10 The Contribution of Agriculture to Growth: Colombia

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As a perusal of Colombia's economic history makes clear, agriculture has been central to the economy's generally satisfactory performance. Agriculture's postwar growth rate (3.7 percent over 1950–80) was well above the average for developing countries and was unusually high in relation to the growth rate of GDP (5.1 percent over 1950–80). During the years of fastest GDP growth (5.9 percent in 1965–80), agriculture grew at 4.5 percent, which was somewhat higher than its longer-period average. This chapter therefore gives special attention to the latter period.

Despite this record, the relatively low ratio of nonagricultural growth to that of agriculture might suggest a smaller positive spinoff from agriculture than might have been hoped for; the nonagricultural sector as a whole grew a little less than 6 percent annually over this period. Why the ratio was low is a complicated matter to explain, since there is no "correct" ratio between the growth of agriculture and nonagriculture, given that countries vary greatly in their resource endowments and policy options. That Colombia achieved its creditable growth rate with a rather low gross investment ratio in comparison with that of other countries of Latin America suggests that its growth process has been relatively efficient.

Of interest from a longer-term perspective, Colombia took off on a path of fairly sustained growth following the rapid expansion of coffee production and exports during the late nineteenth and early twentieth centuries. During much of the nineteenth century, the country had a variety of agricultural and extractive exports, but the quantum per capita remained low. That ratio increased substantially once coffee became the leading export (Ocampo 1984, 1991). Coffee has been the main commodity export ever since, accounting for 60–80 percent of legal exports during most of that period, falling to 55 percent during the 1970s and to less than 50 percent during the 1980s (table 10.1).

For most of the study period agricultural exports as a group accounted for 70 percent or more of total legal commodity exports (the 1970s average was 78 percent); in the early postwar years bananas came a distant second to coffee,

TABLE 10.1 Composition of exports in Colombia during the twentieth century (percent)

Period	Coffee	Gold	Oil, Fuel Oil, and Coal	Other Primary	Manufactures
1905–9	39.0	19.7	—	← 41.3 →	
1910–19	51.3	12.1	—	36.7	
1922–29	70.6	4.1	9.2	16.0	
1930–39	57.1	12.1	19.8	11	
1940–49	66.4	11.5	14.5	7.7	
1950–59	77.5	2.6	14.0	6	
1960–69	65.0	2.3	14.8	12.1	5.9
1970–79	54.2	2.3	5.4	18.2	19.9
1980–89	42.2	6.9	15.1	← 35.9 →	

SOURCES: Ocampo (1990, 220, table 9.2). Original sources are *Anuario de Comercio Exterior* and the Banco de la República for gold exports over the whole period and for the composition of exports in 1985–89.

while in more recent years a variety of items—including cotton, sugar, and flowers—have attained some importance. Tobacco and beef have long been exported, though never in such quantities as to take on macroeconomic importance. In none of these other commodities did Colombia have the large comparative advantage with which coffee was endowed; it could be produced competitively and in quantity, so large rents were generated. One of the notable costs of depending on coffee as the main source of foreign exchange, however, was that the economy became vulnerable to macroeconomic fluctuations; the price of coffee has been notorious for its volatility, and this behavior has substantially complicated the management of the economy and probably slowed its growth over the long run.

Although coffee, and to a lesser degree the other agricultural exports mentioned, earned the foreign exchange Colombia needed to modernize the economy, the rest of the sector has provided such a wide range of food items and inputs for industry that the country has never had to depend extensively on imports for either of these purposes. Most of the food needs of the population, both urban and rural, have traditionally been met by relatively small family farms, while a high share of beef is produced on the country's larger farms. International price comparisons show that food is relatively cheap in Colombia. Trade does not loom large in the supply of food; in the period 1970–83, for example, imports averaged 4.1 percent of real gross output and exports 6.1 percent (García and Montes 1988, 16). Although the country is thus a net exporter not only of agricultural goods as a whole but also of food products, the manufacturing sector had a negative net trade balance equal to 18 percent of the sector's real gross value of output.

The share of capital formation financed out of agricultural income has

likely been substantial, and the transfer process has probably been both facilitated and rendered more efficient by the intraportfolio nature of a good part of it, as discussed in the next section. The extent of agriculture's contribution to the rest of the economy through other linkages is less clear. The agricultural market for manufactured goods has of course been substantial; as of 1950, more than a third of national income was generated in agriculture. Since Colombia has a high level of income inequality, both in agriculture and in the economy as a whole, the demand effects of agricultural growth would not be expected to fall as heavily on wage goods as in more egalitarian countries. This unequal distribution, the correspondingly limited rural demand for locally produced nonagricultural commodities, and the modest supply of savings looking for a local investment outlet probably help to explain the low density of nonagricultural activity in Colombia over most of the postwar period, at least by the standards of Asian countries. Preliminary analyses suggest a rather marked increase in these rural nonagricultural activities over the past decade or so, however, and therefore raise the question of whether agriculture-nonagriculture linkages have changed in character during this recent period.

Many features of Columbia's socioeconomic system are typical of the countries of Latin America: they have a relative abundance of natural resources per person, certainly in comparison with the countries of Asia, and probably those in Sub-Saharan Africa as well; they all have a middle-income level; they tolerate a highly unequal distribution of income and of land; and they pursued import-substituting industrialization in the post–World War II period. Country-specific features include Colombia's marked regionalism, as reflected by the presence of several important urban centers, each dominating a hinterland that earlier in the country's development was isolated from other similar regions by distance and difficult topography; the history of political violence between the two major political parties, centered for the most part in the rural areas; and the country's relatively conservative monetary and fiscal policy, which has kept its inflation rate low by the standards of the region and its public sector moderate in size in comparison with the public sector of some other Latin American countries.

In assessing the contribution of agriculture to economic development in Colombia, one is not primarily concerned with how fast it grew itself (highly subsidized growth, for example, could be unhealthy) but with how much it helped overall growth. A strong contribution to overall growth could be the result simply of a favorable resource endowment, but it would always benefit from effective policy, including the provision of infrastructure; research and extension to improve the level of technology; the provision of credit or inducement to the private financial system to do so; the maintenance of appropriate price incentives, which may or may not involve extensive intervention in product or factor markets but always involves exchange rate management; and other aspects of the tax and subsidy system. Since trade policy helps shape the

environment in which agricultural performance takes place—because of its effects on relative prices, market size, and stability—the policies applied in that domain in Colombia must be examined briefly before the evolution of the agricultural sector itself can be fully understood.

The Macroeconomic Environment

Colombia's postwar economic policy was fairly typical of the region. It included a heavy dependence on agricultural exports; a significant episode of import-substituting industrialization, having its roots in the experience of the Great Depression and the associated traumatic drop in the terms of trade, and normally involving some degree of "discrimination" against agricultural exports (via lower relative prices); and a tendency during the more inward-oriented phase to favor an overvalued exchange rate, as a result of internal inflation combined with a fixed exchange rate system kept in place by a political unwillingness to devalue except in extreme circumstances.

Colombia's incentive system, however, appears to have been somewhat less heavily oriented toward import-substituting activities than the incentives of many other Latin countries. The pivotal step toward a more efficient regime, which urged the adoption of a floating exchange rate, came relatively early (1967) and heralded a decade or more of rapid growth. Because Colombia's monetary and political system was on the conservative side, at least in the context of Latin America, inflation was low up through the 1960s, except for periodic bouts following on significant devaluations. Both the size of the public sector and the fiscal deficit were of modest proportions.

A protectionist trend that began in the mid-1880s grew stronger in the wake of the Great Depression, which ushered in a period of major structural transformation in the economy. Since that time, exchange controls have been a permanent feature of public policy, accompanied by an active exchange rate policy and a variety of protective devices (Ocampo 1991, 134). Protection was increased by the tariff reforms of 1950, 1959, and 1964, the latter two of which were induced by the collapse of coffee prices; extensive use of nontariff protection reinforced the effects of the tariff regime. These moves toward import substitution were accompanied by a set of policies designed to promote export diversification, beginning with preferential exchange rates for nontraditional exports in 1948, a drawback system in 1957, and tax incentives and subsidized credit. Decree 444 of 1967 imposed some order on these varied components of the system and guaranteed a stability not previously present.

After the short recession of 1957–58, which followed the collapse of coffee prices, this "mixed" policy package (the term is from Ocampo 1991, 135) coincided with a period of good average growth (4.9 percent over 1959–67; see table 10.2), despite severe foreign exchange bottlenecks and unstable capital flows. Diversification of the manufacturing sector and of exports was by

TABLE 10.2 Growth of GDP and GDP per capita, 1965–1986

Year	GDP Deflator (1980 = 100)	GDP (billions of current pesos)	GDP (billions of 1980 pesos)	Annual GDP Growth Rate (%)	Population (thousands)	GDP per Capita Growth Rate (%)
1965	8.97	60.80	678.14	3.62	16,425	12.57
1970	14.40	132.80	922.22	6.91	21,266	3.80
1975	33.20	405.10	1,220.18	2.19	23,502	1.35
1980	100.00	1,579.00	1,579.00	4.38	25,892	2.30
1985	277.50	4,881.00	1,758.92	2.88	28,418	0.98
1986	344.10	6,362.00	1,848.88	5.11	28,961	3.14

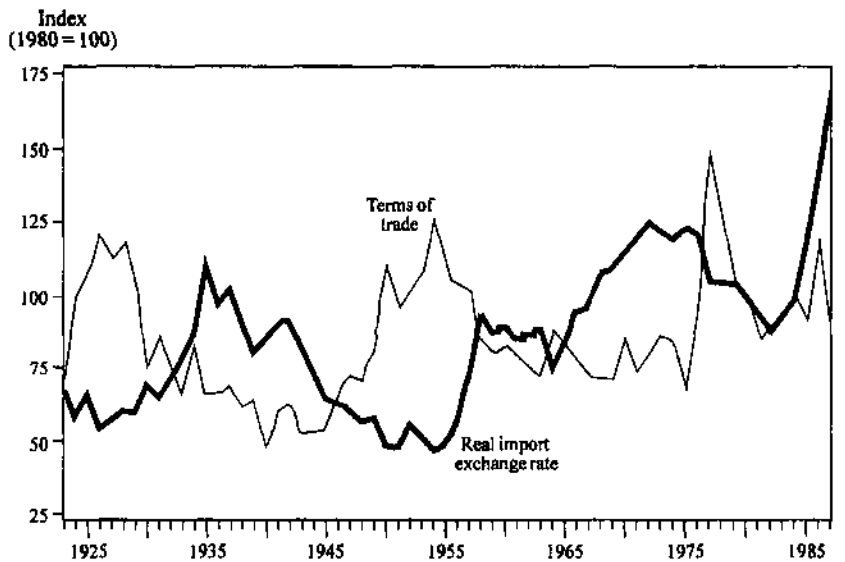
SOURCE: World Bank (1987).

then under way. The post-1967 period saw a trend toward import liberalization, intensified in 1979–81 to stabilize prices that were then under pressure from the large public works program implemented by the administration of President Julio Cesar Turbay (1978–82) and the large fiscal deficit financed by borrowing abroad and by monetary creation; after 1982 the liberalization was drastically reversed. The economic slowdown of the early 1980s was associated with the revaluation of the peso and the restrictive monetary policy designed to offset an expansionary fiscal policy.

Colombia's real exchange rate has gone through several long cycles since the early twentieth century. The Great Depression forced a large devaluation, after which the nominal exchange rate was held constant for 14 years. Next came a major appreciation, which ended with the crash of the coffee price in the mid-1950s and the ensuing devaluation. No clear trend emerged during these stop-go cycles, which ended with the adoption of the floating exchange rate in 1967 and an associated real devaluation in the early 1970s. The reversal that followed brought the rate back to about the level of the pre-1967 decade. The terms of trade for agriculture followed a similar long-run pattern, with positive movements coinciding with real exchange rate appreciation and vice versa (figure 10.1).

Fluctuations around the GDP growth trend have been related to the country's international trade cycles, although the economy did reasonably well even when the foreign sector was not booming. The gap in the growth rate between the periods of "strong" and of "weak" trade performance has not been dramatic. The share of exports of goods and services in GDP (measured at constant 1975 prices) trended down from 24 percent in the late 1930s to a low of 14 percent over 1980–84, but the trend was reversed in the past few years (table 10.3). In the first rapid expansion after the war, during 1945–55, the growth rate reached a little more than 5 percent per year. This expansion was fueled by the running down of foreign exchange balances built up during the war and by

FIGURE 10.1 The exchange rate: terms of trade link, 1925–1985.



Source: Ocampo (1991), fig. 9.3.

the high price of coffee. When the coffee price fell, growth slipped to 2.3 percent over 1956–58 and to an average of 4.4 percent over 1955–67. The average growth of 5.7 percent in the second boom period, 1967–80, was helped along both by a marked improvement in the terms of trade and by the reforms of the trade incentive system mentioned earlier. The dynamism up to the mid-1970s is commonly attributed to the improvement in export performance wrought by this policy reform and the high growth in the late 1970s to the combination of record high coffee prices and the influx of income from the export of illegal drugs.[1] Export quantum grew at an undramatic 6.4 percent over 1966–75 and then slowed markedly; in this subperiod nearly half of the increased international purchasing power from which the economy benefited was the result of the positive shift in the terms of trade (see World Bank 1987, 100–101). Toward the end of this period the abundance of foreign exchange had Dutch disease effects on the other tradable sectors and, together with a burst of government borrowing abroad and spending at home, paved the way for the balance of payments crisis of the early 1980s. The crisis was finally precipitated

1. The official national account figures used here understate growth for a period beginning in the mid-1970s. Therefore true figures for 1974–80 and 1965–80 would be somewhat higher than those given here.

TABLE 10.3 Export growth, 1900–1988

Period	Coffee Exports (thousand bags)	Quantum Indices (1970–74 = 100)		Purchasing Power of Exports (1970–74 = 100)	Exports of Goods and Services as Percentage of GDP (1975 prices)
		Primary Products	Total		
1900–04	542				
1905–09	604	8.8	7.2	7.4	
1910–14	837	12.8	10.5	13.2	
1915–19	1,244	17.2	14.1	12.8	
1920–24	1,906	27.1	22.2[a]	23.1[a]	
1925–29	2,451	34.3	28.0	38.3	24.0
1930–34	3,149	43.0	35.2	33.1	24.4
1935–39	3,972	53.6	43.8	34.8	24.0
1940–44	4,370	57.5	46.9	31.2	20.4
1945–49	5,429	68.4	55.9	47.1	21.0
1950–54	5,337	72.6	59.3	78.0	18.4
1955–59	5,523	74.1	60.5	70.3	17.2
1960–64	6,139	84.7	70.1	68.1	16.0
1965–69	6,076	92.3	80.9	73.6	15.6
1970–74	6,656	100.0	100.0	100.0	14.9
1975–79	7,990	113.5	123.8	162.7	15.1
1980–84	9,685	139.2	147.8	169.1	14.1
1985–88	10,613	180.8[b]	229.0	268.0	17.3[c]

SOURCE: Ocampo (1991), table 1. Original sources are cited there.
[a]1923–24.
[b]1985–86.
[c]1985–87.

by the recession in the world economy, the high interest rates, and the return of coffee prices to more normal levels (García and Montes 1988).

It is difficult to determine the periods in which Colombia's incentive system was significantly biased against international trade. As in most developing economies, the transportation and trading systems were geared to international trade and biased *against* internal trade.[2] What is clear is that throughout its history the republic continued to search for new exports and to protect import substitutes, these substitutes often a by-product of the need for tariff revenues. Accordingly, it is hard to assess the efficiency of the import substitution that accompanied (or produced) the structural transition of the postwar period.

2. Londoño (1989a and 1989b) has analyzed Colombia's structural change in the light of the cross-country patterns identified by Kuznets and Chenery and concluded that in the early twentieth century the economy was more agricultural and less industrial than "normal," as well as being more export-oriented. It remains to be seen whether further analysis will prove this interesting proposition valid.

Growth during the height of that phase was acceptable and was achieved with modest savings and investment rates, typically in the range of 17–20 percent, which suggests relatively good marginal output-capital ratios (0.31 for the 1970s) by comparison with other countries (0.24 for Latin America as a whole) (see ECLA 1985:224–25; Berry 1987a:11). This phase also contributed in a variety of ways to the modernization of the agricultural sector.

Colombia departed from its long tradition of monetary and price stability (the average rate of inflation was not much above 10 percent since almost the turn of the century) following the 1967 boom. The growth of the money supply suddenly jumped from 16 percent per year over 1966–72 to 26.4 percent over 1972–82, and in the short span of 1971–74 the inflation norm shifted up from its former modest level to about 25 percent per year, where it has remained since then.

Agricultural Growth

What have been the key ingredients of agricultural growth in Colombia and how well has agricultural policy been conceived and applied? It is important to understand both the proximate (supply-side) sources of growth (increases in the level of inputs and improvements in efficiency/technology) and their determinants, which include input and output prices and such nonprice factors as the opening up of new lands and technological change resulting from government efforts in research. Demand affects the growth of output by influencing capacity utilization in the short run, but its more important role is to act as a determinant of the rate of growth of capacity. In what follows, I look at the proximate sources of output growth and then the underlying role of demand and prices. First, however, it is important to have some idea of the components of Colombia's agricultural sector.

Structural Features of the Agricultural Sector

Colombia's agricultural sector consists of several significant subsectors. For more than a century coffee has been the main export commodity; it is produced in important quantities both by small farms and by large ones. Another sector consists of small-scale operations that are dedicated mainly to the production of food crops for domestic consumption and that in the past relied on traditional-technology. Livestock is a third sector. It used to be composed mainly of fairly traditional cattle haciendas, but more and more of them are becoming modern and heterogeneous operations. There is also a modern, large-scale crop sector consisting of sugar (for refining), cotton, rice, soybeans, and several other crops. The relative weights of these subsectors in production and their technological features have changed over time, sometimes significantly. Though there are grey areas between these categories, most farms fall clearly in one or another. Note, too, that Colombia is not a country of primarily "mixed"

farms that strike a balance between crops and livestock or between exportables and traditional food crops.

This range of farm types can be traced to the country's varying topography and ecology, as well as to its social structure. The high Andean regions, with their difficult terrain and limited flatlands (mostly in river valleys), were the first to be heavily settled because the health risks there were not as great as in the lowlands. The area eventually became densely populated, with the agrarian structure ranging from some combination of *latifundia* and *minifundia* (e.g., in the region near Bogota) to virtually total *minifundia* (e.g., in the southern department of Nariño). The settlement of new lowland areas added many large farms, most of which focused on cattle ranching. The highly broken terrain in some of the coffee zones opened up in the late nineteenth and early twentieth centuries gave rise to a small producer sector, partly because wealthy absentee owners or would-be owners would have difficulty maintaining control over lands that took weeks to reach by mule. The large-scale, modern crop farms found their home in the few accessible regions with good-quality land and level terrain.

The small noncoffee farms probably have the most complicated product mixes. The main annual crops are corn, beans, potatoes, and yuca, while the main permanent ones are *platanos* (green bananas) and sugar for *panela* (the traditionally consumed block brown sugar). About 65 percent of noncoffee output corresponds to nontradables, almost entirely food for direct consumption (MEDSA 1990, 355). Together with their cropping land, these small farmers currently control a little less than a quarter of the land under pasture. Their share of production is greatest in dual-purpose cattle and in small animals (especially hogs), but it is now low in the case of chickens (5.3 percent) because of the large capitalization of this industry over the past few decades (MEDSA 1990, 359).

As might be expected in a heterogenous agriculture, yields tend to vary widely in most crops, both across regions and by type of farm (MEDSA 1990, 130). Smaller producers tend to have below-average yields on a crop-by-crop basis, but performance varies widely among both small and medium-large producers.

The sector's heterogeneity is also related to the wide range of farm sizes in the country. As 1960 agricultural census data make clear, (table 10.4), the distribution of land was extremely unequal; the smallest 63 percent of farms (those with less than 5 hectares) worked less than 5 percent of the land, whereas the 9 percent with 100 hectares or more worked 65 percent of it.[3] Further contributing to income inequality was the fact that many of the small units were

3. These data must be interpreted with caution because of the variation in land quality; the unadjusted data tend to exaggerate the concentration of land.

TABLE 10.4 Aspects of Colombia's agrarian structure, 1960

Size of Farm (hectares)	Farms (%)	Area (%)	Farms Rented (%)
Less than 5	62.55	4.5	28.83
5–10	13.98	4.3	19.32
10–20	9.44	5.9	15.15
20–50	7.17	9.7	10.55
50–100	3.30	9.8	7.08
100–500	2.98	25.5	5.56
500–1,000	0.42	10.0	3.91
1,000 and up	0.28	30.4	3.11
All	100.00	100.00	23.34

SOURCE: DANE (1964), 42.

rented, and that about half of all renters were sharecroppers. The smaller farms were far more labor-intensive operations: the ratio of labor to "effective" land (i.e., amount of land adjusted for quality differences) was about eight times higher on the farms less than 5 hectares than on those greater than 100 hectares (Berry 1973, 219). As a result, labor productivity was much higher on the larger farms, and land productivity greater on the smaller ones. Total factor productivity did not appear to vary greatly across the size classes of farms; if anything, it appeared to be a little higher in the middle-sized farms (5–50 hectares) (Berry 1973, 220), but since such estimates are prone to error, any such conclusion must be viewed as tentative.

The Process of Agricultural Growth

The main proximate sources of growth over the period under consideration have been capital formation and increased productivity, although the available estimates on capital formation and capital stock (especially for the crop subsector) are rather tenuous. The average annual output growth over 1950–80 was 3.95 percent, and of that figure productivity growth accounted for about 2.15 points (a considerable part of which was associated with the shift from low-value to higher-value crops), capital formation for about 1.3 points, area expansion (at 1.5 percent per year) for about 0.25, and the labor force increase for a similar amount (table 10.5). The land/labor ratio rose nearly 1 percent per year, for a significant increase of about 35 percent over the period as a whole, while estimates of the capital/labor ratio imply an increase of 125 percent, or somewhat more than 2.5 percent per year. The labor share of value added fell from close to 50 percent in the first half of the 1960s to less than 40 percent by the early 1980s, while that of capital rose from 35 percent in 1960 to nearly half by 1982, and that of land fell from 19 percent to 15 percent (Romano 1987).

With total factor productivity gains probably accounting for about half of

TABLE 10.5 Sources of agricultural growth, 1950–1987 (percent)

	Average Rates of Growth				Contribution of Total Growth				
Period	Agricultural Output	Area	Capital	Labor	Area	Capital	Labor	All Factors	Factor Productivity
1950–65	3.29	1.05	1.10	0.99	0.19	0.37	0.47	1.03	2.26
1965–80	4.61	1.95	5.38	0.00	0.36	2.22	0.00	2.58	2.03
1980–87	2.01	1.23	1.37	0.70	0.18	0.66	0.26	1.10	0.91
1950–80	3.95	1.50	3.22	0.49	0.27	1.29	0.23	1.80	2.15

SOURCE: Calculated on the basis of data presented in MEDSA (1990), cuadro 1.12.

the output growth over the period 1950–80, and for more than 2 percent per year in absolute terms, it is clear that technological improvements were an important component of growth. Their effect also reflected in the striking yield increases for many crops. In the crop sector as a whole, value added per hectare rose at an average rate of about 2.44 percent, owing to yield increases for the specific crops and to a shifting from lower-value to higher-value crops. Productivity increased in the livestock sector as well. The increase in land in use should not be downplayed, however, since it may have been sufficiently complementary to capital formation to make it more important than this accounting exercise gives it credit for. Expansion at 1.5 percent per year, reaching about 2 percent during the phase of fast output growth in 1965–80, reflects a considerable amount of colonization, as well as a pushing back of the "interior frontier."

The expansion of land in use during the postwar period was accompanied by a marked change in the structure of Colombian agriculture. Immediately after the war, agriculture was a relatively unproductive sector, except for coffee. Much of the best land in the rich river valleys was in large farms with extensive modes of production (e.g., cattle raising) and low land productivity, while small farmers scratched a meager livelihood from inferior land on the mountainsides (IBRD 1950). The most striking change since that time has been the increasing intensity of land use in the large farm sector and the resulting growth in output. Much land previously dedicated to cattle production was converted to commercial crops (cotton, sugar, soybeans, corn, rice, and other products) while land in less productive crops was converted to more productive ones. Over 1950–80 production grew at an impressive average of about 9 percent in this "commercial" or modern noncoffee sector, which many analysts singled out for comparison with the "traditional" sector. Since the commercial crops (the big three being cotton, rice, and sugar) have for the most part been produced on large capitalized farms, the expansion of the sector created only a modest number of jobs. A notable, albeit recent, exception is the cut-flower industry, which began to develop fast in the 1970s and which employs a large number of workers on a small hectareage.

The primary emphasis in the country's research program was on the discovery of new and better varieties of modern crops (some of this research was carried out in private programs of the producers' associations), and the effort paid off well. A new breed of commercially oriented farmers emerged: some rented land from large owners; others bought land; and still others, who represented a younger and better-educated generation than their more traditionally minded elders, modernized the family's agricultural operations. One might guess that the impact of this process on income distribution in the rural areas and in the country as a whole was negative, since (with the exception of flowers) there is no clear evidence of positive spinoffs onto either wage workers in agriculture (beyond the lucky ones who found good jobs in this new type of agriculture) or onto smaller farmers. The bulk of food production was still in the

hands of the small farm sector, so the expansion of commercial production did not have a major impact on the cost of food for the rural or urban poor.

Although the timing may not have been quite the same, the livestock industry also underwent a significant modernization during this period. Traditionally, and up until the 1960s, cattle dominated the sector and were mainly produced in a land-intensive way, sometimes on fertile soil with the potential for higher productivity in crop production. Since then the sector has been modernized: better grasses and new breeds and strains have been introduced, and management has become more scientific. As a result, the industry's average productivity has increased substantially, even while the average quality of the land it uses has probably gone down. The production of hogs and chickens has expanded rapidly in response to a shift from traditional small-scale activity to modern, specialized, large-scale production; the resulting fall in the relative price of hogs and chickens has led to a corresponding increase in their share of meat consumption.

Some authors argue that the rapid growth of the commercial crop sector from the 1950s to the early 1970s not only failed to contribute to the modernization of the small-scale *campesino* sector but weakened it by the competition it created in the product and land markets. The ingredients of agricultural modernization were apparently beyond the scope of the *campesino* sector at this time; it may even have suffered a decline in the productivity of land over part of the period (MEDSA 1990, 337). The dualism in the agricultural sector became more prominent during this stage of modernization. Despite its relative lack of dynamism at this time, the *campesino* sector remained important; as of 1960, it accounted for about half of total agricultural production. It remained the source of much of agricultural employment and of the supply of food to urban areas. Meanwhile, the medium and large producers focused on exportable food items and on importable and exportable raw materials.

From about the mid-1970s on, the *campesino* sector began showing substantial increases in land productivity, while growth in the capitalist (large-scale) sector slowed down. Between 1950 and 1972 yields of traditional crops appear to have been stagnant, sometimes even falling (MEDSA 1990, 133–34), whereas the commercial ones racked up major increases. By 1973–76 the gap between the smaller and the medium/large producers had probably reached its peak. Between that time and 1988, however, the gap seems to have been reduced, with productivity rising sharply on the smaller units, but little if at all on the larger commercial ones. The increase in the use of modern inputs by small farms was particularly notable in sugarcane for *panela*, potatoes, beans, *platanos* for export, vegetables, and fruits. Livestock production in the small-scale sector also did well. As of 1984, 66 percent of the *campesinos* in eastern Antioquia had cattle and 30 percent had pigs. The reasons for this striking turnaround are discussed in the next section.

Another major source of growth in Colombian agriculture in recent de-

cades has been coffee. Important technical advances in this sector contributed to a substantial increase in output at a time when—because of the absence of quotas in the international market—it was possible to increase sales rapidly. As of 1988, about 43 percent of the coffee area and about 56 percent of the output came from the farms employing the new varieties and associated production practices (MEDSA 1990, 182). In 1970 small producers accounted for 30 percent of coffee output. Since then, and especially since the coffee bonanza of 1975–77, coffee growers of all sizes, especially those in the central coffee zone, have modernized their production. This move has increased the demand for temporary (seasonal) workers, who now constitute 55 percent of coffee employment and many of whom reside in urban centers, especially municipal *cabeceras* (county seats).

Infrastructure, Investment, and Technological Improvement

The available figures suggest a rather low ratio of gross investment (public plus private) to value added in Colombian crop production. Over the study period it averaged perhaps 10–15 percent, (table 10.6), but the data are too imprecise to draw any firm conclusions.[4] They do suggest a strong cycle in public investment, which jumped to a peak in the late 1960s and early 1970s and then in 1978–82 fell to less than two-thirds of the 1968–72 average (see MEDSA 1990, 325). Private investment in machinery and land improvements, meanwhile, showed strong growth (about 8 percent per year) until 1981, after which it dipped sharply as the economic and social problems of the 1980s made their influence felt.

There appears to have been a considerable increase in public expenditures in the key areas of research and extension from the 1950s up to the early 1970s (in line with an overall increase in public expenditure on agriculture). This was followed by a sharp decline over most of that decade and then a recovery in the early 1980s back up to the level of the early 1970s (tables 10.7 and 10.8). If it is assumed that total research expenditures (or expenditures on research and extension, whichever is more relevant) increased at a good clip until the early 1970s and then fell back, this pattern could help to explain the slowdown in the growth of the yields in the modern sector in the second half of that decade.

At about the same time, however, technological improvements apparently accelerated in the small-scale or *campesino* sector, in large part because of favorable public policy, which gave the small *campesino* improved access to modern technology. As of the early 1970s the technological packages that the Instituto Colombiano Agropecuario (ICA) offered small farmers were criticized for being inappropriate for these farmers and the constraints under which

4. Some recent estimates for public expenditure, however, show a similarly sharp downward trend in agriculture's participation in the total budget—from 25.1 percent in 1970 to 7.1 percent in 1982 (Thomas 1985, 238–39).

TABLE 10.6 Estimates of gross annual investment in agriculture, 1965–1987, and its relation to sectoral value added and to total investment (millions of 1975 pesos)

Year/Period	Private Sector[a] (1)	Public Sector (2)	Total[a] (3)	Agricultural Investment[a]/ Agricultural Value Added (4)	Agricultural Investment[a]/ Total Investment[b] (5)
1965–66	2,577	3,272	5,849	4.76	8.11
1967–69	5,793	7,149	12,062	5.80	9.04
1970–74	13,865	13,636	25,369	6.18	8.79
1975–79	17,753	9,679	27,495	5.54	8.51
1980–84	19,161	9,840	29,001	4.93	6.19
1985	2,691	2,392	5,083	4.07	5.45
1986	3,146	4,183	7,329	5.59	7.62
1987	3,360	3,766	7,126	n.a.	n.a.

SOURCE: Columns (1) and (2) are from MEDSA (1990), tables 4.22 and 4.25, respectively. The former includes only machinery and equipment and land improvement. The precise inclusion of the latter series is unclear. MEDSA cites H. Sisa, *Gasto Público en la Producción Agropecuaria*, cuadro 111.1, and notes that the investment figures for 1965–69 and 1985–87 were estimated assuming the same ratio of investment to total public expenditure in the sector for the succeeding and prior years.

NOTE: The sum of columns (1) and (2) should not include any overlap, unless some land improvement undertaken by the public sector somehow got into the figures of the first column. But they do not, it appears, include increases in the value of stands of permanent crops. Livestock is also not included. They seem, nonetheless, consistent with those cited in Ministerio de Agricultura, *Plan de Desarrollo Agropecuario y de Inversiones*, 1987–1990, 11–26, which claims to include both of those items, though it may refer to total investment in the economy, including inventories.

n.a. Not available.

[a]Column (4) indicates private sector investments in machinery and in land improvements, plus public sector investment in value added in the whole sector. As a measure of the true ratio, the figures are low because they fail to include increases in the stock of animals and probably also the value of crop stands. Since most of this investment probably relates to the crop sector, the ratio it bears to value added in crops may be a more meaningful one. It would be approximately twice as high as the series shown, since crop output is about half of total value added in the sector (which includes that for items other than crops or livestock). Partial—does not include all components of investment.

[b]Investment in fixed capital.

they worked. In about 1976, the Programa de Desarrollo Rural Integrado (DRI) began to channel a significant flow of resources to smallholder agriculture (the program gave considerable emphasis to technological development—an average of 10 percent of its expenditures and a peak of 14 percent in 1978/79). After identifying the typical crop combinations and systems of cultivation and production in a region, ICA developed new technological packages that helped farmers adapt experimental results to local conditions and take advantage of group transfer of technology. A substantial increase in institutional credit made it easier for *campesinos* to adopt the new recommendations. And, for the first time, technical assistance was systematically provided to a group of small

TABLE 10.7 Estimated nonprice transfer to agriculture, 1961–1983 (millions of 1978 pesos)

Period	Public Expenditure (1)	Research and Extension (2)	Credit Subsidy (3)	Total (4) = (1) + (2) + (3)
1961–64	4,311.1	1,788.3	2,027.6	8,127.1
1966–69[a]	4,836.5	1,693.0	2,777.7	9,307.4
1970–74	19,432.6	3,860.3	7,576.3	30,869.5
1975–79[b]	17,449.1	2,205.2	11,952.7	31,627.1
1980–83	17,378.6	3,468.0	15,014.6	35,881.1

SOURCES: García and Montes (1989), 349. Column (1) is government expenditure (current and investment) in the agricultural sector carried out by the central government. It includes the expenditures by INCORA, ICA, INDERENA, and HIMAT; the transfer to IDEMA, Caja de Crédito Agrario Industrial y Minero, and the rural development program (DRI). It also includes expenditures made by other public agencies in health, electricity, rural roads, education, and wells. The information was derived from Contraloría General de la República, Informe Financiero, Annex II, several issues. Column (2) corresponds to (a) government expenditures through ICA, Caja Agraria, INCORA, and DRI derived from Contraloría General de la República Informe Financiero, several numbers and (b) expenditures on research and extension in the coffee sector carried out by the National Coffee Fund. Column (3) derived from table 3.1.

NOTE: The information was deflated by the implicit price deflator of agricultural GDPA base year 1975 = 100.

[a]Excluding 1968.

[b]Excluding 1977.

farmers, the users of the DRI program, to facilitate and complement the process of technological change (MEDSA 1990, 140).

Although the program still needs some ironing out, much progress has been made since the mid-1970s, as is suggested by the fact that farmers taking advantage of the DRI subprogram have obtained yields well above the national average (the unweighted average differential is 53 percent) for the main *campesino* crops (MEDSA 1990, 380). The surpluses gained as a result of higher productivity increased investment capacity, no doubt helped finance the new technologies, and contributed to increased incomes in other ways (e.g., by permitting investment in animals and physical improvements).

The Role of Demand, Prices, and Other Incentives

The more responsive agricultural output is to relative prices, the more important it is that those prices be set at appropriate levels. Most countries, Colombia included, have elected to protect many manufactured goods and have intervened to raise their relative prices. This action has the effect of lowering the relative price of many agricultural products, though some of them may have received protection as well. Overvalued exchange rates, once nearly ubiquitous in Latin America, have the effect of raising the relative price of nontradables in relation to tradables. Determining whether and when the relative price of agri-

TABLE 10.8 Basic data on government expenditures in the agricultural sector of Colombia, 1950–1976 (millions of current Colombian pesos)

Year	Direct Expenditures of the Central Government and Decentralized Agencies	Direct Expenditures of the Central Government	Direct Expenditures on Research and Extension	Direct Expenditures on Irrigation	Indirect Estimates on Expenditures on Education	Indirect Estimates of Expenditures on Health
1950	n.a.	25.4	7.8	n.a.	15.7	9.9
1953	n.a.	57.2	12.4	n.a.	22.5	15.6
1958	n.a.	111.5	22.4	n.a.	56.1	22.5
1960	n.a.	103.7	26.1	n.a.	87.7	30.5
1961	1,004.9	362.5	38.9	n.a.	120.3	n.a.
1965	2,010.5	804.1	50.8	n.a.	281.4	59.1
1970	7,314.0	2,329.5	167.6	2,821.0	652.9	348.6
1973	10,710.7	2,782.0	n.a.	1,430.9	1,464.5	519.0
1975	14,119.8	2,796.0	n.a.	1,915.7	2,304.3	803.8
1976	15,604.0	2,752.0	n.a.	2,003.1	n.a.	n.a.

SOURCE: Elias (1983), 52–53.
NOTE: The figures for 1950–71 imply a 3.4-fold increase (if current prices are deflated by the GDP deflator), and an increase from 0.28 percent of agricultural value added in 1950 to 0.56 percent in 1971.
n.a. Not available.

cultural items has been too high or too low in Colombia boils down to assessing the appropriateness of the protection given to both manufactured and agricultural activities, *and* the management of the exchange rate; this exercise, in turn, requires an assessment of the extent of learning by doing in the protected activities and their success at graduating from the category of "infants" after a reasonable amount of time. Such an assessment is well beyond the scope of this discussion, and in any case there has been little empirical analysis of the extent of such learning by doing in Colombia thus far. But it is important to bear in mind that any conclusions reached with respect to agricultural pricing policy are simultaneously conclusions about the appropriate degree of protection of selected manufacturing and agricultural activities.

Since relative price is only one of several variables by which public policy affects the incentive to produce the item(s) and the income levels of the producers, the other relevant factors—credit subsidies, taxes, and sector-specific infrastructure expenditures—need to be taken into account as well. An effective system must provide each sector with about the right average incentive over the longer run, while having the capacity to make needed adjustments in the face of the serious shocks (e.g., terms of trade fluctuations), which are an important part of the macroeconomic setting. The right combination of incentives must also be present.

Protection and Other Incentives

Agriculture may fail to make its potential contribution to development if it is sufficiently discriminated against in relation to manufacturing tradables, if nontradables are in general favored over tradables, or if the wrong activities in agriculture are favored through protection or subsidies. The available empirical studies suggest on the whole that if there has been a significant policy bias against Colombian agriculture, it has been the result of below-equilibrium exchange rates (e.g., García and Montes 1989, 147).

Although import-substituting industrialization was a principal goal of the postwar period, or a good part of it, some agricultural activities also received a fair amount of protection, in keeping with a long tradition that was earlier concerned with self-sufficiency in important food and raw material products (García and Montes 1989, chap. 2). From the end of World War II until 1967, Colombia suffered recurrent balance of payments crises owing to the combination of a (temporarily) fixed exchange rate and domestic inflation well above that of its main trading partners. By 1969, the year with the most reliable figures on effective protection of manufacturing, any overvaluation that remained was of modest proportions. Effective protection of manufacturing (which in principle includes the impacts of quotas, subsidies, currency overvaluation, and other government interventions in trade, though it is not usually possible to evaluate them all in practice) appears also to have been moderate: it averaged about 19

percent in comparison with the −18 percent for agriculture and 2 percent for that sector excluding coffee.[5]

The figures for manufacturing are low in comparison with contemporary figures for most other developing countries (see, e.g., Krueger et al. 1981). They are probably also lower than in previous years. While the usual cascade effect was manifest to some extent—with lower protection being provided to simpler processed foods, construction materials, and the like, and higher levels to intermediate goods and consumer durables—the only figure above 40 percent was that for transportation equipment. A more recent study indicates a sharp increase in the rate of real effective protection of noncoffee tradables between 1980 and 1988 (MEDSA 1990, 608) and an even sharper increase in the level of real nominal protection since the mid-1970s. (In 1980 the protection of noncoffee agriculture was only 8 percent lower than for other tradables, and by 1985 the gap was down to zero.) This pattern would be consistent with a fairly serious attempt to shield the domestic producer from the recent negative trend of agricultural prices in the world markets.

Other incentives and support that were subject to some quantification include agricultural credit and taxes and subsidies unrelated to trade, as well as, infrastructure expenditures. In most years between 1960 and 1984 below-market interest rates on agricultural credit constituted a subsidy of between 1 and 3 percent of the gross value of agricultural output (García and Montes 1989, 52), an amount comparable to the value of public spending in agriculture (table 10.7). The interest rate charged on agricultural loans (see table 10.9) was typically 60–80 percent of the "market" rate, the latter being defined for different subperiods by the return on stock yields, Certificado de Abono Tributario (CAT) yields, and certificates of time deposits.[6] One might guess that the income tax system (and the related wealth and profits taxes) was biased in favor of agriculture through a lower level of tax compliance than in other sectors, while the rest of the tax/expenditure system was on balance biased in the other direction, as indicated by the heavy urban-specific infrastructure expenditures that were not fully covered by urban-based taxes. Depending on how coffee taxes are treated, the total tax burden on agriculture in the mid-1960s amounted to 8.5–12.5 percent of agricultural income; meanwhile public current and investment expenditures on agriculture and on the families who earn their living

5. There appears to be some discrepancy, however, in the interpretation of the figures from the usually cited source, Hutcheson and Schydlowsky (1982, 131). These authors describe the level of protection as "quite low," but García and Montes (1989, 261) present a figure of about 50 percent for the manufacturing sector excluding sugar, citing Hutcheson (1973), whose work was the basis for the Hutcheson-Schydlowsky study. Note that the estimates in question refer to protection on domestic sales and were calculated using the Corden method.

6. The assumed market rates in the early 1960s look low in relation to inflation, but this and any other credit-related subsidies were probably not large in relation to the estimates made by García and Montes.

TABLE 10.9 Agricultural credit, by institution, 1965–1986 (millions of 1975 pesos)

Year	Caja Agraria	FFAP	Banks	Cattle Funds	INCORA	FNC	Total Credit	Ratio of Agricultural Credit to Value Added	Ratio of Agricultural Credit to AVA
1965–69	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	77,740	333,067	23.3
1970–74	49,971	11,883	34,206	9,893	6,622	2,609	115,185	406,583	28.3
1975–79	41,817	41,811	21,346	9,706	5,147	3,644	123,473	508,844	24.3
1980–84	52,927	68,828	32,248	7,356	5,510	3,872	170,743	590,617	28.9
1985–86	26,275	32,311	12,956	2,780	3,363	1,984	79,567	251,541	31.6

SOURCE: MEDSA (1990), cuadro 4.18.
NOTE: FFAP = Fondo Financiero Agropecuario (Fund for Agricultural Financing); INCORA = Instituto Colombiano de Reforma Agraria (Colombian Institute for Agrarian Reform); FNC = Fondo Nacional Cafetero (National Coffee Fund); and AVA = agricultural value added.
n.a. Not available.

there appeared to be about 12.5–16.5 percent of agricultural income (Berry 1974, I-17). The estimates of the resource transfer through the tax/expenditure system are still too imprecise, however, to draw any firm conclusions about the overall bias in the system of public sector interventions.

Some analysts believe that on balance the system of trade cum price-related interventions strongly discriminated against agriculture. The most thorough study to date suggests that the negative transfers due to direct price interventions were a little more than offset by the nonprice transfers to the sector (credit subsidy and public sector expenditures on the sector), but that the indirect price effect through the overvaluation of the exchange rate accounted for a substantial net out-transfer of 12 percent of sectoral value added over the period 1965–83 (García and Montes 1989, 154). This can be thought of as an upper-limit estimate; the benchmark exchange rate used is the one that would put international payments in balance with no trade barriers and with a zero net capital inflow. Also, the estimated level of protection in 1969 in the study is higher than that reported by others and implies a high estimated overvaluation of the exchange rate. If any net protection of manufacturing were appropriate, then the resource transfer would be smaller. Thus, any attempt to judge whether the incentive system gives on balance too little or too much to Colombian agriculture cannot be conclusive because (a) there is a serious lack of empirical information with respect to the sectoral incidence of taxes and public expenditures, and (b) it is not clear whether a significant level of protection is defensible for some economic activities. Since the level of protection does appear to have been modest in Colombia, and since the growth rate of the sector was creditable over most of the postwar period, it is plausible to conclude that Colombia does not fall among those developing countries in which an antiagriculture bias has been one of the big mistakes of economic policymaking.

The important question that remains, however, is how successful policy has been in confronting the income fluctuations accompanying the volatile price behavior of Colombia's agricultural exports.

Price Trends over Time

Between 1950 and the late 1970s, there was no discernible trend in the relative price of agricultural value added (see table 10.10); even the fluctuations around the average appear to have been rather muted. (Though some alternative estimates suggest more volatility, e.g., García 1985, 75). But over 1977–88 the relative price of value added fell by nearly 30 percent, leaving it low in relation to the postwar norm.[7] Whereas in earlier times the value-added prices of coffee and noncoffee products had now and then moved in different directions, at this

7. When the focus is on relative product price (García and Montes, 1988, 28), this result is less clear since the mid-1970s prices (in relation to that of value added in the rest of the economy) were somewhat above the longer-run average. In principle, the former figures are more relevant to the question of the relative profitability of agricultural activities.

TABLE 10.10 Relative price of coffee and noncoffee agriculture, 1950–1976 (1975 = 100)

	Price in Relation to Value Added in Nonagriculture				
Year	Coffee	Noncoffee Crops	All Crops	Livestock	All Agriculture
1950	101.2	97.6	98.5[a]	57.7	98.4
1951	116.1	89.1	93.1	58.9	100.5
1952	121.9	76.1	85.6	87.5	100.2
1953	123.8	82.0	89.1	108.8	104.3
1954	157.0	92.4	105.8	100.9	117.3
1955	133.3	83.4	93.2	85.3	108.8
1956	167.0	88.7	105.9	75.0	115.3
1957	158.0	90.6	104.5	69.9	114.0
1958	133.0	84.1	93.0	78.0	105.2
1959	98.3	84.5	85.7	108.7	102.0
1960	98.8	80.7	82.6	106.6	101.6
1961	96.0	87.1	88.2	91.3	100.0
1962	86.8	79.4	80.0	81.1	94.9
1963	87.1	88.6	88.3	61.9	94.7
1964	97.3	108.1	105.9	73.8	106.0
1965	88.3	94.6	93.6	93.5	101.6
1966	89.9	93.2	93.4	115.4	100.9
1967	85.4	86.6	86.8	115.2	100.1
1968	86.3	84.7	86.0	93.2	98.5
1969	88.5	82.0	83.8	87.2	98.2
1970	105.7	77.3	81.6	73.7	97.4
1971	92.8	79.9	83.8	81.3	96.0
1972	99.7	88.0	88.4	77.1	99.1
1973	109.2	92.9	96.0	86.2	105.2
1974	100.6	91.6	93.3	94.5	106.9
1975	100.0	100.0	100.0	100.0	100.0
1976	165.7	90.3	104.1	94.9	100.5

SOURCES: The price deflators for agriculture and nonagriculture are calculated from the national accounts, as reported in Banco de la República, various publications covering the period 1950–70, and DANE (1985a). Complemented by figures for recent years presented in the *Revista del Banco de la República*. The producer price indices, covering the period 1950–76, for the product categories are from Kalmanovitz (1978, 337). Their original source, not cited with the table, was presumably the tables underlying the national accounts.

NOTE: The national accounts figures on sectoral output used to calculate the sectoral price index for value added in nonagriculture refer to value added at price to the purchaser.

[a]As originally calculated from the source, this figure was 89.4, making it inconsistent with the other two, since the value for "all crops" must lie between those for its only two components. This figure was therefore adjusted to the value shown.

time they both fell, in response to the general decline in agricultural prices at the international level.

The recent decline in the relative price is, of course, due at least in part to trends in international prices. As noted above, agricultural tradables have been increasingly protected since the mid-1970s; this trend would be expected to

partly offset the international price trends. Between the mid-1970s, when domestic prices were farthest below their international counterparts, and the mid-1980s, the average domestic/international price ratio for 11 products rose from 0.69 (for 1972–76) to 107.6 (1985–87) (MEDSA 1990, 280). The greatest price decline since the mid-1970s (and even more so since the early part of that decade) appears to have been suffered by the nontradables—it amounted to almost 30 percent between 1970–72 and 1982/83 (see García and Montes 1988, table 20). The two most favored groups over that period were the noncoffee exportables, with a decline of just 10 percent, and the importables, with an increase of 4 percent. For this recent period, at least, if government price policy did not adequately support agriculture, this failure related mainly to the nontradables, which are not controlled by the same instruments as tradables.

Agricultural exports were discouraged in the late 1970s and early 1980s by exchange rate movements. The real effective exchange rate was allowed to appreciate considerably at that time, after being held roughly constant for about a decade after the change in exchange rate regime in 1967. By 1981 it was about a quarter below the 1975 level, according to one estimate (García and Montes 1988, 23). As a result, the growth rate of the leading agricultural exports declined markedly in the 1980s. Only flowers continued to grow fast (at 7 percent), but the increase was much less than during the 1970s.

Policymakers in Colombia have had chronic problems managing the exchange rate in the face of the great fluctuations in the country's international terms of trade (related mainly to fluctuations in the price of coffee). Whenever prices have been atypically high or low, the tendency has been to shift too many resources into the production of coffee (in the upswing) or of nontradables (in the downswing), a pattern of resource allocation that is inappropriate for the longer run. Furthermore, when incomes were high, absorption habits developed that could not be sustained, but that would only be given up through inefficient readjustment to the once again lower absorption potential of the economy. The taxation designed to sterilize part of the income boom tended to be imposed mainly on the boom sector, although the government has varied the tax to suit its macroeconomic purposes, subject to the outcome of the political push and pull between the government and the powerful and well-organized Coffee Growers Federation. In any case, government intervention in the sector has steadily increased since 1950.[8] During the coffee price boom of the mid-1950s, the coffee tax rate was still low, at about 10 percent (see table 10.11), and the government had less flexibility in dealing with the crisis on the downside of the cycle because of the fixed exchange rate system. Colombia's coffee tax policy cannot perhaps be greatly faulted for trends since the early

8. A considerable share of the "tax" is returned to the coffee sector via the Federacion de Cafeteros. From the point of view of macroeconomic sterilization, the important thing is that it not be returned to the expenditure stream while the boom is still in progress.

TABLE 10.11 Indicators of taxes and subsidies on traded goods, 1910–1914 to 1985–1987 (percent)

Period	Tax on Coffee Exports[a]	Subsidy for Nontraditional Exports	Average Tariff Rate	Proportion of Imports under the Prior Licensing Regime	Proportion of Import Licenses Rejected	Prior Import Deposits as a Percent of Imports
1910–14			47.4			
1915–19			30.3			
1920–24			24.5			
1925–29			30.6			
1930–34	2.6[b]		41.5			
1935–39	4.3		22.5			
1940–44	13.6		16.8			
1945–49	0.0	44.6[c]	11.1			
1950–54	7.1	32.5	18.3	21.0		4.8
1955–59	12.2	19.2	12.0	29.5		16.2
1960–64	24.7	29.3	14.2	50.4	15.5[d]	21.2
1965–69	33.3	28.8	16.0	78.1	32.3	24.9
1970–74	32.2	28.9	14.3	70.0	8.8	13.7
1975–79	44.9	14.1	13.5	57.8	1.1[e]	5.7
1980–84	33.1	18.9	15.0	55.9	10.4	6.4
1985–87	41.2		16.7	65.4	25.7	10.2

SOURCE: Ocampo (1990), table 6.
[a]Ad valorem tax, differential exchange rate, and retention quota.
[b]1932–34.
[c]1948–49.
[d]1959–63.
[e]1979.

1960s, when the tax rate was pushed beyond the 20 percent level. It cushioned the effects of the sharp price boom of the mid-1970s (when the rate reached 45 percent), although by itself it was not adequate to the task. The country engaged in massive foreign borrowing to build up infrastructure just when foreign earnings needed to be sterilized, and this decision certainly reduced its ability to stabilize the economy.

Linkages and Voluntary Transfers

The contribution of agricultural development to industrialization and economic development in Colombia can best be assessed by examining the channels through which agricultural development occurred and the subsequent direct and indirect effects. The onset of modern industrialization was directly related to the export success of coffee and other primary products. That first wave of modern industrialization had a regional focus owing to the distribution

of coffee production and other agricultural activates. And it may be hypothesized, though it is hard to substantiate, that the fact that Colombia's income distribution was less inegalitarian than Brazil's may reflect in part the less skewed distribution of coffee land in Colombia.

Along with supplying the great bulk of the foreign exchange used to fuel the processes of industrialization and modernization, agriculture has met the need for foodstuffs at reasonable prices. The other contributions of agriculture to overall growth are harder to pin down quantitatively, especially in the case of demand linkages with nonagricultural activities in the rural areas and smaller urban centers. Evidence from the coffee zones during the expansion of coffee exports points to important positive interactions or linkages. The ties between industry and agriculture in Colombia have been fairly strong, however; agroindustry is important and may become more so if the economy shifts toward a more outward-oriented focus. And the past decade or so seems to have witnessed a considerable increase in rural nonagricultural employment.

Rural Manufacturing and Development: The Longer Run

Like most developing countries, Colombia once had a large rural manufacturing sector with important linkages to agriculture; in 1870, for example, the rural manufacturing labor force was about five times larger than the urban one (Berry 1987b, 298). From about 1920 to the 1960s, such employment declined in absolute as well as relative terms, leaving the impression that rural manufacturing did not in the end contribute directly or significantly to the evolution of a modern manufacturing sector, as it had in many European countries and some newly industrializing economies like Taiwan.[9]

In view of the isolation between regions, for which Colombia before the twentieth century was justly famous, a substantial amount of manufacturing activity directed to local consumption was to be expected in rural areas and small towns. But there was also considerable regional specialization in certain traditional items and a fair amount of interregional trade. One center of such activity was the municipality of Socorro in the department of Santander, which in the eighteenth century was known for its cotton textiles (Ospina 1955, 69). It was a relatively prosperous region in which smallholders dominated agriculture, and textile production, based on the part-time employment of farmers and their families, was symbiotic with agricultural activities. Small-scale rural manufacturing was also common around Pasto in the south of the country, another region of mainly small farms (Berry 1987b, 299).

Although some regions have retained their manufacturing specialization up to or near the present (as in the case of Pasto, which, however, is one of the poorest regions in Colombia), most of these rural centers of activity came under

9. An important interpretation of the European experience with rural manufacturing goes under the term "proto-industrialization" (see especially Mendels 1972, 241–61).

pressure from imports and domestic factory production and lost ground over the course of the present century, or in some cases earlier. The regions that were hotbeds of textile production in these earlier stages of development did not become the centers of the industry in its twentieth-century manifestation, nor did they seem to supply many of the inputs (human skills or capital) for the modern sector. The twentieth-century development of modern textile production in Medellin appears to be related to the accumulation of capital from other industries (mining, and especially coffee and the import-export trade that flourished as the coffee era began), the availability of entrepreneurial skills (which, like capital, were based on earlier experience in other activities), and perhaps the city's status as the major importer of textiles, which meant that the existing demand was more clearly apparent there than in most of the other regions of the country (Berry 1987b, 311). Artisans and small-scale producers apparently did not generate much of the capital ultimately used in the early growth of modern manufacturing or many of the risk-taking enterprises. One hypothesis in the latter regard is that the Colombian class system, with its strongly demeaning attitude toward manual labor, posed a special obstacle to such "graduation." But there are other plausible explanations as well.

Symbiosis around the Coffee Sector

Although rural industry or artisanry could not be called the forerunner of modern manufacturing, it did play a supportive role in the twentieth-century expansion of coffee exports; some activities were a by-product of the growth of exports, and others expanded as a result of the income increases associated with export-led growth.

In the western part of the country there was a striking symbiosis between the burgeoning coffee sector, transportation improvements, and local small-scale industry. Coffee had become an important export before the end of the nineteenth century, with production concentrated in the semifeudal coffee *haciendas* of the eastern region. But coffee production suffered a severe crisis at the turn of the century as a result of civil war and the simultaneous collapse of the international price of coffee. After the return to peace and subsequent price recovery, the coffee supply showed little improvement, however, because of the inefficient organization of the labor force under the existing labor regime (Ocampo 1991, 220). Agrarian unrest, which has plagued the industry right up to the present, was another impediment to production in this region. The boom came, rather, in the western departments of Antioquia, Caldas, Valle, and Tolima, where output grew by 10 percent per year between 1900 and 1932, by which time about 60 percent of Colombia's coffee was coming from small- and medium-size coffee plantings of 12 hectares or less (Machado 1977). Coffee thus brought the first real stability to what had formerly been mainly slash-and-burn agriculture; it was profitable even under the depressed prices of the first decade of the century. But, as Ocampo (1991, 221) puts it, "The consolidation

of coffee as the dominant staple of Colombia could not have been possible without the development of a series of subsidiary activities that generated the external economies necessary to make the expansion self-sustaining." The sector expanded quickly into a large component of the economy that warranted an extensive commercialization network; coffee growth interacted both with the modernization of the transportation infrastructure and such manufacturing activities as jute bags, pulping machines, and other coffee-related machinery and inputs. The small-scale coffee farm had demonstrated its ability to compete, and it has remained important ever since.

Infrastructure

The extremely uneven topography of highland Colombia has continued to thwart efforts to integrate rural regions and hinterlands with population centers. Most students of Colombian economic history are aware that cost-lowering transportation investments have played an important role in the periods of economic progress. Railroad investment, for example, was instrumental in the expansion of coffee and the takeoff of the economy beginning in the late nineteenth century (McGreevey 1971, chap. 10). In the past 60 years or so, the road network has been the key to lowering the costs of shipment. It has grown from a tiny system in 1930 to one with more than 100,000 kilometers of roads, 10,000 of which are paved (table 10.12). The 1950s saw a burst of investment in highways in an effort to link the principal cities with each other and with the ports. By 1960, about 31,000 kilometers were listed under the national or departmental authorities (Ministerio de Obras Publicas 1962, I-22); by 1986, these two levels were responsible for about 79,000 kilometers. The inadequate supply and low quality of the feeder roads has long been a concern. By the 1970s, paved national roads were increasing at the rate of about 10 percent per year, as compared with only about 2 percent for all national roads.

More recently, greater attention has been directed to the serious problem of maintenance, and it appears that the feeder road system has been substantially extended. The World Bank and other international agencies have contributed to the financing of the feeder roads, partly in the context of integrated rural development projects. Such improvements have no doubt played a role in the growth of the *campesino* sector.

Current Demand Linkages and Rural Nonagricultural Growth

The more easily measurable linkages between agriculture and manufacturing in Colombia are found in modern agroindustrial operations. This important industry is for the most part located in the larger urban centers. Rural nonagricultural employment has grown significantly in recent years, from about 15–19 percent of the rural labor force in the 1950s and 1960s to close to 30 percent in the late 1980s (table 10.13), but it is not known whether or in what

TABLE 10.12 Road network, by level of government responsible, selected years

		National			Departmental			Community	All	
Year	Total	Paved	Other	Total	Paved	Other	Total	Total	Paved	Other
1986	104,106	9,617	16,316	25,933	636	52,488	53,124	25,049	10,253	93,853
1978				21,000					7,780	
1960	30,728			15,877			14,851			

SOURCES: The 1986 data are from Departamento Nacional de Planeación (1987, 442). Those for 1978 were obtained from the Ministerio de Obras Públicas, and those for 1960 are from Ministerio de Obras Públicas (1962, 1–22).

NOTE: The 1960 figures may be incomplete in relation to those for 1986, because of only partial reporting of the local roads. For 1978, the figure obtained is about 51,000 kilometers for the total size of the network, but again it seems probable that the figure understates the facts. This is partly a matter of definition, and none of the sources is explicit about the definitions used in the data collection.

TABLE 10.13 Evolution of rural nonagricultural employment, selected years

Year	Percentage Distribution of Employment or Population				
	Agriculture	Manufacturing	Construction	Commerce	Transportation
1951 (population)[a]	81.1	3.53	1.15	1.40	0.89
1971 (employment)	74.5	8.80	2.17	5.07	1.49
1988 (employment)	71.3	6.09	1.76	8.29	2.12

SOURCES: The 1951 data are from the population census of that year, DANE (1959, 162–65). The 1971 figures are the average from three household surveys taken that year and reported in DANE (1976, 90, 256, and 408). Those for 1988 come from MEDSA (1990): see p. 388, for an estimate of the total share of nonagriculture methodologically comparable to those for the earlier years, and p. 168 for the distribution of nonagricultural employment by sector.
[a]Population by sector on which economically dependent.

sense, this trend has been a response to the growth of agricultural incomes.[10] Some clues may be provided by the sectoral distribution of the nonagricultural labor force. Commerce and services clearly dominate, accounting for 23 percent of rural employment and nearly 60 percent of the nonagricultural component of that employment in the late 1980s, while manufacturing activities account for 7 percent of rural employment (table 10.13). Although nonagricultural activities are naturally less prevalent among the dispersed rural population, even there they accounted for more than 20 percent of employment (as defined by principal occupation). More than 14 percent of employed persons had more than one job, and 18 percent of those were in the dispersed population. Of all persons engaged in agriculture (either as a principal or a secondary activity), about 7 percent were also engaged in a nonagricultural activity; the comparable ratio for families was much higher, at about 20 percent. Although no direct evidence is yet available on this point, it seems likely that the apparently rapid increase in rural nonagricultural employment since 1970 has reflected a variety of linkages with agriculture, both on the demand side and the factor supply side.

Modern Agroindustry

Comparative data suggest that agroindustry has been relatively more important in manufacturing in Colombia than in most of the other middle-level developing countries of Latin America. A little less than half of manufacturing value added (and about 10 percent of GDP) corresponds to agroindustry, which broadly includes textiles (except knitwear), leather and its products, and wood

10. This hypothesis is difficult to explore because there are few data on rural consumption and absorption patterns. The only sample-based data on "rural" consumption of which I am aware pertain to the rural parts of seven mainly urban municipalities (DANE 1972, 175), but the product categories are too broad to be useful and the respondents were not typical of rural Colombia.

TABLE 10.14 Share of agroindustry in manufacturing value added, and in GDP, 1975

Agroindustry	Share of Value Added in Agriculture (%)	Share of GDP (%)
Branch food processing	36.83	8.55
Coffee processing	13.62	
Meats	3.42	
Cereal processing	5.05	
Milk products	1.63	
Sugar	2.67	
Beer	4.02	
Wine	0.14	
Malt	0.77	
Processed tobacco	2.88	
Oils, margarines, and lards		1.21
Fruits and vegetables	0.17	
Candy	0.61	
Miscellaneous food products		0.63
Other agroindustry	10.13	2.35
Textiles, except knitwear	5.66	
Cordage	0.90	
Leather and products	0.66	
Treated wood	0.68	
Pulp	0.78	
Paper and cardboard	1.45	
All agroindustry	46.96	10.91

SOURCE: MEDSA (1990), cuadro 7.9.

and its products (table 10.14); about 37 percent of manufacturing added corresponds to the food industries. By far the most important food-related industry is the processing of coffee, which in 1975 accounted for 13.6 percent of manufacturing value added. Other significant categories were cereal processing, textile production, beer manufacture, meat processing, and sugar refining. The individual activities are numerous and varied, and range from relatively simple to complicated. Agroindustry tends to have a high level of backward linkages in comparison with other branches of manufacturing, but a low level of forward linkages. The causal links between industrialization and agricultural development have perhaps been most evident in the impact of the beer industry on the production of barley, of textiles on cotton, sugar refining and panela production on sugarcane, and animal concentrates and oils on a variety of inputs used in their manufacture (MEDSA 1990, 530).

Between 1965 and 1975, when manufacturing was growing at an annual average of 7.2 percent, the food-related sector grew at a somewhat slower but still respectable pace of 5 percent. In 1975–86, manufacturing grew at just 2.6

percent, while the food-related activities grew at 4 percent, to provide some degree of stabilizing impact (MEDSA 1990, 518). During the heart of the crisis (i.e., 1982–84), however, the food sector's share of total value added in manufacturing was essentially unchanged (MEDSA 1990, 514).

Several factors contributed to the considerable growth of agroindustry during the period 1965–86. Although the evolution of coffee processing was uneven, and its share of manufacturing value added fell rapidly from 1968 to 1977, it then recovered to contribute significantly to the growth of the next decade. Rising per capita incomes and urbanization led to a robust demand for processed foods. The production of food concentrates and oils and fats accelerated from the 1970s on, and sugar exports led this sector to double its share of manufacturing output over the twenty-year period.

With the exception of coffee, sugar, and, in much lesser degree, textiles, exports have not been a major source of demand for the agroindustry sector; overall, they have in recent decades accounted for not much more than 15 percent of the total, compared with about 55 percent for domestic consumer demand and a little less than 20 percent for intermediate goods (MEDSA 1990, 521). During its slow growth phase in the 1980s, the sector depended almost exclusively on the domestic market for increases in demand. Since the income elasticity of demand for food products is typically low, this implies a modest growth rate of output at best.[11] Some products, however, most of them conserved foods, have faced buoyant demands. In a number of cases unexpected growth may have been due to considerable income growth over the past decade or so among the poorer groups whose income elasticity for the items is relatively high.

To the extent that agroindustry locates near the regions in which its agricultural inputs are produced, it has the potential to spread industry to smaller urban centers. In the Colombian case, to judge from the statistics on manufacturing, this has not been a frequent outcome; rather, manufacturing has concentrated in the large centers of consumption and of industrial production in general (though the regional distribution of the small manufacturers is less concentrated than that of the large ones). In 1983 the three largest metropolitan areas—around the cities of Bogota, Medellin, and Cali—accounted for nearly 64 percent of the total (see DANE 1985b, 49, 373). The 1987 figures for the concentration of value added in agroindustry indicate almost exactly the same pattern (MEDSA 1990, 545). Agricultural dynamism *was* the major source of the extraordinary population growth of the city of Cali in the first half of this century, which averaged about 8 percent per year. The region has excellent

11. According to a recent cross-sectional household survey, the income elasticity of demand for food, drinks, and tobacco taken together is 0.59 (see Sociedad de Agricultores de Colombia 1988, 125). Output growth rates for some of the categories suggest that the cross-sectional estimates are too low, although for agroindustry as a whole they tend to confirm that the elasticity is less than 1 (MEDSA 1990, cuadros 7.17, 7.18).

natural resources, and its opportunities to trade with other parts of the country and the rest of the world were greatly expanded when the Cali-Buenaventura road was opened. Cali readily acquired a specialization in the agroindustrial branches of manufacturing. And although the smaller urban centers of the region did certainly share in the spinoffs from agricultural growth, Cali was the main beneficiary.

Some agroindustrial activities *are* located close to the raw materials, as with milk products (high share in Cundinamarca), milling (Huila), animal feeds (Cundinamarca), and a few others. Such cases do not, however, appear to have been frequent or strong enough to outweigh the powerful centripetal forces toward concentration in the few largest cities. This concentration may have limited the positive externalities between industrial development and agriculture to rural areas near the larger urban centers, where most of the recent increase in rural nonagricultural employment may be located. A hypothesis suggested by the Colombian experience is that the total benefits from agriculture-industry linkages are smaller, manifest themselves later, and are less dispersed regionally in countries with an unequal distribution of land and of income than in countries where those distributions are more or less equal.

Transfer of Savings

There is some evidence to suggest that, for given nominal income levels, savings tend to be higher out of agricultural than nonagricultural income and also higher in rural than in urban areas. Part of those savings are, of course, invested in agriculture, but in view of the usually modest investment rate of the sector and the considerable flow of savings from the rest of the economy into agriculture (especially since the acceleration of modernization in recent decades), it is evident that a significant gross flow moves to other sectors. Tentative estimates for the 1950s and 1960s suggest that the rate of savings out of agricultural income lay in the range of 6–8 percent, that there was a private gross transfer of 6–12 percent of agricultural income to finance investment in the rest of the economy, and that the gross inflow of credit and investment out of nonagricultural income was about 5–8 percent, leaving a net private outflow of 1–4 percent (Berry 1974b, I-16).

Apparently a defective capital market seriously impedes the effective transfer of savings out of agriculture, or from one subsector to another, in many countries. While Colombia's capital market is far from perfect, it probably outperforms those of many developing countries. Colombia has had the advantage of being a low-inflation country, at least by the standards of Latin America; until the 1970s, the average rate of inflation was in the neighborhood of 10 percent per year, although since that time it has been closer to 25 percent. The Caja Agraria, the public agrarian bank, has many branches around the country, and they probably facilitated the savings process even though the interest they paid was traditionally low. It is also possible that the intersectoral transfer of

resources has been facilitated by the concentration of land and of agricultural income. A correlate of this concentration is that a significant share of agricultural income accrues to people who reside in urban areas and are also engaged in nonagricultural activities. The "Intraportfolio" transfer of resources between sectors has long been a standard part of the modus operandi of the Colombian economy: it dates back to times when coffee incomes financed the expansion of commerce and later of industry (textiles and other industries made Medellin the manufacturing center of the country) (Berry 1974b, chap. 4). This intraportfolio transfer goes in both directions, as the strong flow from nonagriculture to agriculture in recent years attests. A considerable amount of new money has been flowing into the sector from the urban professional and business classes, some of them having family backgrounds in agriculture. Most recently there has been a large flow of narcodollars into agriculture, especially into the cattle sector. A considerable movement of resources may also be taking place between the sectors of the smaller-scale economy as well. The recent rather marked expansion of rural nonagricultural activity probably indicates an increase in such flows; rising incomes in the smallholder sector would facilitate them.

Nonagricultural Growth

In the transition from Colombia's dependence on import substitution to a more outward-looking policy, 1967 stands out as a particularly important year. During 1950–67, while agriculture grew at just over 3 percent per year, manufacturing averaged 6 percent, the service sector 5.3 percent, and GDP (at factor cost) also 5.3 percent (table 10.15). Over the period 1967–80, agriculture registered an impressive average growth of 4.3 percent, while two quite different patterns emerged in the nonagricultural sector. During the heart of the

TABLE 10.15 Sectoral output growth rates, 1950–1986, by subperiods

Period	Agriculture	Industry	Manufacturing	Services[a]	GDP[b]
1950–60	3.06	6.24	6.60	5.07	4.64
1960–67	3.24	5.25	5.49	5.50	4.59
1967–74	4.42	7.45	8.26	7.04	6.62
1974–80	4.53	3.63	4.01	5.69	4.91
1980–86	2.46	3.84	2.30	2.02	2.63
1950–80	3.71	5.80	6.20	5.75	5.13

SOURCE: For 1950–80, directly from the national accounts of Colombia. For 1980–86, World Bank (1987).

[a]Including public utilities.

[b]At market prices.

postreform boom (1967–74) the economy grew at 6.6 percent, manufacturing at 8.3 percent, and services at 7.0 percent. Growth was fast and well balanced among the sectors. The real exchange rate rose (i.e., devalued) by about 20 percent during the first four years of the period and remained well above its 1967 level until 1977, while the relative price of exports (in relation to the implicit price of the gross value of nonagricultural production) rose by 44 percent and the terms of trade by 62 percent (World Bank 1987, 102). In contrast, the ratio of exports to GDP in constant 1980 prices fell from 18.4 percent in 1967 to 16.6 percent in 1974, while the current price share rose from 12.7 percent to 16.9 percent. If the production of tradables contributed significantly to the growth of this period, it was not reflected in an increase in the share of exports.

In the second subperiod of fast agricultural growth, from 1974 to 1980, the rest of the economy did less well, especially manufacturing, whose growth slumped to 2.8 percent, before ceasing entirely in the early 1980s. The economy as a whole maintained an acceptable average of 4.3 percent over this period only because the service sector kept growing at more than 5 percent. More telling was the decline of the goods-producing sectors, which presaged the recession of the early 1980s. This period of "Dutch disease" saw Colombia's policymakers wrestle unsuccessfully with the problems caused by a sharp upturn in the price of coffee and the upward pressures this created for the exchange rate, as discussed above. The turnaround between 1967–74 and 1974–80 was particularly dramatic in the manufacturing sector. In the first subperiod, the productivity and the incomes of persons engaged there rose rapidly, as output grew at more than 8 percent per year. In the next six years output grew at 4 percent, but then stagnated, while labor productivity declined; this, coupled with a decrease in the relative price of coffee, led to a sharp decline in the income generated per worker.

Although, as noted, the overall export quantum performance after 1967 was not impressive, manufacturing exports did make something of a breakthrough (see table 10.1), which led many to believe that Colombia was about to become a major exporter of such goods and thereby gain access to a more reliable source of foreign exchange revenues. As the performance of manufacturing faded, analysts debated the maladies of the sector and the degree to which they were the result of unwise macroeconomic policy.

Trends in Poverty, Income Distribution, and the Rural Standard of Living

With Gini coefficients of 0.5 or higher, Colombia has ranked among the more inegalitarian of the developing countries. Inequality has certainly long been evident in the distribution of land. An additional concern in recent years has been the inequality in the distribution of education and the lack of coherent

and strong public sector intervention in the economic system to alleviate poverty and inequality (e.g., by a satisfactory system of health care, access to good-quality primary education, and housing). Considerable improvement has occurred over time, however.

It seems likely that the degree of income inequality increased between the 1940s and the 1960s, as urbanization proceeded apace but real wages rose little. The picture is unclear for the decade or so before the mid-1970s. Since that time a significant decrease in inequality may have taken place. If so, one reason may be a fall in the rate of return to education, whose unequal distribution has contributed greatly to the inequality of labor income. Levels of productivity in the *campesino* sector and the agricultural wage rate are on the rise, and rural dwellers now have greater access to nonagricultural incomes.

A variety of studies have pointed to a declining level of inequality in the urban areas over the late 1970s, but show no clear trend for the 1980s. Rural inequality also seems to have declined between 1971 and 1978: the Gini coefficient fell from 0.53 to 0.48 (Londoño 1989b).

Increases in rural income are likely to be based on increases in the value of agricultural output, which reflect trends both in output and in prices. Between 1950 and 1980 the average productivity of persons employed in agriculture rose nearly 3 percent per year (table 10.16), which is considerably faster than the rates in either manufacturing or services, and also faster than the average for the economy as a whole, even though that figure is affected positively by the transfer of employment from the low-productivity sector (agriculture) to the higher-productivity ones. As of 1980, labor productivity in agriculture was 70 percent of that in the rest of the economy (values expressed in 1975 prices), up from 66 percent in 1950. More striking, between 1950 and 1980 it increased from 54 to 69 percent of the level in manufacturing and from 44 to 71 percent of the level in services.

The extent to which increases in a sector's relative labor productivity show up in increases in the relative income of its workers depends in part on changes in the relative prices among sectors and on changes in the share of sectoral incomes accruing to owners of capital who do not work in the same sector (or perhaps in any sector at all). On the first count, agriculture fared less well, as reflected in an average income growth of 1.7 percent per year compared with the 2.9 percent increase in productivity.[12] Over the first two subperiods distinguished, the terms of trade for agriculture improved; income growth was especially rapid over the boom period 1967–74. Since then, however, income per worker in the sector has barely increased, since productivity gains having been offset by price declines.

12. When agricultural income is deflated by the price index of private consumption or by the national cost of living index corresponding to blue-collar workers, the trend in purchasing power is more positive, in the latter case reaching about 2 percent per year.

TABLE 10.16 Evolution of labor productivity and average income per worker, by broad economic sectors, 1950–1986 and subperiods

Period	Labor Productivity			
	Economy	Agriculture	Manufacturing	Services
Ratio of 1967 to 1950	1.474	1.259	1.760	1.311
AGR	2.31	1.35	3.38	1.61
Ratio of 1974 to 1967	1.256	1.218	1.319	1.092
AGR	3.31	2.86	4.04	1.27
Ratio of 1980 to 1974	1.067	1.257	0.828	1.012
AGR	1.09	3.88	−3.06	0.20
Ratio of 1986 to 1980	1.017	1.105	1.077	0.935
AGR	0.28	1.68	1.25	−1.12
Ratio of 1980 to 1950	1.975	1.928	1.922	1.450
AGR	2.60	2.86	2.02	1.25

SOURCES AND METHODOLOGY: Sectoral growth figures are from the national accounts for 1950–1980 and from World Bank (1987) for 1980–1986. Sectoral weights are based on 1975 prices; this was the base year for the Colombian national accounts for many years from 1970. Growth rates over 1950–67, however, being based on the earlier national accounts series, have the base year 1958. The labor force figures are based on a piecing together of data from Reyes (1987, 84–85), and Berry (1978, 223–34). At the sectoral level, there are likely to be considerable inaccuracies, as suggested especially by the erratic movements in labor productivity in manufacturing in the last two subperiods distinguished. The total figures may also be somewhat off the mark, but the full period growth rates should be fairly accurate. Unfortunately, neither of the two population censuses since 1964 has provided good information on the employment structure of the economy.

The figures on average income per worker are based on the figures for labor productivity, adjusted for changes in the relative price of value added by sector over the periods in question. Price figures are taken from the national accounts over 1950–80 and from World Bank (1987) for 1980–86. These figures do not quite represent the trends in real purchasing power per worker, since they do not take into account the international terms of trade. They do refer to changes in purchasing power if all of the purchasing was done domestically.

NOTE: AGR is average growth rate.

The small farm sector has had considerable success in raising output and productivity, especially since some time in the 1970s. Its performance has clearly helped push up some of the incomes at the lower end of the rural distribution. In addition, the distribution of land appears to have improved, perhaps significantly, between the agricultural census of 1960 and the agricultural sample taken in 1988; the share of land in the top 10 percent of farms fell from about 82 percent to 68 percent and that in the bottom 50 percent rose from about 2.5 percent to about 4 percent.[13] Moreover, the frequency of tenancy fell sharply, both on the smaller farms and in general; for farms of less than 10 hectares, for example, the share owned by the operator rose from 60 percent

13. The results of the recent survey have yet to be analyzed carefully, however.

to about 81 percent. For all farm sizes together, the share cultivated by the owner rose from about 75 percent in 1960 to about 88 percent in 1988, while the shares corresponding to rental and untitled land fell sharply, from 8 to less than 3 percent of the total area for the former and from about 12 to 6 percent for the latter. In the rental category, sharecropping also declined.

Factors that probably contributed to the decrease in the concentration of landholding include the process of colonization and the division of large landholdings through inheritance. Titling of public lands was an important source of new farms of 50 hectares or less (MEDSA 1990, 352–53). As a result of these various changes, farm size has begun to increase at the lower end of the size scale, increasing the share of families who are more or less secure "farmers" rather than that of the precarious *campesinos*. The trend over the 1980s may differ from that of the longer period, however, since drug dealers are known to have accumulated large tracts of land in some parts of the country.

The period 1975–88 did see a substantial fall in the relative price of the products of the *campesino* economy as a whole, especially for those not intensive in inputs. (The appreciation of the peso lowered the price of purchased inputs.) This decline appears to have offset most of the increase in productivity then occurring. The market for food products of the *campesino* economy is essentially domestic and hence dependent on an increasing demand within the national economy; international trade is important only in the case of wheat and cacao. During the period 1960–75, the 3 percent growth rate in food production was insufficient to prevent a price increase of just over 3 percent per year. But with demand growing more slowly from the late 1970s on, prices subsequently trended downward.

The main direct indicator of income trends for the bulk of the agricultural labor force is the daily wage rate; it tells a modestly positive story, with the increase for the entire study period probably lying between 49 percent (1.3 percent per year) and 83 percent (2.0 percent per year).[14] A best guess might be 1.5 percent, which is virtually identical to the estimate of the average increase in income generated per worker in the sector. The similarity between the two figures suggests that income gains were shared in about the same proportions between workers and other factor owners. There are some intriguing hints that the distribution of wage income may have improved over the latter part of the period (see Reyes 1987, 87). Household survey data suggest much greater wage increases (about 50 percent between 1978 and 1988) than do the agricultural

14. Between 1949–51 and 1969 wages grew about 14 percent in total (Berry 1974a, 298–99). After 1976, when a new wage series was initiated, they increased about 25 percent in the cooler regions and 14 percent in the warmer ones. The sharp increase was clearly associated with the coffee boom and has been interpreted in some quarters as a signal of the end of Colombia's labor surplus phase. The economic slowdown of the 1980s, however, saw real wages slip back again, in agriculture at least, and perhaps in some other sectors, though this is not clear. For further discussion on this subject, see Urrutia (1985, 12–13) and Berry (1978, 10–11).

daily wage series, perhaps because of an increase in the number of days worked and/or an increase in the share of income from nonagriculture; the former, while preliminary, do add to the presumption of a considerable increase in the wage income of persons involved in agriculture (for further details, see Londoño 1989b, MEDSA 1990, cuadro 3.39). One of the striking phenomena of the intercensal period 1973–85 was the sharp increase in the female participation rate in rural areas (from 13.7 percent to 32.4 percent). Presumably this increase mainly reflected an increase in the number of female workers hired. This phenomenon has yet to be studied in detail, but may have played an important role in the increases in family incomes over this period.

Useful indicators of rural living standards include data on housing and related services, which show a fairly continuous improvement since the early 1950s (and before). The share of occupied family dwellings with electricity rose from 5.6 percent in 1964 to 13–15 percent in 1973 (there is some discrepancy among sources) before jumping to 41 percent in 1985 (table 10.17). Over the same interval, the urban access to this service, which as in rural areas had not risen significantly if at all during 1951–64, climbed from about two-thirds to about 95 percent. Running water, available in only 7 percent of rural dwellings in 1964, was found in more than a quarter by 1973; apparently its frequency did not rise between that time and 1985 (although the 1973 figure may be upward biased). The presence of an earthen floor, which generally implies the lack of economic resources for something better, fell from 52 percent in 1973 to 41 percent in 1985, suggesting gains for the middle-income group of rural families. For the bottom few deciles, however, not much can be deduced from these housing-related data. The 1985 rural figures were in no instance as high as those for urban areas in 1938 in any of the dimensions considered here, but there is no denying the rather rapid advance that has been taking place in the rural areas.

The share of the rural population of 10 years and up that is illiterate fell from 41 percent in 1964 to 23 percent in 1985; the corresponding figures for the age cohorts just passing through their schooling period fell from more than 30 percent to not much more than 10 percent. By the latter year the share of youth (proxied by the 18–24 age group) with some secondary schooling had reached 21.5 percent, up from probably no more than 3 percent in 1964.[15] Whether this sharp increase in the number of people with some secondary (only a minority had completed it) played a role in the broadly based productivity growth discussed above is a matter warranting closer attention.

Despite a number of positive indications with respect to rural incomes, the concentration of household income in the rural areas remains striking (as of

15. The 1964 census does not provide a breakdown by age of persons who had taken technical programs, many of which would be the equivalent of secondary or higher school programs. But a reasonable guess as to the size of this group leads to no more than 3.5 percent with secondary or higher.

TABLE 10.17 Housing services and characteristics in rural Colombia, 1951–1985

Service/ Characteristic	1951			1964			1973			1985		
	Colombia	Cabeceras	Resto	Colombia	Cabeceras	Resto	Colombia	Cabeceras	Resto	Colombia	Cabeceras	Resto
Sanitary												
Toilet, sewer	21.0	52.4	3.3	30.5	58.0	4.9	50.6	47.6	8.4	59.5	80.7	11.3
Toilet, septic tank	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	6.3	6.7	5.6	10.1	7.8	15.4
Latrine	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	10.8	9.7	12.6	7.4	5.1	12.7
None	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	32.3	8.7	73.3	23.0	6.4	60.6
Electricity[a]	>25.0	>64.9	4.2	34.5	65.4	5.6	57.6	87.0	14.9	78.5	95.1	40.8
Piped water	24.4	60.3	5.1	30.1	54.9	6.8	62.7	86.8	27.6	70.5	89.2	28.0
Floor materials, earth	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	34.3	22.3	51.8	17.1	6.7	40.8

SOURCE: The population/housing censuses of the four years in question.
NOTE: It is not always clear whether the definitions applied for these various services are the same in each year.
n.a. Does not imply that the figures were not collected, but simply that we do not have access to them.
[a]The greater than sign (>) results from the fact that in the cases indicated the data exclude Bogota and Cundinamarca, whose inclusion would push them up somewhat.

1988), as reflected in the Gini coefficient of 0.465 (MEDSA 1990, 233). But, if the Mision's figures can be trusted, there was a sharp decline in the incidence of poverty over the decade 1978–88, from 80 percent of families to about 62 percent (MEDSA 1990, 251). Those in "critical poverty" fell from 52 percent of all families to 32 percent, a striking improvement. The main source of these substantial reductions in the incidence of poverty was the growth in average income over the decade; although the figures imply a slight decline in inequality (the reported Gini coefficient fell from 0.486 in 1978 to 0.465 in 1988 in rural areas, excluding municipal seats), this would not be large enough to have much impact on poverty in the absence of an increase in average income.

The Pattern of Urbanization

From the end of World War II to the present, the share of population found in rural areas fell from about two-thirds to less than one-third. Colombia has been noted among the countries of Latin America for its "healthy" dispersion of the urban population among several major centers. This dispersion has been due at least in part to the regional isolation wrought by the difficult topography in the Andean region of the country. As of 1973, there were four cities with more than a half million people—Bogota, Medellin, Cali, and Barranquilla; their total population of 5.6 million was 25 percent of the country's total population and 42 percent of the urban population (approximated as the population living in municipal seats). As expected, these ratios have been rising over time.

More important in the context of this discussion is the distribution of the urban population by size class. Effective linkages between agriculture and other sectors are most likely to be forged in the context of numerous and fairly small urban centers. As of 1964, when 47 percent of the population was rural (by the Colombian definition, a rural center consists of up to 1,500 people), 21 percent lived in centers of 1,500–50,000 people, 15 percent in centers of 50,000–500,000 people, and 16 percent in the three cities larger than that (see DANE 1967, 32). Apart from not being dominated by a single, very large city, the rest of the urban structure appears to be more or less normal, with many centers of a size to interact in a close and mutually beneficial relationship with agriculture. Over the period 1964–73, at least, the growth rate of the small and medium-sized cities, although not quite as fast as the largest ones, was nonetheless striking.

Conclusions

Between 1950 and 1980 Colombia's agricultural sector grew at a creditable rate of 3.7 percent per year. It generated the great bulk of the foreign exchange that fueled the growth of the rest of the economy. Output increased

mainly through a combination of capital formation and productivity improvements, with land and labor expansion playing smaller roles. The large-scale sector underwent a striking modernization, concentrated especially between the 1950s and the 1970s, with rapid increases in yields due to more intensive use of modern inputs and to new varieties. The small-scale or *campesino* sector also achieved important productivity gains, starting somewhat later and probably continuing on into the 1980s. Coffee, the single most important crop both because of its share in agricultural output and because of its preeminent position among exports, underwent a price boom in the 1950s and a price and output boom in the 1970s; in the latter case the resulting income bonanza brought Dutch disease problems to the economy. The 1980s have been a problematic decade for agriculture as a whole, as for the rest of the economy.

Apart from its obvious contributions to overall development through the production of nearly all the food consumed in the nation, the generation of nearly all of the exports (until quite recently), and the provision of most of the savings that fueled the growth of the other sectors, several other aspects warrant attention. Nearly half of manufacturing value added as of the mid-1970s took place in branches that could be classified as agroindustry. The comparative advantage of coffee and of sugar, for example, was the source of the processing industries built up around them. In turn, the expansion of manufacturing during the import substitution phase created inducements for the modernization of several activities within the agricultural sector.

The land and income concentration that have characterized Colombian agriculture may help to account for the absence, at least until recently, of a strong rural nonagricultural sector. There have been examples of strong symbioses between agriculture and local manufacturing, including coffee and sugar processing activities, but these have not been the norm. Some of the strong intersectoral linkages have involved ties between large-scale agriculture and urban nonagricultural activities, a natural enough outcome when the large farmers are urban residents. Another factor explaining the relative weakness of the rural nonagricultural sector may be the lower population densities in many regions of rural Colombia and the more difficult terrain than is found in some of the countries with a well-developed nonagricultural sector.

Although Colombian agriculture has not coaxed into existence a systematically dynamic rural nonagricultural sector, it has clearly contributed to a reasonably successful national development, one whose main flaw has been the inequality of income distribution and the associated social maladies. But there is evidence that the distribution of income, both in rural areas and in the country as a whole, has become somewhat less unequal since the mid-1970s; that rural nonagricultural activates, important historically and always significant in some regions of the country, have become important more generally; that the small-scale *campesino* sector has achieved significant increases in productivity and incomes; and that living standards have in general improved in the rural areas.

These patterns raise the possibility that even though the positive reinforcement between growth and equality through strong symbiosis between agriculture and rural nonagriculture has appeared only recently, it may still make an important contribution in the later stages of Colombia's socioeconomic development.

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