct price control and to IDEMA's intervention in the marketing of sugar. The domestic producer price of sugar was fixed by the Ministry of Agriculture after negotiations with sugar cane producers and processors, taking into account the cost of production and the level of international prices. In 1991 a system of price bands was established for raw and refined sugar in order to stabilize producers' incomes. Another mechanism used since 2001 is the price stabilization fund, which aimed to ensure that prices across all domestic markets were equal. The production of ethanol

commenced in 2005, for use as fuel in the domestic market. This is likely to further support incomes of sugar producers.

Beef

Beef is an exportable product, although the level of exports varied widely between 1969 and 2005. Exports took the form of live cattle, whole meat and boneless meat. In this analysis, appropriate conversion factors were used to express exports and prices in terms of live cattle (Valdés 1995).

The Colombian price policy towards beef over the period was a mix of interventionist and non-interventionist policies. In 1957 a minimum price for beef was established and since then sporadic price fixing occurred with the purpose of controlling inflation and protecting consumers. Price controls were implemented mainly for lower cuts of meat to favor low-income consumers, while the price of high quality meat was free from intervention. In the past, price controls were supplemented with restrictions on the sale of meat in restaurants to release beef for exports.

During the 1967-95 period, beef exports received a subsidy (CAT, later CERT), while beef imports were subject to quantitative restrictions until 1991 and high import tariffs over the period. In 1999 a price stabilization fund was created to promote beef and milk exports and to stabilize producers' income. Under this mechanism, producers were made indifferent between selling in the domestic and international markets, since prices in both markets were equalized. Since exports have been much less than imports of beef despite the barriers to imports and the subsidies to exports, this industry, like sugar, is classified as import-competing.

Milk

Raw milk, which is a primary agricultural product, is seldom traded; however milk products such as dry milk, butter and other derivatives are widely imported and exported. In this study, we use appropriate conversion factors to express exports, imports and prices in terms of raw milk (Valdés 1995). Until 1978 Colombia was self-sufficient in milk production, between 1979 and 1998 milk was imported in varying quantities, and since 1999 there were both imports and exports, but the commodity is treated as import-competing in this study because despite high ocean transport costs on imports and subsidies on exports, the country is a net importer.

The price policy for milk was subject to continuous government intervention as a means of protecting consumers from the oligopolistic structure of production and distribution. Direct price control began in 1957 when the government fixed prices. Between 1968 and 1972 prices were free from intervention, but they were fixed again during the 1973-78 period. In 1979 a system of supervised freedom was implemented whereby price modifications were agreed upon by producers and the Ministry of Agriculture on the basis of changes in domestic inflation. Between 1989 and 1999, a new mechanism named 70/30 was implemented. Under this instrument, processors paid a minimum price for raw milk equal to 70 percent of the consumer price of processed milk. Later, a new price agreement (a system of quotas and surplus) was implemented based on a price differential according to the seasonality of production. Recently, the government provided an incentive for the storage of powdered milk in order to regulate milk supply and reduce fluctuations of farmers' income.

The government intervened directly in the marketing of milk. In 1975 producers agreed to sell to IDEMA 20 percent of their milk output to be distributed among low-income consumers. In 1979 the proportion was reduced, to 1 percent destined to the Instituto de Bienestar Familiar and 1 percent to the National Milk Fund. In 1991 a price band system was established for milk in order to stabilize producers' income. Another mechanism used since 2001 has been the price stabilization fund so that prices between the domestic and export market are equal. Until 2001 exports received a subsidy through the CERT mechanism.

Palm oil

The primary agricultural palm oil product is the fruit of the palm oil tree. This is not a tradable commodity, but it is given the same trade status as crude palm oil (CPO), which is the lightly processed product sold in domestic and international markets. Palm oil is given mixed trade status in this analysis. Until 1989, Colombia was relatively self sufficient in palm oil production with small and sporadic imports. It is considered as non-tradable in this period. In 1990 and 1991 some palm oil was imported but since 1992 it has been an exportable commodity with export surpluses increasing rapidly. In 2005, palm oil exports accounted for 37 percent of domestic production.

The domestic price received by producers is set by an agreement between producers and industrial processors. Exports of palm oil received an export subsidy until 2002 when the CERT level was set at zero. Imports, on the other hand, were subject to the price band system and since 1998 the price stabilization fund played an important role in stabilizing the income

of farmers. This fund ensured prices in the domestic and export/import markets were equal through transfers from the high price market to the low price market. Palm oil was an important recipient of the Incentive to Rural Capitalization (ICR) scheme; this mechanism was widely used by the alliances of small farmers to establish new farms. The subsidy element reached as much as 40 percent of the credit.

Cotton

Cotton seed, which is a primary agricultural product, is not tradable; therefore its trade status was taken from the status given to cotton fiber. Cotton was an exportable commodity during the period 1960-92 and it was an importable after 1993. Government price interventions were active over the period to promote domestic production. The prices of cottonseed and cotton fiber were originally controlled by the Ministry of Economic Development and later by the Ministry of Agriculture. In 1972 internal prices were set for cotton fiber by agreement between cotton growers and textile producers, and for cottonseed by agreement between cotton growers and producers of fats and oils. These agreements are still in operation.

Similarly, minimum guarantee prices for cotton are still in operation and are based on the international price. However, if the support price falls below the cost of production, producers receive a direct compensation from the government. Imports of cotton fiber are authorized when domestic production is sold to the textile industry. Exports of cotton received an export subsidy and for some years exports had an external price support price. The differential between the external price and the support price was paid by PROEXPO; this subsidy was the compensation received by exporters.

Rice

Paddy rice was not traded for most of the period apart from sporadic imports in the late 1990s. However, polished rice was widely traded at the international level and has been subject to high import tariffs and quantitative import restrictions during most of the period. We classify both paddy and white rice as importables given that the domestic price was above the f.o.b. border price.

The main policy consideration was the achievement of self-sufficiency in production. Until 1991 the principal interventions of the government in this product were designed to prohibit imports of rice when the price of domestic rice was not competitive (e.g. during 1960-68), prohibit exports when the price of domestic rice became competitive with the

international price, and extend substantial support to the development of new rice varieties. In addition, the price of rice was supported by IDEMA.

Procurement agreements and more recently the Public Mechanism for the Administration of Agricultural Contingencies were in operation for paddy rice. Under these mechanisms processors wishing to import were required to absorb domestic production before obtaining permission to import from the Ministry of Agriculture. In 1991 a price band system for paddy and white rice was established to protect domestic production, and safeguards were used when the border price declined sharply. Recently, the government provided an incentive to the storage of dried paddy rice in order to regulate supply and reduce fluctuations in farmers' income.

Wheat

Wheat is an importable product and imports account for more than 90 percent of domestic consumption. Until the early 1990s the wheat market was controlled by the Institute for Agricultural Marketing (IDEMA), which was the sole importer, and imports were sold to flour mills after evidence of absorption of domestic production was presented.

The functions of the agricultural importing monopoly, IDEMA, were modified during the liberalization period and procurement agreements were implemented based on a minimum support price. Upon presentation of evidence of the use of domestic supplies (absorption certificates), firms were allowed to purchase imports at a reduced tariff. Since 1991 imports of wheat have been subject to a price band system.

Maize, sorghum and soybean

Maize, sorghum and soybean are classified as importable commodities, except for sorghum which was classified as non-tradable during the early years of the period we analyze. Government intervention protected domestic production of these three commodities, only allowing imports when domestic production fell short of consumption. The prices of all three products were supported by IDEMA and the import regime until 1991 through quantitative barriers and high tariffs. In recent years, a state monopoly over grain imports was eliminated and domestic procurement by the government agency, IDEMA, was scaled back and is now limited to poor, isolated areas. Procurement agreements were implemented to guarantee the absorption of domestic production and a minimum guarantee price that depends on the international price and the exchange rate was also set. The procurement agreements were

replaced in 2002 by the Public Mechanism for the Administration of Agricultural Contingencies (MAC) and import contingencies were set by the Ministry of Agriculture allowing a reduction in import tariffs when evidence of the purchase of domestic production was presented. In addition, since 1991 imports of all three grains were covered by the price band system.

Value added tax

In relation to fiscal policies, a value added tax was widely implemented in 1983 in Colombia; however the tax rate varied depending on the product and some goods and services were exempted or excluded from the tax. (The difference between exemption and exclusion is that the former were not subject to the tax and the latter faced a zero tax rate.) Today the general tax rate is set at 16 percent but food products and agricultural inputs receive special treatment. Primary agricultural food products, essential processed food (bread, rice and salt) and fertilizers and agricultural machinery and equipment are among the excluded goods. Meat, fish, eggs and dairy products are exempted goods. A tax rate of 7 percent is applied to roasted coffee, wheat, flour, oatmeal and palm fruit oil. In addition, since 2003 the establishment of new perennial crops such as cocoa, fruit trees, palm oil and rubber are exempt from the tax for 14 years.

Estimates of nominal rates of assistance from price interventions

The present study's methodology (Anderson et al. 2008) defines indicators to study policy-induced agricultural price distortions (as distinct from market factors, infrastructural investments and services that change prices and incentives more generally). The focus is on government-imposed distortions that create a gap between domestic prices and what they would be under free markets. Since it is not possible to understand the characteristics of agricultural development with a sectoral view alone, the project's methodology not only estimates the effects of direct agricultural policy measures (including distortions in the foreign exchange market), but it also generates estimates of distortions in non-agricultural sectors for comparative evaluation, thereby considering the overall economic environment. Our price intervention estimates do not consider the distortions in the market for foreign

currency, however, because the exchange rates in the parallel market do not reflect the level of overvaluation/undervaluation of the official exchange rate.

The nominal rate of assistance (NRA) to farmers is a direct price comparison defined as the price of a product in the domestic market less its price at the border, expressed as a percentage of the border price. This measure thus captures ad valorem import taxes, variable import duties resulting from the price band system (SAFP), quantitative import restrictions, storage subsidies, and any other price-based taxes or subsidies for producers. A crucial task in constructing this measure is to make transport costs and processing/marketing margin adjustments and include any quality premium/discount to ensure the comparison is of 'like' products in the value channel (see Anderson et al. 2008). If the NRA is negative, policies are effectively taxing the production of the commodity; if it is positive, production is being subsidized. And if it is border measures on output alone (not also domestic production subsidies or taxes or distortions on inputs) generating those NRAs, then in the absence of direct consumer taxes or subsidies the consumer tax equivalent (CTE) of those policies will have the opposite sign to the NRA, assuming full pass-through along the value chain.

The nominal rate of assistance incorporates not only the above distortions to output price but also the output price equivalent of product-specific input subsidies/taxes. In including such measures, the following inputs are considered: fertilizers, pesticides and seeds, concentrates and vaccines (for cattle). Colombia is a net importer of agricultural inputs and, except for fertilizer, inputs are subject to import tariffs. The price distortion on inputs are thus measured as the ad-valorem import tariff plus other import surcharges where applicable, except for urea since domestic and international prices were available to capture the subsidy during the 1970s and 1980s before it was eliminated at the end of the 1980s. There were also farm credit subsidies. They are defined as the difference between the market interest rate and the interest rate charged to agricultural producers' times the total annual amount of credit approved.² These input distortions lower the NRA except for a few exceptional years in the 1970s and 1980s, because the tariffs on inputs more than outweigh subsidized fertilizer and credit. The extent of reduction in the NRA is on average 2 percentage points, although it ranges from 0.2 to 6.5 percentage points. The impact is greatest for milk, sugar and rice where inputs account for a higher proportion of the total cost of production.

² Although we should calculate the subsidy on outstanding credit, those data are not available. Thus this subsidy may be underestimated because the average outstanding credit was generally larger than the annual flow of credit.

The production of importable commodities has been subsidized for most of the period with the exceptions of maize (which was taxed in the 1960s and 1970s) and rice and soybean (which were taxed in about one-seventh of the years studied). The lowest assistance rates occurred during the first half of the 1970s when international prices peaked. From 1982, NRAs increased sharply, and rose further for rice, cotton, milk and sorghum in more recent years (Table 3).

The production of exportable commodities shows a mixed history of subsidies and taxation. Coffee was taxed during the whole period except for the years 2000-05 when a direct price support from the government was provided to offset the decline in international prices. Cotton and sugar were taxed during the 1970s when the country still had a comparative advantage in those products, but they have been assisted since then. In the case of sugar, its high price is a result of Colombia having preferential access to high-priced markets abroad – without which it may well not be an exported product - and of the industry being provided protection from import competition at home. Beef was assisted until 1999 and taxed during more recent years, while the reverse is true for palm oil (Table 3).

Policy reforms initiated in 1990 immediately reduced price distortions in seven of our eleven covered products, but they increased distortions in wheat, palm oil and beef. However, in the most-recent five-year period price distortions increased for all but one (beef) of the eleven products.

The NRA for import-competing products decreased from an average rate of 15 percent in the 1960s to -9 percent in the 1970s. The rate then increased markedly, reaching an average of 40 percent during the 1980s and though it declined during the 1990s immediately after trade liberalization, the rate of protection from import competition increased again in recent years to reach levels above 40 percent. The average NRA for exportables, by contrast, was negative until the mid-1990s and turned positive after the turn of the century (Figure 2). This change of trend was due to the sharp increase in the subsidy rate to sugar and to a lesser extent to palm oil, while coffee producers, who were generally taxed over the period, were also supported slightly during the most recent years. If sugar had been treated as an import-competing product (as it could well be without preferential access to foreign markets and a high tariff on imports), the NRA for exportables may still be negative. On average, policies directly affecting these eleven products as a whole were taxing farmers during most years to the end of the 1980s, but since then there has been a steady increase in support for them (Figure 2).

Non-covered farm products also have been affected by government policies. Quantifying that via price comparisons has not been possible, but by dividing that residual group into exportables, import-competing products and nontradables and assuming the NRAs for each of those components of non-covered products are the same as for covered products, a weighted average guesstimate has been generated for each year and is summarized on row 2 of Table 4. Non-product-specific assistance to the industry can also be added in. Unfortunately data for it are available only from 1990, but it amounts to only 2 or 3 percent and would have been even less in earlier decades.³ That then makes it possible to obtain NRA estimates for all agriculture and for the tradables part of the farm sector, shown on rows 5 and 7 of Table 4, respectively. Both NRAs have transitioned from about -10 percent in the 1960s and 1970s to just above zero in the 1980s, to more than 10 percent in the 1990s, and to more than 25 percent in the first half-decade of the present century. Throughout most of the period the NRA for import-competing farm products remained above that for exportables, leading to an anti-trade bias that did not reduce much over the decades (row 6 of Table 4).

This upward trend in NRAs for agriculture contrasts with the opposite trend in the NRA for non-agriculture. The latter has been estimated by again dividing up each of the non-farm sectors into exportable, nontradable and import-competing sub-sectors. Those sectors include non-agricultural primary products, highly processed food, non-food manufactures, and the service sector. Their NRA is estimated directly from the information on import tariffs (including import surcharges) and export subsidies. Prices of nontradables are assumed to be undistorted, including the whole of the service sector.

Highly processed food was protected during the whole period, but at a decreasing rate. The rate declined from an average of 24 percent during the 1960s and 1970s to just 10 percent between 2000 and 2005. The rate of protection in the non-food import-competing manufactures averaged 27 percent prior to 1992, but again protection rates have decreased since then due to the general tariff reductions implemented with the opening of the economy, and its NRA is now below 10 percent (see Appendix Table A1). This is illustrated in Figure 3, together with the reduction in the average NRA for agricultural tradables and the relative rate of assistance (RRA, derived from those two NRAs, as described in footnote c of Table 4). It shows that, relative to other sectors, the taxing of agriculture peaked at around 40 percent in the mid-1970s when international prices were very high, and averaged well over

³ The non-product-specific assistance includes expenditures on research and extension, marketing and promotion, the rural capitalization incentive (ICR), rural development, rural housing, support to displaced people, and land reform.

20 percent before the 1980s. By the 1980s the relative taxing of agriculture had fallen to around 17 percent, before becoming positive from 1992.

Political economy of agricultural policies

This section aims to update previous analysis by García and Montes (1989) and Krueger, Schiff and Valdés (1992), who studied the period up to 1982. A brief summary of that history is presented and then compared with subsequent developments. Colombian agricultural policy during the twentieth century has had three stated primary goals: to resolve balance of payments problems through self-sufficiency in the production of food and non-food agricultural commodities, to maintain price stability and, especially after the opening of the economy, to increase rural employment and reduce rural poverty.

1900 to 1950

Agricultural policy during the first twenty-five years of last century favored agricultural production because of the strong political power of landowners. It had three main elements: incentives to grow and export coffee (and, on occasion, tobacco, rubber, and cotton) through specific subsidies and through reductions in transportation costs; import substitution of wheat, rice, sugar, and oils and fats, mainly by tariff protection; and tariff exemptions for agricultural inputs such as fertilizer, machinery, tools, and barbed wire.

With the increasing importance of manufacturing, gradually the government's emphasis shifted toward cheap food policies, which led to a reduction of tariffs on agricultural products through the so-called Emergency Law (Law 3) of 1926. As a result, food imports almost doubled between 1926 and 1928, and domestic production of wheat, rice, sugar, and other import-competing agricultural products was undermined.

The negative effects of the Great Depression on the Colombian economy led to stronger government intervention and a substantial increase in protection took place. A 100 percent devaluation of the peso in 1931-32, as well as direct subsidies to producers, stimulated coffee production, which was the provider of most of the country's foreign exchange. By the end of the 1930s, given the economic realities imposed by World War II, the government proposed the following objectives: the achievement of self-sufficiency in the

production of food crops (corn, rice, sugar, potatoes) and of raw materials used in clothing manufacture (cotton, hides, furs); and intensified production of tropical exports (coffee, cocoa, bananas, rubber, and others). These objectives, similar to those of the 1920s, also included new funds for agricultural research and extension, credit, storage, and the creation of new farmers' associations. Quotas on the use of domestic import-competing crops were established to promote self-sufficiency, and price controls were introduced to achieve price stability. In addition, the National Institute of Food Supplies (INA – later transformed into IDEMA) was created in 1944 to facilitate the exportation of Colombia's food commodities and the internal distribution of imported commodities.

The early post-war period in Colombia was characterized by rapid industrial growth (9.4 percent per year between 1945 and 1950), heavy rural-urban migration, substantial monetary growth, and increases in imports, mainly of machinery and equipment. Agricultural production also increased rapidly. An increase in food prices, and renewed access to world markets, then led the government to devise a system of "contracts" between the public and private sectors. These "contracts" included a concession of import quotas to industrial firms using imported agricultural raw materials as long as they also purchased a designated amount of domestic production at a fixed price, which was usually higher than the international price, and transferred a portion of their domestic crop purchases to INA. Furthermore, the final product had to be sold at a government-designated price.

Import substitution: 1950 to 1966

The 1950-66 period was characterized by a strong effort to develop an industrial sector through import substitution. The design of economic policy in general, and in agricultural policy in particular, was again influenced by the need to solve balance of payments problems and achieve self sufficiency. The policy of import substitution in agricultural products persisted, and an attempt was made to promote agricultural exports through direct subsidies.

Importable agricultural products used to develop agro-industries based on the processing of products such as cereals, oilseeds and cotton received strong protection, due to agreements between large land owners and the emergent industrial bourgeoisie (Jaramillo 2002).

The overvaluation of the peso during this period reduced the relative price of imported inputs, mainly tractors, thus causing a shift from cattle-raising to crop production that led, in various regions, to expansion of the agricultural frontier. A new system of

subsidized credit was implemented under Law 26 of 1957 which obliged banks to allocate about 15 percent of their loans to agricultural enterprises at below market rates of interest. Government investment in agricultural research and extension was strengthened as well. This period ended with a current account crisis caused by a fall in foreign exchange earnings from coffee exports, an increase in imports and an overvaluation of the peso as the gains from the devaluation of the exchange rate in 1964 were insufficient to reverse the trend.

Export promotion: 1967 to 1974

In 1967 a major effort to rationalize macroeconomic policy management began. It was evident by then that the strategy of import substitution was exhausted, and Colombia began to adopt a policy of freer trade. Decree Law 444 issued in March 1967 adopted a crawling peg system which allowed the peso to depreciate substantially. A new export subsidy in the form of a tax saving certificate (CAT) set at 15 percent was created to promote non-traditional exports (other than coffee, oil and cattle hides). An export promotion fund (Proexpo), financed by a 1.5 percent import tax, was created. All these measures favored agriculture and cultivated land and production of the main commodities increased substantially.

A leading policy issue during this period was the relationship between trade in agricultural products and the impact of such trade on inflation. Exports of food products such as rice and beef were subjected to quotas and other restrictions to ensure that more of the products remained in the country, and price controls were placed on other basic items, such as milk. Imported wheat, meanwhile, was sold at a loss. In short, food policy was consumer-oriented. Although Colombia's new macroeconomic policies were more favorable to agricultural development, specific policies on agriculture fluctuated frequently. The Liberal-dominated regime of 1966-70, insisting on differentiating between "latifundio" (large landholdings) and "minifundio" (small landholdings), reinforced the application of the agrarian reform law of 1961, and introduced some changes to it.

The 1970-74 Conservative Government returned to a policy of promoting agricultural productivity through subsidized credit and expanding the agricultural frontier through fiscal incentives. In addition, it revised agrarian reform law, making it more favorable to landowners. Under the following Liberal government, the fiscal incentives for land expansion were abolished, and the credit subsidy was weakened.

The coffee boom: 1975 to 1981

In this period the world price of coffee increased substantially and Colombia's export earnings multiplied, favoring liberalization. This in turn led to a substantial accumulation of international reserves, an increase in the rate of monetary expansion, and an acceleration of inflation (García and Montes 1988). To ease inflationary pressures, restrictions were placed on the allocation of credit to the private sector, and imports were allowed to increase. Public investment was severely curtailed, including investment in agriculture. Export subsidies were reduced. As a result of these developments, interest rates climbed, and the real exchange rate and relative agricultural prices declined. These developments, in combination with rising real wages and land prices, squeezed profits in agriculture.

Crisis and adjustment: 1982 to 1989

This period started with a current account crisis, and restrictions on imports were increased in an attempt to reactivate the economy. Some commodities that were previously freely imported were shifted to either the prior licensing classification or to the prohibited import list. As well, import tariffs were increased, and an annual import budget was drawn up by the monetary authority. A major devaluation occurred: adjustment in the exchange rate between October 1984 and June 1986 was 84 percent, which led to an increase in the real exchange rate of 12.5 percent. As a result, imports declined and exports grew very rapidly, mainly from the mining and industrial sectors. Agricultural exports began to recover in 1983, and were helped by a mini coffee boom in 1986. During this period the production of tradable crops grew rapidly, thanks to high international prices and the devaluation of the real rate of exchange.

Trade liberalization and structural change: 1990 to 1994

In 1990, the Gaviria administration started an economy-wide program of trade liberalization accompanied by the deregulation of foreign exchange and labor markets. Although the program was initially thought to be gradual, the high levels of protection and the uncertainty caused by its slowness compelled the government to accelerate the process, against the opposition of the different pressure groups in the industrial and agricultural sectors.

By the end of 1991, the trade liberalization process was completed. Quantitative trade restrictions were abolished, import tariffs were reduced, and five levels of ad-valorem tariffs were established: 0 and 5 percent for raw materials, intermediate and capital goods not

produced domestically, 10 and 15 percent for intermediate goods produced locally, and 20 percent for consumption goods.

The role of IDEMA, the state marketing agency that had a monopoly over grain imports, was reduced and limited to poor isolated areas where distance from markets, lack of infrastructure and political unrest deterred private sector intervention. The producer price support based on average production costs was replaced by a system of "minimum guarantee prices", taking as a benchmark the floor price of the band (or world price) adjusted by port and handling costs and by deducting drying and storage costs.

Although the basic criteria of reform was to provide a neutral incentive structure for private decision makers by applying trade measures roughly to the same degree to agriculture and other sectors, this goal was not completely achieved. Powerful farm interest groups, arguing a sharp decline in profits and the collapse of the agricultural sector (mainly grains and oilseeds) due to the opening of the economy, pressured the government to adopt various policy interventions.

In June 1991, with the aim of stabilizing producer incomes in the face of price fluctuations in world markets, the government introduced a price band system for six agricultural commodities including their substitutes and derivatives, covering a total of 112 products.⁴ Despite the stated aim of this policy, the way the price bands were constructed to fix the floor and ceiling prices served as a protective device, providing over-protection to derivative products. In addition, a number of agricultural commodities were protected by the previous licensing system, and coffee export taxes were maintained.

The liberalization strategy also included customs reform with the aim of simplifying the regulatory framework, and reducing costs associated with international trade. Ports were privatized and tariffs and handling costs declined.

In 1992 production from the agricultural sector declined sharply causing a deep crisis and affecting large farmers' incomes. Large farmers pressed the government for reform, arguing that the opening of the economy was the prime cause of the collapse of income, the loss of rural jobs and the increase in rural poverty, social unrest and the level of violence and insecurity.⁵ Several measures were introduced to compensate for the reduction in rural

⁴ The six agricultural products subject to the price band system are known as "markers" and the rest, known as "linked" products, are substitutes or processed versions of the marker products. The tariffs applied to linked products are based on the rate applied to the corresponding marker product.

⁵ Several studies demonstrate that the root of the crisis was not trade liberalization itself but the decline in world prices, a severe drought caused by "el Niño" and the overvaluation of the peso. See Jaramillo (2002), Jaramillo and Junguito (1993), World Bank (1995), Arguello (2000) and Quiroz (2000).

income, reversing the structural change initiative. They included refinancing of debts at preferential interest rates, increased intervention by IDEMA in the marketing of cereals and oilseeds, two new price bands, exports subsidies, increased government expenditure, and the suspension of imports of selected products.

Law 101 issued in 1993 (Ley Agraria) allowed credit subsidies to small farmers, but it also created a system of capital subsidies to cover up to 40 percent of the total cost of investments in all private investments in irrigation and drainage. This tool, called the Incentive to Rural Capitalization (ICR), was expanded to cover installation and maintenance of perennial crops benefiting large farmers who did not qualify for credit subsidies.

Law 160 of 1994 introduced market-based land reform by providing a grant to poor farmers equal to 70 percent of the cost of purchasing a family-size farm. This grant element was needed to compensate for the factors tending to drive the market price of land above the capitalized value of farm profits. This law was intended to promote cooperatives and alliances among small farmers ready to buy land for crop production. Large capital inflows during this period caused a rapid appreciation of the peso, and this contributed in part to a rapid increase in imports, while exports did not increase as expected.

During this period several trade agreements were reached, including with Venezuela and México (G3), Chile, and CARICOM; the Andean Group (a free trade zone created in 1992); and the United States under a program of cooperation and preferential tariffs for selected imports from Andean countries (Andean Trade Preferences ATPA).

Crisis and adjustments: 1995 to 1999

During the 1995-99 period, the liberalization process was maintained but was subjected to adjustments according to the performance of macroeconomic variables and growth of the economy. A new government was inaugurated in August 1994, and within the framework of existing laws it introduced several mechanisms to counteract the liberalization reforms in the wake of the poor performance of the economy and particularly of the agricultural sector. The price band system became the model of the Andean Group (the SAFP) in 1995, and the system expanded to include five new bands reaching a total of 13 bands covering 154 products. The role of this mechanism in stabilizing and protecting agriculture was very important.

Under pressure from farmers associations, Procurement Agreements (convenios de absorción) were introduced for grains and oils where agro-industries exercise oligopsonic

power. The system was based on negotiations between the government, farmers and industrialists to reach agreement on the price paid to farmers and the volume of production absorbed by buyers. In exchange, agro-industrialists were allowed to import at a preferential import tariff previously approved by the Ministry of Agriculture. In other words, this mechanism became a quantitative import restriction as imports were allowed only when domestic production was completely absorbed by processors.

In 1995, direct and storage subsidies to producers of selected sensitive products were introduced, import quotas for certain cereals were established, and the level of the CERT was increased. “Competitive Agreements” between the government and agro-industrialists were promoted to coordinate actions between agricultural producers and manufacturers in selected products (cotton, rice, sorghum, milk and oilseeds). In order to reduce income fluctuations during the crisis, in 1995 the government applied safeguards (temporary import surcharges added to an existing tariff on the grounds that imports were threatening domestic production due to a sharp decline in international prices).

Although agricultural funds existed for selected products (coffee, cotton and cocoa), during this period a large number of additional funds were created. These funds, authorized and supervised by the Ministry of Agriculture, were organized and administered by producers’ associations and served different purposes. Promotion funds supported and promoted research and development programs, the transfer of technology, and marketing. They were financed by direct contributions from producers. On the other hand, price stabilization funds regulated marketing to a unique domestic producer price: markets with higher prices subsidized markets with lower prices.

Despite the implementation of these policies, farmers complained about poor policy outcomes, as agricultural production in a large number of products decreased and profits declined due in part to the appreciation of the exchange rate. In addition, the land reform and job creation objectives so widely promoted by the government showed very limited results. This period ended with a negative rate of growth of GDP in 1999 (-3.8 percent) – something never seen before in the country – and an important devaluation of the exchange rate.

Stabilization and growth: 2000 to 2005

This period is characterized by continuity in the application of past policies and instruments. Despite certain policy adjustments, the level of protection was not altered. The devaluation of the peso continued during 2000, which had a direct impact on the production and profitability

of tradables. However, the nominal exchange rate decreased by 19 percent between 2003 and 2005 and by the end of the period the peso was overvalued. Productive chains and competitive agreements between farmers and processors were strengthened, new sources of credit were available, and the scope of the Incentive to Rural Capitalization (ICR) was widened. Special attention was devoted to the promotion of producers' cooperatives and alliances between small farmers for the production of perennial crops characterized as labor intensive. Palm oil was one of the most favored products, based on optimistic expectations for the production of biodiesel.

Procurement agreements were abolished in 2003 under WTO regulations, but they were soon replaced for selected products by the Public Mechanism for the Administration of Agricultural Contingencies (Mecanismo Público de Administración de Contingentes Agropecuarios – MAC). Under this instrument, a contingent or import volume required to meet domestic demand is announced by the Ministry of Agriculture and auctioned at the Agricultural Stock Exchange (Bolsa Nacional Agropecuaria-BNA) among processors, traders, and retailers wishing to import. Imports are subject to a preferential import tariff. Because imports are restricted, and processors are required to absorb domestic production, protection to producers is maintained under this policy.

Since 2001, direct support to coffee growers has been granted by the government (Apoyo Gubernamental a la Caficultura – AGC) in the form of a price complement. The price complement amount is set according to the evolution of the exchange rate and the international coffee price, and it is subject to the fiscal situation of the central government.

In addition to the SAFP system and ad-valorem import tariffs, since 2002 the new government has implemented a series of measures to stimulate agricultural production and support farmers. Although minimum guarantee prices were abolished, except for cotton, the government created a program of price protection for maize, sorghum and soybean in 2004. Under this program, the government subsidizes up to 80 percent of the cost of the purchase of instruments that protect farmers from exchange rate and international price fluctuations. The policy guarantees a minimum price for producers. The subsidy is also available for buyers of commodities when international prices increase above a ceiling.

In a similar way, export producers also receive an incentive to purchase instruments that protect farmers from overvaluation of the peso. The incentive is equivalent to 80 percent of the purchase cost of the instruments offered by the BNA and funds are allocated among products according to their share in total exports. In addition, producers of bananas and

flowers for external markets are subject to government sanitary incentives that allocate an annual amount of public funds for pest control. Since 2004, new farms producing selected perennial crops have been exempt from income tax for 14 years. These new assistance instruments, especially the price stabilization fund for sugar, palm oil and milk and the AGC for coffee growers/exporters (who were highly taxed in the past) mean that these producers have enjoyed positive NRAs in recent times.

This most-recent period has been important too for the consolidation of trade agreements. In 2005 the trade agreement CAN – Mercosur came into force and in February 2006 a free trade agreement with the United States was signed, pending approval by congress in both countries. Negotiations of the agreement were subject to pressures from farmers' associations demanding higher levels of protection for their products (in terms of market access, import tariffs, safeguards, etc). As a result, products like rice, sugar, maize and poultry meat obtained high import tariffs and long periods for trade deregulation. In addition, the government is preparing a package of incentives for maize, sorghum, soybean, wheat, beans and rice called "Agriculture Secured Income" (Agricultura Ingreso Seguro - AIS).

Conclusions

The political economy of intervention in the agricultural sector can be divided into two significant periods. During the import substitution period (1950-89), farmers' pressure groups sought to reduce the costs of production in terms of inputs and credit, to increase government investment in infrastructure, and to obtain protection from fluctuations in international prices. This led to a dependency on institutional intervention rather than on farmers' own efforts to improve technology and increase productivity. After liberalization, pressure from farmers moved to trade policies and protection mechanisms under the new trade agreements.

In general, the measures adopted after the trade liberalization process have protected farmers, slowing the integration of producers into world markets. In general, the more powerful are farm interest groups, the more isolated they have been from changes in world markets (as typified in the cases of sugar and rice). High levels of protection can also be found when products are very sensitive for consumers and/or producers (e.g., maize) or when the interests of farmers and processors coincide, especially when international markets are subject to strong price fluctuations.

The price band system (SAFP) that was introduced for stabilization purposes also provides important protection. According to recent estimates (Ministerio de Agricultura 2005) the assistance effect of the stabilization price band during the 1995-2002 period was positive with the exception sometimes of poultry meat. It was important for products such as sugar, rice and maize.

One of the objectives of trade liberalization has been to promote the integration of domestic and international markets. Therefore, we might expect the opening of the economy to have increased the transmission of international prices to domestic producers. According to Jaramillo (2002) and Baffes and Gardner (2003), since 1970 wheat, cotton and cocoa have shown high integration with world markets, with no change after the trade reforms of 1991. The protection measures introduced for cotton when it became an importable product have failed to increase production. In the same way, other products associated with powerful interest groups (sugar, rice, banana, coffee and palm oil) do not show changes in the level of price transmission. The lack of market integration for agricultural products after liberalization is due to government interventions through price bands, procurement agreements, incentives and import restrictions. In general terms, it can be concluded that the agricultural sector has been subjected to less trade reform than other sectors during the liberalization begun in the early 1990s.

Within the agricultural sector, the development and growth of the rural sector has favored large farmers, and land ownership continues to be highly concentrated. Very few of the benefits of agricultural reform have reached small farmers. Rural employment grew only very slowly, and the incidence of rural poverty is well above that of urban areas. That is, the land reform initiatives too have not achieved their goal, which is to reduce poverty and inequality.

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Table 1: Official and parallel market exchange rates, Columbia, 1979 to 2005
(Pesos/US\$)

| Year | Official (1) | Parallel (2) | Ratio (2/1) |
|-------------|---------------------|---------------------|--------------------|
| 1979 | 43 | 39 | 0.92 |
| 1980 | 47 | 45 | 0.94 |
| 1981 | 55 | 52 | 0.95 |
| 1982 | 64 | 62 | 0.97 |
| 1983 | 79 | 81 | 1.02 |
| 1984 | 101 | 116 | 1.15 |
| 1985 | 142 | 149 | 1.05 |
| 1986 | 194 | 196 | 1.01 |
| 1987 | 243 | 244 | 1.01 |
| 1988 | 299 | 302 | 1.01 |
| 1989 | 383 | 387 | 1.01 |
| 1990 | 502 | 504 | 1.00 |
| 1991 | 633 | 595 | 0.94 |
| 1992 | 680 | 645 | 0.95 |
| 1993 | 787 | 759 | 0.97 |
| 1994 | 827 | 806 | 0.98 |
| 1995 | 913 | 883 | 0.97 |
| 1996 | 1037 | 1020 | 0.98 |
| 1997 | 1141 | 1096 | 0.96 |
| 1998 | 1427 | 1363 | 0.96 |
| 1999 | 1758 | 1684 | 0.96 |
| 2000 | 2087 | 1958 | 0.94 |
| 2001 | 2300 | 2137 | 0.93 |
| 2002 | 2505 | 2368 | 0.95 |
| 2003 | 2878 | 2695 | 0.94 |
| 2004 | 2626 | 2451 | 0.93 |
| 2005 | 2321 | 2195 | 0.95 |

Source: Banco de la República, www.banrep.gov.co.

Table 2: Shares of selected commodities in total agricultural production valued at distorted prices, Colombia, 1981 to 2004

| | (percent) | | |
|------------------------|-------------|-------------|-------------|
| | 1981-1993 | 1993-1998 | 1995-2004 |
| Annual crops | | | |
| Cotton | 4.4 | 2.5 | 0.8 |
| Rice | 4.9 | 4.7 | 5.0 |
| Maize | 4.2 | 3.4 | 1.4 |
| Sorghum | 1.3 | 1.8 | 0.5 |
| Soybean | 1.3 | 1.0 | 0.2 |
| Wheat | 0.4 | 0.4 | 0.1 |
| Perennial Crops | | | |
| Sugar Cane | 5.8 | 6.3 | 2.4 |
| Palm Oil | 0.8 | 2.0 | 1.8 |
| Coffee | 12.8 | 12.8 | 10.7 |
| Animal Products | | | |
| Beef | 17.5 | 15.7 | 16.7 |
| Milk | 5.8 | 7.3 | 13.2 |
| Total | 59.3 | 57.9 | 52.8 |

Source: Derived from DNP, Valoración de la Producción Agropecuaria, and www.dnp.gov.co

Table 3: Nominal rates of assistance to covered products, Colombia, 1960 to 2005

(percent)

| | 1960-64 | 1965-69 | 1970-74 | 1975-79 | 1980-84 | 1985-89 | 1990-94 | 1995-99 | 2000-05 |
|---|-------------|-------------|--------------|--------------|-------------|-------------|-------------|-------------|-------------|
| Coffee | -12.3 | -26.7 | -21.6 | -27.5 | -22.4 | -19.5 | -6.1 | -21.4 | 6.2 |
| Sugar | 34.6 | 62.0 | -39.0 | -10.4 | 33.3 | 46.0 | 19.6 | 66.0 | 106.3 |
| Wheat | 40.6 | 52.6 | 18.7 | 40.1 | 34.7 | 38.8 | 44.8 | 13.2 | 20.1 |
| Rice | 63.7 | 32.0 | -11.5 | -9.2 | 28.7 | 41.6 | 23.4 | 57.3 | 76.7 |
| Maize | -2.5 | -14.5 | -18.1 | -4.6 | 14.2 | 14.0 | -1.1 | 14.9 | 19.0 |
| Soybeans | 7.1 | 7.5 | -9.3 | 2.3 | 39.6 | 32.0 | 17.2 | 3.9 | 6.4 |
| Cotton | -0.4 | 2.5 | -8.5 | 0.4 | 12.5 | 12.3 | 6.9 | 6.9 | 10.3 |
| Sorghum | -3.7 | -3.7 | -2.7 | 5.2 | 26.0 | 23.8 | 6.4 | 22.1 | 23.5 |
| Palm oil | -4.2 | -4.2 | -3.4 | -2.0 | -2.5 | -3.2 | 33.3 | 13.7 | 44.9 |
| Beef | -1.9 | 6.5 | -10.0 | 10.5 | 5.3 | 2.1 | 8.9 | 6.4 | -9.5 |
| Milk | -3.2 | -3.2 | -3.9 | 5.7 | 96.8 | 25.1 | 18.4 | 44.4 | 94.5 |
| Exportables^{a, b} | -9.6 | -9.8 | -17.7 | -17.5 | -9.2 | -8.8 | 1.7 | -1.7 | 24.9 |
| Import-competing products^{a, b} | 22.9 | 8.2 | -14.8 | -2.8 | 52.7 | 26.6 | 16.7 | 40.0 | 45.5 |
| Total of covered products^a | -2.1 | -6.3 | -16.4 | -14.6 | 3.9 | -0.9 | 6.1 | 10.0 | 27.6 |
| Dispersion of covered products ^c | 28.7 | 34.8 | 21.2 | 29.9 | 42.5 | 34.1 | 27.2 | 31.0 | 43.7 |
| % coverage (at undistorted prices) | 64 | 62 | 65 | 71 | 72 | 68 | 56 | 54 | 52 |

^a Weighted averages, with weights based on the unassisted value of production.

^b For calculation of exportables and import-competing averages, trade status changes during the period, as detailed in the Appendix.

^c Dispersion is a simple 5-year average of the annual standard deviation around the weighted mean of NRAs of covered products.

Source: Author's spreadsheet

Table 4: Nominal rates of assistance to agricultural relative to non-agricultural industries, Colombia, 1960 to 2005

(percent)

| | 1960-64 | 1965-69 | 1970-74 | 1975-79 | 1980-84 | 1985-89 | 1990-94 | 1995-99 | 2000-05 |
|---|--------------|--------------|--------------|--------------|--------------|--------------|------------|-------------|-------------|
| Covered products ^a | -2.1 | -6.3 | -16.4 | -14.6 | 3.9 | -0.9 | 6.1 | 10.0 | 27.6 |
| Non-covered products | 1.8 | -2.2 | -11.7 | -8.1 | 7.8 | 2.6 | 4.5 | 9.4 | 18.1 |
| All agricultural products ^a | -0.7 | -4.7 | -14.8 | -13.0 | 5.0 | 0.2 | 5.1 | 9.7 | 23.1 |
| Non-product-specific (NPS) assistance | n.a. | n.a. | n.a. | n.a. | n.a. | n.a. | 3.1 | 3.5 | 1.9 |
| Total agricultural NRA (incl. NPS) | -0.7 | -4.7 | -14.8 | -13.0 | 5.0 | 0.2 | 8.2 | 13.2 | 24.9 |
| Trade bias index ^c | -0.26 | -0.15 | 0.00 | -0.11 | -0.40 | -0.27 | -0.11 | -0.29 | -0.14 |
| <i>Assistance to just tradables:</i> | | | | | | | | | |
| All agricultural tradables ^b | -0.4 | -5.6 | -19.4 | -16.1 | 4.2 | 0.0 | 9.5 | 14.5 | 28.7 |
| All non-agricultural tradables | 19.3 | 28.1 | 24.4 | 18.9 | 23.7 | 23.5 | 9.6 | 7.9 | 6.9 |
| Relative rate of assistance, RRA^d | -16.5 | -26.0 | -35.3 | -29.5 | -15.7 | -19.1 | 0.3 | 6.1 | 20.3 |

^a NRAs including product-specific input subsidies.

^b NRAs including product-specific input subsidies and non-product-specific (NPS) assistance.

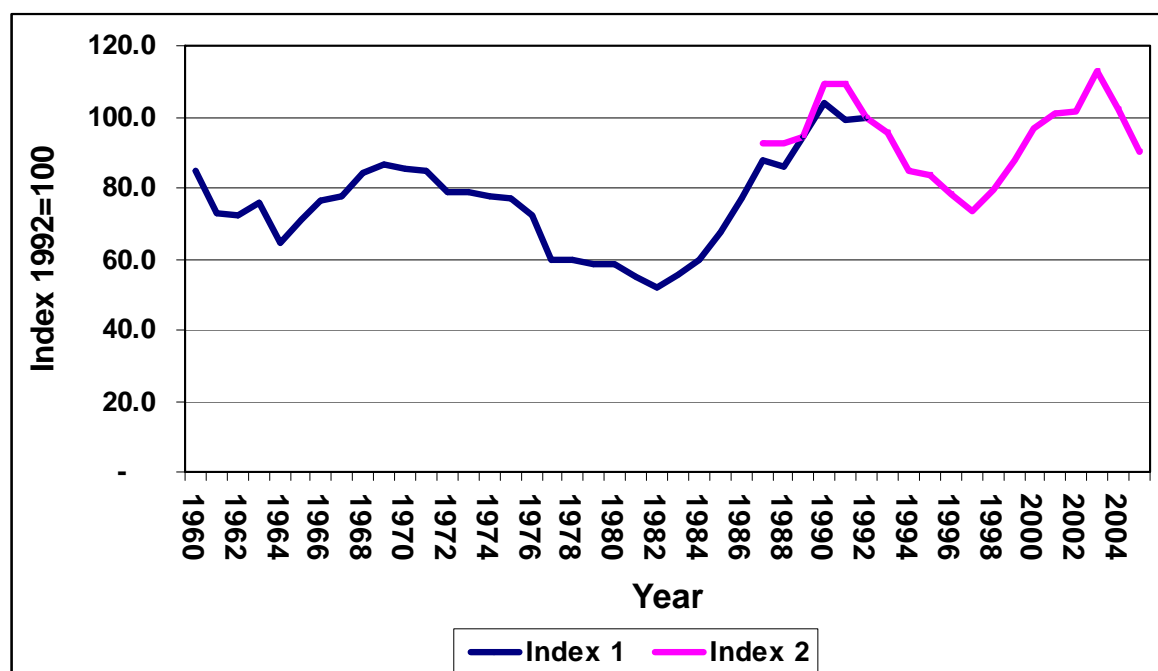
^c Trade Bias Index is $TBI = (1 + NRA_{ag_x}/100)/(1 + NRA_{ag_m}/100) - 1$, where NRA_{ag_m} and NRA_{ag_x} are the average percentage NRAs for the import-competing and exportable parts of the agricultural sector.

^d The RRA is defined as $100 * [(100 + NRA_{ag}^t)/(100 + NRA_{nonag}^t) - 1]$, where NRA_{ag}^t and NRA_{nonag}^t are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Author's spreadsheet

Figure 1: Real Exchange Rate, Colombia, 1960 to 2005

(Index 1992=100)

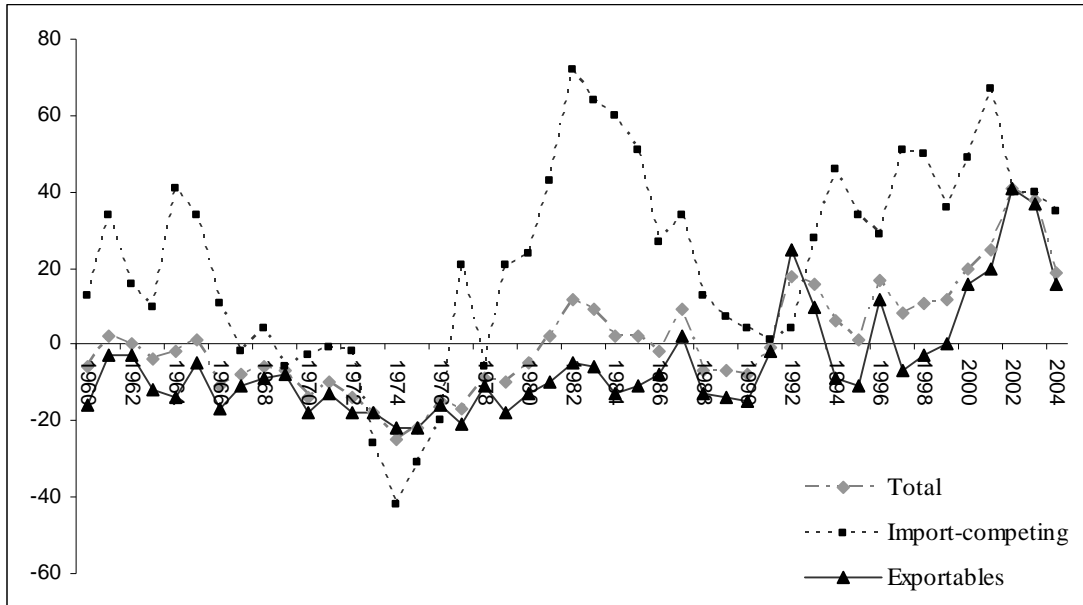


Source: Index 1 (period 1960-1992) from Duarte Guterman & Cia Ltda (1994), Index 2 (period 1987-2005) from Banco de la República, www.banrep.gov.co.

Figure 2: Nominal rates of assistance to products,^a Colombia, 1960 to 2004

exportable, import-competing and all covered

(percent)

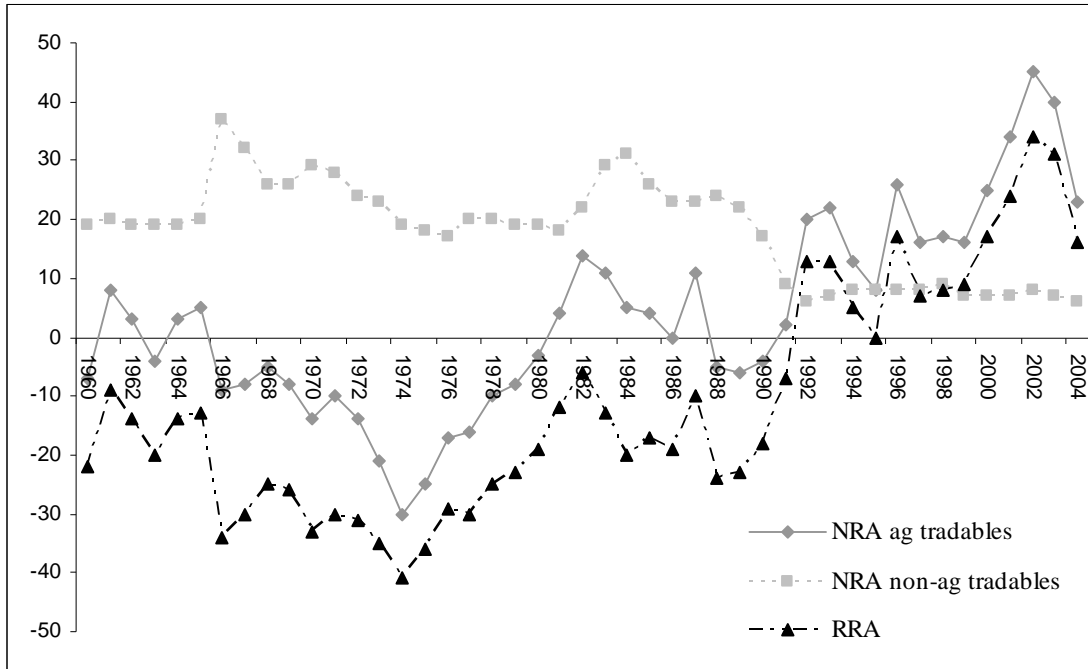


^a The total NRA can be above or below the exportable and import-competing averages because assistance to nontradables is also included.

Source: Author's spreadsheet

Figure 3: Nominal rates of assistance to all non-agricultural tradables, all agricultural tradable industries, and relative rates of assistance^a, Colombia, 1960 to 2004

(percent)



^a The RRA is defined as $100 * [(100 + NRA_{ag}^t) / (100 + NRA_{nonag}^t) - 1]$, where NRA_{ag}^t and NRA_{nonag}^t are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Author's spreadsheet

Coffee

Coffee policy comprises several instruments:

1) The domestic support price, which is the price the National Coffee Federation pays to domestic producers;

2) The reintegro cafetero (surrender price), which is the minimum amount of foreign exchange that coffee exporters must surrender to the Banco de la Republica;

3) The ad-valorem export tax, which constitutes revenue for the central government, suspended in 1993;

4) The “retention quota,” which is a fixed amount of pergamino coffee that private exporters must hand over to the National Coffee Federation per 70 kg bag of green coffee exported (an implicit tax that can be changed easily and used to regulate exports);

5) A differential exchange rate system for coffee exports abolished in 1967;

6) “Pasilla and ripio,” a tax equal to 6 percent of the volume of exports, paid to the National Coffee Fund (although after adjustments for quality between green and “ripio” coffee this tax equates to 1 percent of the value of exported coffee);

7) A contribution equivalent to 5 percent of the international price was established for exports of coffee equivalent to 2 US cents per pound exported; and

8) In 2001 the government established a direct price support to coffee growers (Apoyo Gubernamental a la Caficultura AGC) which varies according to the international price and the exchange rate.

To estimate the revenues to coffee exporters it is necessary to consider on the one hand the distribution of taxes and contributions between the government and the National Coffee Fund and on the other hand the proportion of the resources accruing to the Coffee Federation that are reinvested in the coffee sector, mainly in infrastructure and research. Therefore, one must adjust the domestic price, assuming that only some taxes are “true” taxes on coffee exports and as there is no information available, it is assumed that 50 percent of the taxes collected accrued to the coffee sector.

The support price set by FEDERACAFE is used as the domestic producer price. This price corresponds to 89 kg of pergamino coffee and is adjustable according to the assumption explained above.

The International Coffee Agreement regulated exports of coffee (until 1989), and the International Coffee Organization constructs indicators for the price of each quality of coffee. The indicator used by FEDERACAFE corresponds to the price of other mild arabica plus a given amount depending on the importing region, usually US\$0.02 per pound as applied to the US market. To obtain the dollar price per bag of 70 kg of green coffee (equivalent to an 89 kg bag of pergamino), the indicative price is multiplied by 153.5 which is the number of pounds in a 70 kg bag. This reference price is an ex-dock price. Therefore, to obtain the f.o.b. price it is necessary to deduct the external expenses (freight and insurance). Finally, internal costs (transportation) are deducted to obtain the f.o.b. price Manizales (producer level).

All the prices were expressed in pesos per ton.

All the information for the 1960-1979 period was obtained from Garcia and Montes (1989) and for 1980-1991 from Valdés (1995).

For 1992-2005 all the information for price comparisons was obtained from FEDERACAFE, except for external expenses (freight, port and insurance) and internal expenses (transportation) of exported coffee. The former were assumed to remain constant at US\$15 per 70 kg bag of green coffee and the latter values were generated from the 1991 value using the GDP implicit price deflator.

Composition of costs of Production: from Minsiterio de Agricultura for 1988 and assuming constant proportions during the whole period.

Import tariffs (ad-valorem and import surcharges) for pergamino and green coffee and agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas

Credit to coffee growers from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Cotton

The government has established minimum support prices for cotton seed and cotton fiber for most of the period. Since 1997 if the support price, which is based on the international price, falls below the cost of production, producers receive a direct compensation from the government. Between 1967 and 1995 exports of cotton fiber received an export subsidy (initially the CAT and later the CERT) and for some years exporters of cotton fiber also received an external support price and the differential between the external price and the support price was paid by Proexpo.

To measure price interventions, the reference price for the domestic market was calculated as a weighted average price of cotton fiber received from sales in the domestic and foreign market (inclusive of the CAT/CERT export subsidy and the compensation subsidy received by producers since 1997).

The international border price for the 1960-1992 period, when cotton fiber was exported, was measured as the f.o.b. effective export price of cotton net of export subsidies, excluding the compensation subsidy because information was not available for the whole period. For the 1993-2005 period, when cotton became an importable commodity, the border price was the international price INDEX A. This price was adjusted for external expenses (freight and insurance) and port charges. This value was set at US\$ 60/ton.

To obtain the price of the primary commodity (seed) a conversion factor of seed to cotton fiber of 0.41 was used.

All the information for the 1960-1979 was obtained from Garcia and Montes (1989) and for 1980-1991 from Valdés (1995).

For 1992-2005 domestic and external prices and compensation to producers were obtained from FEDEARLGODÓN. CERT levels from PROEXPORT.

For imported cotton: external expenses and port charges from Ministerio de Agricultura for 2003 and were assumed to remain constant in dollar terms during the period.

Composition of costs of Production: from Caja de Crédito Agrario, Ministerio de Agricultura and FEDERALGODÓN for the years 1981, 1986, 1991 and 2005.

Import tariffs (ad-valorem and import surcharges) for cotton fiber and seed and agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to cotton growers from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Wheat

Wheat has received a support price which has usually been below the producer market price and differs from the effective price paid by IDEMA for domestic production. Until 1992, the domestic price used to make price comparisons was a weighted average of the producer price and the price paid by IDEMA, using as weight the share of IDEMA in the purchase of domestic production. From 1993, when Idema’s intervention almost disappeared, the domestic price was equal to the producer price. This price was adjusted for transportation costs from the producer to the processing center (mill) as price comparisons were made at the processing point.

The border price is the effective c.i.f. import price adjusted for port charges and transport costs from the port to the mills. Port charges decreased from US\$30/ton to US\$8/ton. Internal transportation costs were assumed to remain constant at US\$14 per ton.

All the information for the 1960-1979 was obtained from Garcia and Montes (1989) and for 1980-1991 from Valdés (1995).

For 1992-2005 domestic producer price was obtained from Ministerio de Agricultura and IICA-Agrocadenas.

The c.i.f. import price was obtained from DANE, Anuarios de Comercio Exterior and IICA- Agroacadenas.

Port charges show a decreasing trend to reach US\$8/ton in 2000-2005 according to information from Ministerio de Agricultura for 2003.

Transportation costs from Ministerio de Agricultura for 2003 and was assumed to remain constant at US\$14 per ton for the whole period.

Composition of costs of production: from Caja de Crédito Agrario and Ministerio de Agricultura for the years 1981 1986 and 1991.

Import tariffs for wheat (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to wheat growers from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Rice

The price of rice was supported by IDEMA and has been classified as importable during the whole period. Until 1992 the average domestic price indicator corresponds to a weighted average of the producer price of paddy rice and the price paid by IDEMA, using as weight IDEMA’s share in the purchase of domestic production. Since 1993 the producer price was used. The price of paddy rice was converted into white rice using a constant factor of 1.9.

The border international price corresponds to the price of white rice f.o.b. Bangkok 10 percent broken (which is the quality closest to Colombian rice) adjusted by external costs (freight and insurance), port charges and internal transport costs to farm. The price of imported rice was converted into paddy rice using a constant factor of 2.1.

All the information for the 1960-1979 was obtained from Garcia and Montes (1989) and for 1980-1991 from Valdés (1995).

For 1992-2005 domestic producer price, f.o.b Bangkok price and the conversion factor of paddy into white rice were obtained from FEDEARROZ.

External freight and insurance costs of imported rice equal to US\$18.5/ton from Ministerio de Agricultura for 2003 and assumed constant during the whole period

Port charges and internal transportation costs were obtained following the same approach as in the case of wheat.

Composition of costs of production: from Caja de Crédito Agrario and Ministerio de Agricultura for the years 1981, 1986, 1991 and 2000.

Import tariffs for rice (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to rice producers from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Maize

Colombia produces two types of maize, white and yellow. White maize is mainly used for human consumption while yellow maize is used for animal feed. Though the quality differences between the two types are important, price differences in the domestic market have been very small.

Maize was under IDEMA's support program. The domestic producer price taken to make price comparisons was a weighted average of the producer price and the price paid by IDEMA, using as weight the share of IDEMA in the purchase of domestic production. Since 1993 the producer price was used. This price was adjusted by internal transport costs from the producer center to the processing or consumer center.

Until 1992, there was not an established international market for white maize and only small surpluses were traded; however, yellow maize was widely traded internationally. The border international price for the 1960-1992 period corresponds to quoted prices for yellow maize (American yellow maize No. 2 f.o.b.) and this price was increased by 25 percent to allow for quality differences between yellow and white maize. Between 1993-2005 the international price corresponds to the f.o.b quoted price for white maize.

The f.o.b. price obtained was adjusted by external freight and insurance costs and by internal handling and transportation costs to the processing center.

For the period 1960-1991 all the information was derived from Valdés (1995). This information was obtained directly from Lia Guterman. The domestic producer price from IDEMA. Internal costs of domestic maize refer to the 1989 transportation cost from the farm to the processing center in 1989. This value was based on transportation costs by origin and destination from the Ministerio de Transporte and given the geographical distribution of production and consumption of maize model run by Eduardo Duarte). The values for the rest of the period were generated using the GDP implicit price deflator.

The f.o.b. import price for yellow maize from IMF-IFS and the correction factor of 25 percent from IDEMA. External dollar costs from IDEMA for 1990 and values generated using the USA WPI index. Port charges are based on the 1990 dollar value for 1990 from IDEMA and

the values for the rest of the period were calculated using the USA WPI index. Transportation costs from the port to the processing center of imported maize are based on the same procedure used to calculate transportation costs of domestic maize.

For 1992-2005 domestic producer price was obtained from Ministerio de Agricultura and IICA-Agrocadenas

The f.o.b.international price of yellow and white maize from Ministerio de Agricultura.

External expenses, port charges and transportation costs are based on the 2003 dollar value from Ministerio de Agricultura and are assumed to remain constant for the rest of the years.

Composition of costs of production: from Caja de Crédito Agrario and Ministerio de Agricultura for the years 1981, 1986, 1991 and 2000.

Import tariffs for maize (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to maize produces from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Sorghum

Sorghum was another product whose price was supported by IDEMA. The domestic producer price taken to make price comparisons was a weighted average of the producer price and the price paid by IDEMA, using as weight the share of IDEMA in the purchase of domestic production. Since 1993 the producer price was used. This price was adjusted by internal transport costs from the producer center to the processing center.

The internationally quoted prices (American sorghum No. 2 f.o.b.) was used as the international border price. This price was adjusted by external freight and insurance costs and by internal handling and transportation costs to the processing center.

For the period 1960-1991 all the information was derived from Valdés (1995). This information was obtained directly from Lia Guterman. The domestic producer price from IDEMA. Internal costs of domestic sorghum refer to the 1989 transportation cost from the farm to the processing center using the procedure explained above for maize.

The f.o.b. import price of sorghum from IMF-IFS. External dollar cost and port charges from IDEMA for 1990 and values for the rest of the period were generated using the USA WPI index. Transportation costs from the port to the processing center of imported soybean are based on the same procedure used to calculate transportation costs of maize.

For 1992-2005 domestic producer price was obtained from Ministerio de Agricultura. and IICA-Agrocadenas

The f.o.b.international price of sorghum from Ministerio de Agricultura.

External expenses, port charges and transportation costs are based on the 2003 dollar value from Ministerio de Agricultura and are assumed to remain constant for the rest of the years.

Composition of costs of production: from Caja de Crédito Agrario and Ministerio de Agricultura for the years 1981, 1986 and 1991.

Import tariffs for sorghum (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to sorghum productores from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Soybean

Although soybean was also under IDEMA’s support price program, IDEMA’s intervention was very low. The producer price was taken as the indicator of domestic price. This price was adjusted by internal transportation costs from the farm to the processing centre.

The international quoted prices for US yellow No. 2 were used as the international border prices. This price corresponds to a c.i.f. Rotterdam quotation during 1960-1987; therefore this price was adjusted to obtain the USA port f.o.b. Then the USA f.o.b. price was adjusted by external freight and insurance costs and by internal handling and transportation costs to the processing center. Between 1988 and 2005 the USA f.o.b. price was obtained directly.

For the period 1960-1991 all the information was derived from Valdés (1995). This information was obtained directly from Lia Guterman. The domestic producer price from IDEMA. Internal costs of domestic soybean refer to the 1989 transportation cost from the farm to the processing center using the procedure explained above for maize.

The c.i.f. and f.o.b. import price of soybean from IMF-IFS. External dollar cost and port charges from IDEMA for 1990 and values for the rest of the period were generated using the USA WPI index. Transportation costs from the port to the processing center of imported soybean are based on the same procedure used to calculate transportation costs of maize.

For 1992-2004 domestic producer price was obtained from Ministerio de Agricultura. and IICA-Agrocadena

The f.o.b.international price of soybean from Ministerio de Agricultura.

External expenses, port charges and transportation costs are based on the 2003 dollar value from Ministerio de Agricultura and are assumed to remain constant for the rest of the years.

Composition of costs of production: from Caja de Crédito Agrario and Ministerio de Agricultura for the years 1981, 1986, 1991 and 2003.

Import tariffs for maize (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to soybean productores from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Palm Oil

The domestic price to producers is set by agreement between producers and industrial processors. Between 1990 and 2001 exports of palm oil received an export subsidy (initially the CAT and later the CERT). To measure price interventions, the producer price of crude palm oil (CPO) at the factory level was taken as the reference border domestic adjusted by the CERT

export subsidy. The producer price was obtained from FEDEPALMA for 1966-2005; the price for 1960-1965 was estimated from the 1966 price using the GDP implicit price deflator.

The international border price was the quoted Malasya c.i.f. price Rotterdam of crude palm oil (CPO) from FEDEPALMA. This price was adjusted for external expenses (freight and insurance) and port charges.

To obtain the domestic and international border price of the primary commodity (palm fruit) a conversion factor of fruit to oil of 0.166 was used.

As an importable, the international c.i.f. price was adjusted by port charges and internal handling and transport of imported palm oil to the processing center. The dollar value of port charges and transportation costs were obtained for 2004 from FEDEPALMA and were assumed to remain constant for the rest of the years.

As an exportable, the international c.i.f. price was adjusted to deduct external expenses (freight), port charges and internal handling and transport to obtain the international price at the processing point Malasya. External expenses and port charges equal to 11.6% of the c.i.f. price derived from FEDEPALMA and transportation costs assumed equal to domestic costs.

Composition of costs of production: from FEDEPALMA for 2005.

Import tariffs for palm oil (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to palm oil producers from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Sugar

The domestic producer price of raw sugar and sugar cane is an ex-factory price. For 1960-1989 from Departamento Nacional de Planeación-SITOD; for 1990-2005 Asocaña. This price was adjusted to include the CAT-CERT export subsidy

The international border price corresponds the f.o.b.effective export price obtained from information on value and volume of exports of raw sugar from FAO. To obtain the international price of sugar cane a conversion factor from sugar cane to raw sugar was used. This factor was calculated as the ratio between the domestic price of sugar and the domestic price of sugar cane.

Composition of costs of production: from Ministerio de Agricultura for 2003.

Import tariffs for sugar (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to sugar cane growers from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Beef

The domestic producer price was obtained as the average price of beef received from sales in the domestic and foreign markets (inclusive of the CAT/CERT export subsidy). This price corresponds to the price per head at the Medellin cattle auction market (Feria de Medellin),

adjusted by internal transport costs from Medellín to the Colombian port and expressed in tons of live cattle using a conversion factor of 400 kg per head.

The f.o.b. export price of beef net of export subsidies was obtained as the average effective export price per head of live cattle using appropriate conversion factors for boneless meat (6.5) and whole meat (4.5). The prices obtained were expressed in tons of live cattle using a conversion factor of 400 kg per head.

For the period 1960-1991 all the information was derived from Valdés (1995). This information was obtained directly from Lia Guterman. Domestic producer prices, export prices and conversion factors from CEGA for 1969-1991. The domestic price for 1960-68 was estimated from the 1969 value using the rate of growth of domestic production. The dollar f.o.b. price for 1965-1968 was assumed to be equal to US\$140/head of live cattle.

Internal transportation costs from the Medellín cattle auction market to the Colombian port, representing 1.3 percent of the producer price.

For the period 1992-2005, domestic producer price from Ministerio de Agricultura based on information of the Feria de Ganados de Medellín. Internal transportation costs from Medellín to the port, representing on average 1.8 percent of the producer price.

The f.o.b. export price derived from information of the value and volume of exports from FEDEGAN for live cattle, boneless meat and whole meat, following the same approach explained above for the period 1969-1991.

Composition of costs of production: from Caja Agraria and Ministerio de Agricultura for 1991 and 2003.

Import tariffs for beef (ad-valorem, and import surcharges) and agricultural inputs (fertilizers, seeds, pesticides, concentrates) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to cattle raising for beef production from Departamento Nacional de Planeación, "Valor de los Créditos Otorgados por Línea". Interest rates to producers from Finagro. Market interest rates from Banco de la República.

Milk

Although the government intervened through IDEMA in the marketing of milk, the domestic price taken to make price comparisons was the producer price of raw milk. This price was adjusted by internal transport costs from the producer center to the processing center or port.

In selecting the border price, the objective was to minimize the subsidies given especially by the EEC and USA to exports of milk and its derivatives. Therefore, the international quoted price of New Zealand butter (c.i.f. London) was selected, using a conversion factor of raw milk into butter of 21.1 was used. As an importable, this price was adjusted by external freight and insurance costs, port charges and internal handling and transportation costs to the processing center. As an exportable the international c.i.f. price in terms of raw milk was adjusted to deduct the external costs and obtain the international f.o.b. price Colombian port.

For the period 1960-1991 all the information was derived from Valdés (1995). This information was obtained directly from Lia Guterman. The domestic producer price from Banco de la Republica for 1960-1978; INPA-Nestle for 1979-1991. Internal costs of domestic milk refer to the 1989 transportation cost from the farm to the processing center using the procedure explained above for maize.

The c.i.f. New Zealand Butter from IMF-IFS, expressed in terms of milk using a conversion factor of 21.1. External dollar cost estimated as 15 percent of the c.i.f. international price. Port charges from IDEMA for 1990 and values for the rest of the period were generated using the USA WPI index. Internal transportation costs from the port to the processing center of imported milk are based on the same procedure used to calculate transportation costs of maize. Port charges and international transportation costs obtained using the same approach as in the case of maize.

For the period 1992-2005, producer price from INPA-Nestle until 2001 and Fedegán for 2002-2005. The dollar value of internal transportation costs estimated as US\$12/ton and constant during the rest of the years

The c.i.f. price of New Zealand butter from IMF-IFS. External dollar cost estimated as 15 percent of the c.i.f. international price. Port charges and internal transportation costs of imported milk follow the same procedure as for maize.

Composition of costs of production: from Caja Agraria and Ministerio de Agricultura for 1991 and 2003.

Import tariffs for liquid milk (ad-valorem, and specific) from Ministerio de Agricultura; for agricultural inputs (fertilizers, seeds, pesticides, concentrates) from Departamento Nacional de Planeación, Arancel de Aduanas.

Credit to cattle raising for milk production from Departamento Nacional de Planeación, “Valor de los Créditos Otorgados por Línea”. Interest rates to producers from Finagro. Market interest rates from Banco de la República.

NRA for non-agricultural sectors (see Appendix Table A1)

The source of information for output (Q), exports (X) and imports (M) by sector (National Account classification) was obtained from DANE, Cuentas Nacionales de Colombia for 1964-2003. (See Appendix_Production and Shares_National Accounts.xls)

Tariffs and import surcharges from Departamento Nacional de Planeación, Arancel de Aduanas. (See Appendix_Production and Shares_National Accounts.xls)

Appendix Table A1: Nominal rates of assistance for agriculture and other sectors, Colombia, 1960 to 2005
(percent)

| | 1960-69 | 1970-79 | 1980-89 | 1990-95 | 1996-99 | 2000-05 |
|--------------------------|---------|---------|---------|---------|---------|---------|
| IMPORTABLES | | | | | | |
| Primary agriculture | 15.04 | -8.65 | 39.77 | 19.50 | 41.46 | 45.01 |
| Lightly processed food | 18.57 | -1.33 | 10.74 | 0.95 | 10.27 | 13.37 |
| Highly processed food | 89.30 | 64.11 | 50.16 | 25.49 | 18.32 | 18.99 |
| Non-agricultural primary | 23.72 | 22.43 | 24.77 | 11.16 | 5.30 | 5.28 |
| Non-food manufacturing | 43.74 | 40.44 | 43.34 | 19.11 | 12.00 | 11.83 |
| Services | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| EXPORTABLES | | | | | | |
| Primary agriculture | -10.32 | -17.68 | -8.92 | -0.29 | 0.67 | 25.28 |
| Lightly processed food | 2.50 | -2.66 | 0.83 | 0.23 | 4.45 | 13.27 |
| Highly processed food | 1.82 | 1.85 | 1.76 | 0.56 | 0.43 | 0.10 |
| Non-agricultural primary | 0.06 | 0.14 | 0.13 | 0.06 | 0.06 | 0.01 |
| Non-food manufacturing | 0.15 | 0.62 | 0.54 | 0.37 | 0.18 | 0.06 |
| Services | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| TOTAL | | | | | | |
| Primary agriculture | -2.58 | -12.80 | 4.93 | 9.18 | 16.77 | 27.51 |
| Lightly processed food | 5.04 | -2.32 | 2.22 | 0.29 | 5.15 | 12.75 |
| Highly processed food | 20.23 | 27.12 | 17.69 | 8.73 | 12.69 | 9.73 |
| Non-agricultural primary | 0.06 | 4.28 | 4.12 | 0.06 | 0.06 | 0.01 |
| Non-food manufacturing | 26.75 | 24.68 | 30.15 | 12.53 | 8.32 | 6.44 |
| Services | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |

Source: Author's estimates.

Appendix Table A.2: Nominal rates of assistance to covered products, Colombia, 1960 to 2005

| | (percent) | | | | | | | | | | | |
|------|-----------|--------|--------|-------|------|----------|------|---------|---------|-------|-------|-----|
| | Beef | Coffee | Cotton | Maize | Milk | Palm-oil | Rice | Sorghum | Soybean | Sugar | Wheat | All |
| 1960 | -2 | -20 | 6 | -19 | -3 | -4 | 77 | -4 | 10 | 19 | 37 | -6 |
| 1961 | -2 | -4 | -5 | 8 | -3 | -4 | 75 | -4 | -1 | 35 | 47 | 2 |
| 1962 | -2 | -3 | -13 | -14 | -3 | -4 | 48 | -4 | 10 | 45 | 31 | 0 |
| 1963 | -2 | -16 | 2 | -7 | -3 | -4 | 36 | -4 | 4 | 19 | 18 | -4 |
| 1964 | -2 | -18 | 8 | 19 | -3 | -4 | 83 | -4 | 12 | 55 | 71 | -2 |
| 1965 | 17 | -25 | -11 | -12 | -3 | -4 | 100 | -4 | 12 | 80 | 74 | 1 |
| 1966 | -3 | -32 | 18 | -19 | -3 | -4 | 45 | -4 | 0 | 62 | 44 | -11 |
| 1967 | 8 | -29 | 4 | -14 | -3 | -4 | 6 | -4 | 5 | 79 | 47 | -8 |
| 1968 | 5 | -25 | 3 | -10 | -3 | -4 | 10 | -4 | 8 | 82 | 49 | -6 |
| 1969 | 5 | -22 | -2 | -19 | -3 | -4 | 0 | -4 | 13 | 6 | 50 | -7 |
| 1970 | -10 | -26 | -3 | -22 | -4 | -5 | 15 | -4 | 16 | -3 | 48 | -14 |
| 1971 | -3 | -23 | -11 | -19 | -5 | -7 | 20 | -6 | 4 | -20 | 25 | -10 |
| 1972 | -14 | -22 | -10 | -3 | -4 | -3 | -5 | 15 | -9 | -38 | 40 | -14 |
| 1973 | -12 | -21 | -10 | -12 | -4 | -4 | -38 | -4 | -41 | -55 | -6 | -18 |
| 1974 | -11 | -17 | -9 | -35 | -2 | 2 | -50 | -15 | -17 | -80 | -14 | -25 |
| 1975 | 1 | -17 | 0 | -30 | -3 | 0 | -37 | -16 | -8 | -79 | 13 | -22 |
| 1976 | 9 | -28 | 3 | -25 | -4 | -3 | -20 | -16 | -4 | -53 | 11 | -15 |
| 1977 | 19 | -34 | -1 | 24 | -4 | -1 | 19 | 23 | 8 | 16 | 52 | -17 |
| 1978 | 12 | -23 | -2 | -3 | -4 | -3 | -12 | 9 | 8 | 26 | 86 | -9 |
| 1979 | 11 | -35 | 1 | 12 | 44 | -3 | 3 | 26 | 9 | 39 | 39 | -10 |
| 1980 | 10 | -21 | 5 | 28 | 49 | -1 | -5 | 26 | 17 | -53 | 32 | -5 |
| 1981 | 5 | -20 | 11 | 20 | 92 | -1 | 3 | 28 | 33 | -32 | 35 | 2 |
| 1982 | 9 | -22 | 20 | 26 | 110 | -2 | 53 | 41 | 56 | 101 | 43 | 12 |
| 1983 | 6 | -21 | 20 | 4 | 121 | -3 | 41 | 20 | 35 | 68 | 40 | 9 |
| 1984 | -4 | -27 | 7 | -7 | 112 | -5 | 51 | 15 | 57 | 82 | 23 | 2 |
| 1985 | 4 | -30 | 19 | 8 | 70 | -4 | 55 | 25 | 53 | 143 | 19 | 2 |
| 1986 | 15 | -24 | 36 | 13 | 25 | -4 | 49 | 18 | 33 | 59 | 31 | -2 |
| 1987 | 8 | -5 | 7 | 37 | 33 | -2 | 30 | 49 | 25 | 17 | 52 | 9 |
| 1988 | 3 | -28 | 0 | 7 | -1 | -2 | 56 | 16 | 12 | 23 | 53 | -7 |
| 1989 | -19 | -10 | 1 | 6 | -1 | -4 | 18 | 11 | 38 | -12 | 39 | -7 |
| 1990 | -25 | -3 | -13 | 3 | -7 | 80 | 10 | 5 | 35 | -20 | 64 | -8 |
| 1991 | 2 | -3 | -7 | -12 | 0 | 21 | 4 | 0 | 19 | -4 | 70 | -1 |
| 1992 | 47 | 17 | 13 | -16 | 3 | 23 | 22 | 4 | 13 | 3 | 40 | 18 |
| 1993 | 10 | -5 | 41 | 1 | 35 | 39 | 29 | 8 | 6 | 51 | 30 | 16 |
| 1994 | 11 | -36 | 1 | 18 | 60 | 4 | 51 | 15 | 14 | 67 | 21 | 6 |
| 1995 | -1 | -30 | -7 | 3 | 49 | 6 | 32 | 0 | 7 | 38 | 5 | 1 |
| 1996 | 29 | -17 | 5 | -8 | 37 | 20 | 43 | 21 | -11 | 57 | -12 | 17 |
| 1997 | 5 | -26 | 3 | 12 | 57 | 6 | 79 | 18 | -10 | 72 | 13 | 8 |
| 1998 | 5 | -19 | 14 | 24 | 51 | 3 | 69 | 20 | 5 | 70 | 19 | 11 |
| 1999 | -6 | -14 | 20 | 44 | 27 | 33 | 64 | 51 | 28 | 94 | 40 | 12 |
| 2000 | -20 | -11 | 3 | 39 | 113 | 51 | 66 | 35 | 27 | 119 | 57 | 20 |
| 2001 | -24 | 18 | 22 | 26 | 103 | 65 | 115 | 26 | 23 | 88 | 22 | 25 |
| 2002 | -6 | 25 | -3 | 4 | 134 | 41 | 80 | 16 | 12 | 149 | 9 | 41 |
| 2003 | 17 | 9 | -1 | 8 | 76 | 45 | 78 | 7 | -4 | 104 | 4 | 38 |
| 2004 | -11 | -4 | 7 | 8 | 57 | 34 | 66 | 18 | -26 | 99 | 7 | 19 |
| 2005 | -13 | 1 | 34 | 28 | 84 | 32 | 55 | 40 | na | 78 | 21 | 22 |

Source: Author's estimates

Appendix Table A.3: Value shares of primary production of covered and non-covered products^a, Colombia, 1960 to 2005

(percent)

| | Beef | Coffee | Cotton | Maize | Milk | Palm-oil | Rice | Sorghum | Soybean | Sugar | Wheat | Non-covered |
|------|------|--------|--------|-------|------|----------|------|---------|---------|-------|-------|-------------|
| 1960 | 21 | 26 | 3 | 6 | 6 | 0 | 2 | 0 | 0 | 1 | 1 | 34 |
| 1961 | 21 | 22 | 4 | 5 | 7 | 0 | 3 | 0 | 0 | 1 | 1 | 36 |
| 1962 | 22 | 23 | 5 | 4 | 7 | 0 | 4 | 0 | 0 | 1 | 1 | 33 |
| 1963 | 20 | 21 | 3 | 5 | 7 | 0 | 3 | 0 | 0 | 1 | 1 | 39 |
| 1964 | 20 | 25 | 2 | 5 | 6 | 0 | 3 | 0 | 0 | 1 | 0 | 37 |
| 1965 | 19 | 23 | 3 | 5 | 7 | 0 | 3 | 0 | 0 | 1 | 1 | 38 |
| 1966 | 17 | 25 | 2 | 5 | 6 | 0 | 4 | 0 | 0 | 1 | 1 | 38 |
| 1967 | 16 | 22 | 3 | 4 | 6 | 0 | 5 | 0 | 1 | 1 | 0 | 41 |
| 1968 | 18 | 23 | 4 | 4 | 6 | 0 | 5 | 1 | 1 | 1 | 1 | 37 |
| 1969 | 19 | 22 | 4 | 4 | 6 | 0 | 4 | 0 | 1 | 1 | 0 | 37 |
| 1970 | 20 | 27 | 4 | 4 | 8 | 0 | 3 | 0 | 1 | 1 | 0 | 32 |
| 1971 | 22 | 21 | 4 | 4 | 8 | 0 | 3 | 1 | 1 | 2 | 0 | 34 |
| 1972 | 23 | 19 | 5 | 3 | 7 | 0 | 4 | 1 | 1 | 2 | 0 | 34 |
| 1973 | 20 | 20 | 3 | 4 | 6 | 0 | 6 | 1 | 1 | 3 | 0 | 35 |
| 1974 | 16 | 12 | 5 | 3 | 6 | 0 | 10 | 1 | 1 | 5 | 0 | 41 |
| 1975 | 14 | 15 | 3 | 3 | 5 | 0 | 7 | 1 | 1 | 8 | 0 | 41 |
| 1976 | 15 | 26 | 4 | 3 | 7 | 0 | 5 | 1 | 0 | 3 | 0 | 35 |
| 1977 | 13 | 52 | 4 | 2 | 6 | 0 | 3 | 1 | 1 | 1 | 0 | 16 |
| 1978 | 16 | 37 | 2 | 2 | 7 | 0 | 5 | 1 | 1 | 1 | 0 | 26 |
| 1979 | 17 | 37 | 2 | 3 | 5 | 1 | 5 | 1 | 1 | 1 | 0 | 28 |
| 1980 | 18 | 31 | 3 | 3 | 6 | 1 | 6 | 1 | 1 | 5 | 0 | 26 |
| 1981 | 21 | 28 | 3 | 3 | 6 | 1 | 6 | 1 | 0 | 4 | 0 | 28 |
| 1982 | 23 | 29 | 1 | 3 | 7 | 1 | 4 | 1 | 0 | 2 | 0 | 30 |
| 1983 | 22 | 31 | 1 | 3 | 6 | 1 | 4 | 2 | 1 | 2 | 0 | 28 |
| 1984 | 22 | 28 | 2 | 3 | 6 | 1 | 3 | 1 | 0 | 2 | 0 | 31 |
| 1985 | 20 | 31 | 2 | 2 | 7 | 1 | 3 | 1 | 0 | 2 | 0 | 30 |
| 1986 | 16 | 38 | 2 | 2 | 8 | 1 | 2 | 1 | 1 | 2 | 0 | 27 |
| 1987 | 19 | 26 | 2 | 2 | 8 | 1 | 3 | 1 | 0 | 3 | 0 | 33 |
| 1988 | 16 | 27 | 3 | 2 | 9 | 1 | 3 | 1 | 0 | 3 | 0 | 34 |
| 1989 | 19 | 17 | 2 | 3 | 10 | 1 | 5 | 1 | 1 | 4 | 0 | 36 |
| 1990 | 19 | 18 | 3 | 3 | 11 | 1 | 6 | 2 | 1 | 5 | 0 | 30 |
| 1991 | 13 | 18 | 3 | 3 | 9 | 1 | 3 | 1 | 1 | 6 | 0 | 43 |
| 1992 | 12 | 14 | 2 | 2 | 10 | 1 | 3 | 1 | 0 | 5 | 0 | 49 |
| 1993 | 14 | 14 | 1 | 2 | 10 | 1 | 3 | 1 | 0 | 4 | 0 | 50 |
| 1994 | 13 | 21 | 1 | 2 | 8 | 1 | 2 | 1 | 0 | 4 | 0 | 48 |
| 1995 | 14 | 21 | 1 | 2 | 8 | 1 | 2 | 1 | 0 | 5 | 0 | 46 |
| 1996 | 16 | 16 | 1 | 2 | 11 | 1 | 3 | 1 | 0 | 5 | 0 | 44 |
| 1997 | 14 | 21 | 1 | 1 | 8 | 1 | 2 | 0 | 0 | 3 | 0 | 47 |
| 1998 | 15 | 20 | 0 | 1 | 9 | 2 | 3 | 0 | 0 | 3 | 0 | 47 |
| 1999 | 17 | 16 | 1 | 2 | 12 | 2 | 4 | 0 | 0 | 3 | 0 | 45 |
| 2000 | 18 | 16 | 1 | 2 | 7 | 1 | 3 | 0 | 0 | 3 | 0 | 48 |
| 2001 | 23 | 12 | 1 | 2 | 9 | 1 | 3 | 0 | 0 | 4 | 0 | 45 |
| 2002 | 19 | 12 | 0 | 3 | 8 | 2 | 4 | 0 | 0 | 3 | 0 | 48 |
| 2003 | 15 | 14 | 1 | 3 | 11 | 2 | 4 | 1 | 0 | 4 | 0 | 45 |
| 2004 | 19 | 13 | 1 | 3 | 12 | 2 | 4 | 0 | 0 | 3 | 0 | 42 |
| 2005 | 14 | 11 | 1 | 2 | 7 | 1 | 2 | 0 | na | 3 | 0 | 59 |

^a Valued in US dollars at undistorted farmgate prices, with each row adding to 100 percent.

Source: Author's estimates

Appendix Table A.4: Nominal rates of assistance to covered, uncovered and all agricultural products, to exportable and import-competing agricultural industries^a, and relative to non-agricultural industries, Colombia, 1960 to 2005

(percent)

| | Covered products | Non-covered products | Total ag NRA (incl NPS) | Exportables NRA | Import-competing NRA | All ag tradables | All non-ag tradeables | RRA ^c |
|------|------------------|----------------------|-------------------------|-----------------|----------------------|------------------|-----------------------|------------------|
| 1960 | -6 | -2 | -5 | -16 | 13 | -7 | 19 | -22 |
| 1961 | 2 | 6 | 4 | -3 | 34 | 8 | 20 | -9 |
| 1962 | 0 | 2 | 1 | -3 | 16 | 3 | 19 | -14 |
| 1963 | -4 | -2 | -3 | -12 | 10 | -4 | 19 | -20 |
| 1964 | -2 | 4 | 0 | -14 | 41 | 3 | 19 | -14 |
| 1965 | 1 | 5 | 3 | -5 | 34 | 5 | 20 | -13 |
| 1966 | -11 | -3 | -8 | -17 | 11 | -9 | 37 | -34 |
| 1967 | -8 | -5 | -7 | -11 | -2 | -8 | 32 | -30 |
| 1968 | -6 | -3 | -5 | -9 | 4 | -5 | 26 | -25 |
| 1969 | -7 | -5 | -7 | -8 | -6 | -8 | 26 | -26 |
| 1970 | -14 | -8 | -12 | -18 | -3 | -14 | 29 | -33 |
| 1971 | -10 | -6 | -9 | -13 | -1 | -10 | 28 | -30 |
| 1972 | -14 | -7 | -12 | -18 | -2 | -14 | 24 | -31 |
| 1973 | -18 | -15 | -17 | -18 | -26 | -21 | 23 | -35 |
| 1974 | -25 | -23 | -24 | -22 | -42 | -30 | 19 | -41 |
| 1975 | -22 | -18 | -20 | -22 | -31 | -25 | 18 | -36 |
| 1976 | -15 | -12 | -14 | -16 | -20 | -17 | 17 | -29 |
| 1977 | -17 | -3 | -14 | -21 | 21 | -16 | 20 | -30 |
| 1978 | -9 | -6 | -9 | -11 | -6 | -10 | 20 | -25 |
| 1979 | -10 | -1 | -8 | -18 | 21 | -8 | 19 | -23 |
| 1980 | -5 | 2 | -3 | -13 | 24 | -3 | 19 | -19 |
| 1981 | 2 | 7 | 3 | -10 | 43 | 4 | 18 | -12 |
| 1982 | 12 | 13 | 12 | -5 | 72 | 14 | 22 | -6 |
| 1983 | 9 | 11 | 9 | -6 | 64 | 11 | 29 | -13 |
| 1984 | 2 | 6 | 3 | -13 | 60 | 5 | 31 | -20 |
| 1985 | 2 | 6 | 3 | -11 | 51 | 4 | 26 | -17 |
| 1986 | -2 | 3 | 0 | -8 | 27 | 0 | 23 | -19 |
| 1987 | 9 | 8 | 9 | 2 | 34 | 11 | 23 | -10 |
| 1988 | -7 | -1 | -5 | -13 | 13 | -5 | 24 | -24 |
| 1989 | -7 | -3 | -6 | -14 | 7 | -6 | 22 | -23 |
| 1990 | -8 | -3 | -4 | -15 | 4 | -4 | 17 | -18 |
| 1991 | -1 | 0 | 1 | -2 | 1 | 2 | 9 | -7 |
| 1992 | 18 | 7 | 16 | 25 | 4 | 20 | 6 | 13 |
| 1993 | 16 | 10 | 17 | 10 | 28 | 22 | 7 | 13 |
| 1994 | 6 | 8 | 10 | -9 | 46 | 13 | 8 | 5 |
| 1995 | 1 | 5 | 6 | -11 | 34 | 8 | 8 | 0 |
| 1996 | 17 | 11 | 21 | 12 | 29 | 26 | 8 | 17 |
| 1997 | 8 | 10 | 13 | -7 | 51 | 16 | 8 | 7 |
| 1998 | 11 | 11 | 13 | -3 | 50 | 17 | 9 | 8 |
| 1999 | 12 | 9 | 13 | 0 | 36 | 16 | 7 | 9 |
| 2000 | 20 | 17 | 20 | 16 | 49 | 25 | 7 | 17 |
| 2001 | 25 | 21 | 26 | 20 | 67 | 34 | 7 | 24 |
| 2002 | 41 | 21 | 34 | 41 | 40 | 45 | 8 | 34 |
| 2003 | 38 | 20 | 31 | 37 | 40 | 40 | 7 | 31 |
| 2004 | 19 | 14 | 18 | 16 | 35 | 23 | 6 | 16 |
| 2005 | 22 | 16 | 20 | 20 | 42 | 28 | 6 | 20 |

^a NRAs including product-specific input subsidies, assistance to nontradables, and non-product-specific (NPS) assistance.

^b The Relative Rate of Assistance (RRA) is defined as $100 * [(100 + NRA_{ag}^t) / (100 + NRA_{nonag}^t) - 1]$, where NRA_{ag}^t and NRA_{nonag}^t are the percentage NRAs for the tradables parts of the agricultural and non-agricultural sectors, respectively.

Source: Authors' estimates