

9 Development in Costa Rica: The Key Role of Agriculture

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Costa Rica is a relatively small country (50,000 square kilometers) with a population of only 2.7 million inhabitants. Its economy is small (GDP \$4.7 billion), relatively open (annual imports account for 35 percent of GDP), and relatively poor (per capita yearly income is \$1,600). Demographic and economic growth during the period after World War II was extremely rapid: between the periods 1950–52 and 1975–77 its population doubled, as did real per capita income. The 1980s, however, might well be labeled a lost decade. After the second oil-price shock at the end of the 1970s, the economy fell into its worst crisis in more than half a century. The effort to resolve the crisis consumed most of the available resources for several years. It has only been in the past few years that the pace of economic growth has more or less returned to a satisfactory level. Still, economic growth, real per capita income, and affluence indicators remain below precrisis levels.

Economic growth in Costa Rica can be attributed to three principal factors: First, it took advantage of the opportunities offered by external markets, both the global ones (in coffee, bananas, and later sugar and beef), and the regional ones (in manufactured products for the Central American Common Market, CACM). Second, the government's economic policy has by and large maintained economic stability. Thus Costa Rica has avoided the tremendous instability, particularly inflation, that has troubled the economies of many other Latin American countries and created a serious obstacle to higher savings rates and internal investment, as well as foreign investment. Third, the country's long-term social policy has channeled a significant proportion of public expenditure into education and health, as well as into a wealth and income distribution scheme that has addressed inequalities. These policies have enabled Costa Rica to create a framework of social and political stability that has facilitated economic development.

Agriculture has played a vital role in this growth. It has contributed to every aspect of economic activity: GDP, exports, food supply, the production of raw materials for the industrial sector, and employment opportunities. As ex-

TABLE 9.1 Relative importance of agriculture, selected years

Description	1957	1965	1980	1987
Share of agriculture in real GDP ^a	24.4	22.9	18.0	19.0
Share of agriculture in employment	54.7 ^b	49.7	27.4	28.1
Share of rural population	66.5 ^b	65.5 ^c	53.7	56.2
Share of agricultural exports	85.9	74.1	63.6	71.1

SOURCES: Banco Central de Costa Rica (1986, 1987, 1989a, 1989b); and Dirección General de Estadística y Censos (1957, 1965, 1974, 1987).

^aBase year: 1966.

^bFigures for 1950.

^cFigure from 1963 population census.

pected, however, the relative importance of agriculture has declined in the wake of economic development (table 9.1). This structural change has been closely related to the growth of other sectors (industry, services, the public sector), whose activities are by and large concentrated in urban rather than rural areas.

Nevertheless, the agricultural sector is still of primary importance. It accounts for a high proportion of nontraditional exports, which form the foundation of the export-led model of development. According to figures from the Central Bank of Costa Rica, nontraditional agricultural exports account for about 15 percent of total exports and continue to grow steadily. Between 1982 and 1990 nontraditional agricultural production grew at an average annual rate of 17 percent, while exports of these commodities to markets outside the Central American common market grew at an unprecedented rate of 31 percent (Corrales and Monge 1990).

This study covers the years 1962 through 1979. This period begins with the incorporation of Costa Rica into the CACM and ends on the eve of the severe crisis following the second oil-price shock. These were years of rapid growth for both the agricultural sector and the economy as a whole. It is a period long enough for medium- and long-term trends to emerge and recent enough for its lessons to be relevant today.

Growth of Agricultural Production

In the period covered by this study, agriculture expanded at an average real rate of 4.3 percent per year. Its performance reflected the dynamism of agricultural production during this period. As economic growth accelerated, agriculture's importance as a proportion of GDP decreased from approximately one-fourth to slightly less than one-fifth of the total (Banco Central 1986). This trend—namely, rapid diversification of secondary and tertiary sectors—is not untypical of the process of economic development.

Not unexpectedly, the pace of growth was uneven. It was rapid in the periods 1962–68 and 1967–73, but slowed down in 1973–79. The sluggish behavior of this last period can be attributed to a number of factors. For one thing, the external petroleum-price shocks caused a drastic increase in oil prices, the impact of which can be seen in the overall price of imports. For another, banana planting in the Atlantic zone did not expand at the same rate as in the years 1967–72. Furthermore, the lands held by the state for agricultural production had been exhausted. Unused state-held property suitable for agriculture became scarce and growth could not continue by means of incorporating new lands, but rather required more intensive production on lands already in private hands. The “agricultural frontier” had reached its legal limit, though technically and economically speaking such a frontier is still far off. With vacant lands disappearing, some began illegally invading the property of many plottolders. The Instituto de Desarrollo Agrario (IDA), which is in charge of land reforms, reported an increase from 36 cases in 1963–66 to 343 cases in 1983–86. In addition, emphasis was placed on growth in other sectors of the economy, especially industry, in order to take advantage of opportunities in the CACM. This process of industrialization absorbed capital, labor, and entrepreneurial energy, which otherwise would have been partially channeled into the agricultural sector.

The relative growth rates of the principal agricultural products also varied. The leading agricultural exports, such as coffee and especially bananas, grew rapidly in relation to GDP (table 9.2), as did products that sold locally as well as internationally, such as beef and sugar. All of these rates fell substantially in the third subperiod, 1973–79.

Products to be sold in local markets, such as milk and basic grains, show significant expansion in the last years of the period under analysis. This was a result of policies designed to achieve self-sufficiency in basic foodstuffs. Their effect was felt mainly in the national production of basic grains (corn, beans, rice, sorghum) in the years 1974–78. The only other products to show considerable growth were in the fish sector, but they did not play a significant role in total agricultural production.

Crops account for about two-thirds of total production in the sector, livestock about one-fourth, and other activities slightly less than 10 percent. Bananas increased in relation to coffee production in terms of their share in total output of the sector. But these two products, both at the beginning of the period of analysis and toward its end, account for slightly more than 40 percent of total agricultural production in Costa Rica, and in some years exceeded 50 percent of the total. These figures indicate that the behavior of coffee and bananas is the determining factor in the growth of agriculture.

Agricultural production consists overwhelmingly (almost 95 percent) of food products, and far less of nonfood products such as tobacco, cotton, and wood. Part of the production of foodstuffs is used as raw material in the food

TABLE 9.2 Growth rates of real agricultural value added, by products, 1962–1979 (percent per year)

Product	1962–68	1967–73	1973–79
Coffee	3.8	3.1	1.0
Banana	10.8	20.6	-2.1
Sugarcane	7.9	6.0	1.9
Basic grains	1.0	2.6	7.2
Other products	2.3	0.7	2.9
Crops	5.1	7.9	0.8
Beef	4.6	4.9	2.8
Dairy	7.9	3.8	4.7
Other products	1.5	4.3	4.7
Livestock	5.0	4.4	3.7
Wood	9.0	2.4	3.4
Fisheries	13.6	24.5	16.5
Other products	6.6	-10.6	1.6
Others	8.2	0.2	6.3
Total	5.3	6.5	1.8

SOURCE: Banco Central de Costa Rica (1986).

NOTE: Growth rates are compounded. Base year: 1966.

industry. This is the case with sugar, milk, corn, and beef. As a result, the production of goods to be sold in local markets basically depends on population growth, per capita income, and the elasticity of demand for these products. Fluctuation in the industrial sector per se (in textiles, for example), and in other sectors such as construction, do not influence agricultural production *directly* in any large measure (i.e., with regard to the demand for raw materials), but do influence production *indirectly*, through the demand for labor and the resulting derived demand for food. In the period of analysis, the production of food per capita grew approximately 30 percent. This increase is in keeping with the available information concerning general nutritional conditions, which indicate that food availability in terms of calories, proteins, and vitamins, was satisfactory according to the minimum nutritional requirements established by the World Health Organization.

Agricultural production is destined primarily for external markets, not internal ones. Agricultural exports at the beginning of the period of analysis represented almost two-thirds of total agricultural production (see table 9.3). The proportion of products for export continues to grow, in part because the size of the local market is very small, and in part because the medium-term profitability of imported products has been greater than that of local products, even when subsidies have been granted to local producers. But the most relevant factor has been that the size of the local market is too small to serve as a base for

TABLE 9.3 Distribution of agricultural production (percent), various years, 1962–1979

Year	Domestic Consumption	Exports	Total
1962	39.6	60.4	100.0
1967	34.9	65.1	100.0
1973	12.1	87.9	100.0
1979	18.9	81.1	100.0

SOURCE: Banco Central de Costa Rica (1986).

NOTE: Estimated from nominal value-added figures.

rapid and sustained growth in the agricultural sector. Future expansion, as in the past, therefore depends on the sector's capacity to take advantage of opportunities offered by the international economy, both as a result of growth in markets or a reduction in trade barriers. This trend is part of the process of agricultural diversification, which has been manifested more recently in the structural adjustment of the second half of the 1980s, as a result of which nearly all new products are destined for export.

Despite the decline in its relative importance in the economy, agriculture in Costa Rica still plays a central role in development. Over the study period, agricultural products accounted for almost 70 percent of all exports, even toward the end of the 1970s. Moreover, agriculture absorbs more labor than any other sector in the national economy. Of course, the relative importance of agricultural employment has diminished (see table 9.1). At the beginning of the period in 1962, employment in this sector accounted for more than one-half of all national employment, and by the end of the period it had decreased to less than one-third.

Population density is approximately 56 inhabitants per square kilometer. The utilization of territory, however, has intensified substantially—perhaps more than is desirable—as can be seen in the marked expansion of areas dedicated to cattle grazing and an alarming reduction of forests and wooded areas (table 9.4). This trend has brought with it the well-known problems of soil erosion and water shortages. The destructive transformation of woodlands to cow pastures can be traced to several factors: technology is not advanced enough to make intensive cattle raising more profitable than extensive cattle raising (for example, it is conjectured that the present national level of beef production could be achieved with only half the area being used for pasture); land is cheap, because Costa Rica does not have an appropriate system of taxes to encourage a better, more productive use of land and thereby force landowners to pay for inefficient or harmful utilization; and the government's easy-credit policies in the past favored cattle production, such that for each unit of value added received by the activity, it generated three or four times more credit than the rest of the agricultural sector.

TABLE 9.4 Pattern of land use (percent), 1963–1984

Use	1963	1973	1984
Annual crops	15.3	9.1	12.6
Perennial crops	7.5	6.6	7.7
Pastures	35.1	49.9	53.8
Forestland	30.7	22.9	16.0
Other	11.4	11.4	10.0
Total	100.0	100.0	100.0

SOURCE: Dirección General de Estadística y Censos, *Censo Agropecuario* (1965, 1974, 1987).

Coffee and bananas account for at least 40 percent, and at times half of all agricultural production. At the beginning of the study period, these products had an 80 percent share of total exports, but with agricultural diversification and the growth of other sectors such as industry in subsequent years, the relative importance of coffee and banana exports declined. Nevertheless, even in 1979, at the end of the period under analysis, they accounted for more than half of all national exports. At present, their production continues to increase.

Both experienced a large increase in yields per hectare during 1963–73 (table 9.5). It is not difficult to understand why this happened in the banana industry, given the relatively large size of the plantations and the fact that the property is largely in the hands of multinational corporations in which the processes of research and extension are highly integrated to production. In contrast, coffee is produced on a large number of small farms of less than 20 hectares, which find it more difficult to adopt new technologies because financing is a problem for small farmers and they are reluctant to take risks.

Because of the importance of coffee and banana, the present analysis concentrates on these two crops. Basic grains, for example, are excluded because they represent only a modest proportion of Costa Rican farmers' incomes, particularly among smallholders (Celis 1988). Furthermore, it has been shown that variations in the prices of basic grains had a negligible effect on the

TABLE 9.5 Coffee and banana yields, 1955–1984 (metric tons per hectare)

Year	Coffee	Banana
1963	2.7	23.1
1973	4.7	34.6
1979	4.9	38.2
1984	7.1	36.1

SOURCE: Dirección General de Estadística y Censos (1965, 1974, 1987).

total variability of farmers' incomes, as well as on the expenditures of most urban and rural consumers (Hazell 1991). Interestingly enough, these products were granted high levels of protection (Celis et al. 1987; Stewart 1991). In addition, and perhaps for the same reasons, research on these products has declined. As a result, other products are probably less relevant as sources of past and future growth, especially since an effort is under way to remove the heavy protection granted to them.

Determining Factors in the Evolution of Banana and Coffee Production

A number of factors have played a significant role in banana and coffee production in Costa Rica: the natural conditions, human resources, macroeconomic policies, protection of the local market, public expenditure policy, institutional support, research, technical assistance, access to credit, the nature of the market, and the relationship between producers, processors, and exporters.

Natural Conditions

Banana production on a large scale requires very special natural conditions. First, growing areas must be extensive and have high-quality soil. They should also be flat in order to permit the application of specific agricultural techniques such as aerial spraying. Transportation to packing plants must be easy. Second, because the banana belongs to the musaceous family, a regular regimen of intense, almost daily, rainfall is indispensable; at the same time, a large amount of sunlight is also needed every day. This combination ensures rapid growth and maturation of the fruit. Third, since banana is easily damaged by strong winds, the area of production must be free from hurricanes.

Coffee requires fertile soils located between 900 and 1,300 meters above sea level. Seasons with significant differences in rainfall are also needed to allow the plant to rest during part of the year; and sufficient sunlight in conjunction with rainfall promotes flowering, growth, and maturation of the plant.

Certain zones within Costa Rica satisfy these conditions fully—the tropical regions of the Atlantic Coast are ideal for bananas and the valley of the Central Plateau for coffee. Natural conditions in Costa Rica have been exceptionally favorable for the production of both products.

Human Resources

The availability of labor has been favorable for the expansion of coffee and banana production, thanks to rapid population growth (2.5–3.0 percent yearly) and the immigration of laborers from Nicaragua. Wages in these two sectors are among the highest in all areas of agricultural production in the country. There has been a mild upward pressure on real wages, but the relatively stable labor situation has stimulated development and the application of new production techniques. Owners have had to accept a modest, but continual increase in

salaries, which has driven them to seek new technologies and production techniques in order to hold down the proportional growth of per unit costs of production.

Macroeconomic Policies

During the period from 1962 to 1979 the Costa Rican economy was very stable. Inflation was not a serious problem during this period; in most years it fluctuated between 3 percent and 5 percent. The only destabilizing factor was of external origin, namely the first oil-price shock. During 1974, 1975, and 1976 prices grew more rapidly than the average for the entire period. The impact, however, was absorbed rapidly, and price stability returned. Furthermore, because prices were stable, there were few serious fluctuations in the exchange rate. Because of this stability, adjustments in the rate of exchange were only minor and sporadic modifications (they occurred three times). This stability was achieved in part because national inflation was maintained at a level very close to the levels maintained by Costa Rica's main trading partners. Finally, the general employment situation evolved satisfactorily in this period owing to rapid increases in both demographic growth and national production. The creation of new employment opportunities thus kept unemployment levels below 5 percent of the labor force.

The stability in prices, exchange rates, and employment was due in large part to a strict monetary and fiscal policy. Costa Rica adopted a monetary policy that closely followed the course of its traditional exports in international markets, as well as the conditions affecting its foreign exchange reserves. Monetary expansion and contraction are basically a function of the behavior of international reserves. In general terms, it could be said that a classic "gold standard" policy was implemented. At the same time, there was a large expansion of international commerce, which kept fluctuations in exports (principally coffee, banana, sugar, and beef) to a minimum. Equally important, Costa Rica was able to avoid significant negative impacts originating in international markets. When fluctuations in external sectors did occur, they could be absorbed without great difficulty through temporary reductions in international monetary reserves, the level of employment, imports, and the pace of economic growth. In few cases did the country resort to temporary external financing by way of standby agreements with the International Monetary Fund.

In this way the government exercised fairly strict control over the balance of payments and maintained public finances within acceptable limits. During this period the public sector experienced a significant expansion through its participation in multiple financial, social, and productive activities. Public finances continued to be more or less in equilibrium year after year, such that public debt (internal and external) did not increase significantly as a proportion of GDP, nor did interest and debt-service costs increase greatly as a proportion of public expenditure. Also, it was unnecessary to increase taxes considerably

since tax revenues as a proportion of GDP did not increase sharply. The ratio of tax revenues to GDP grew moderately, from 9.9 percent in 1960 to 11.2 percent in 1980 (OFIPLAN 1982).

During the period under study Costa Rica, like many other Latin American countries, adopted a model of development based on import substitution. Under this model national markets had to be protected so that local producers could produce what before was only imported. This policy promoted industrialization but had a negative impact on the agricultural sector.

One reason for this adverse effect was that industrialization increased the demand for labor, and thereby put upward pressure on wages. Another reason was that local production, sheltered by protectionist tariffs, raised the price and lowered the quality of important agricultural materials in comparison with the imported product; this was the case, for example, with fertilizers, tires, tubes, sacks, barbed wire, and veterinary products. These factors affected the cost of production in the agricultural sector, which in the case of products sold in international markets such as coffee and bananas, could not be passed on to the consumer. A third reason for the negative impact was that part of the subsidies granted to the industrial sector were financed with agricultural export taxes, such as those on coffee and bananas. These two products not only had to compete openly in international markets, with high production costs as a result of the industrialization process, but also had to pay comparatively higher taxes. In spite of these circumstances, both products achieved highly satisfactory results. This progress was due primarily to the excellent natural conditions of the country and an accelerated pace of technological change, which allowed these products to maintain a satisfactory competitive position.

Industrialization did, indeed, produce an antiexport environment, but not inordinately so, since protectionist tariffs were applied not only in Costa Rica, but also to the countries of the CACM. This meant that although national businesses were protected from the international community, they were forced to compete within the CACM. As a result, producers were not able to take full advantage of the protection offered by tariffs. Furthermore, Costa Rican and Central American industrialization did not "take flight" on its own because of the small size of the region's economies. The most dynamic factor in the process of regional integration was the behavior of agricultural exports toward the rest of the world. When exports achieved sufficient growth, demand within the CACM increased, thereby creating new opportunities for production and investment. Thus the government was less inclined to erect export barriers in the agricultural sector, which would have "killed the goose that laid the golden eggs."

Protection of the Local Market

An important characteristic of the political-economy during the period under study was the high degree of protection afforded to the agricultural sector. Protection enabled national producers to take advantage of local markets with-

out much interference from external competition. The barriers erected were not so much tariffs as procedures requiring potential importers to obtain permission from the administration or other nontariff barriers, such as health and safety requirements. For all practical purposes, the nontariff barriers that were used were equivalent to an infinite tariff barrier.

The protected market favored primarily the production of basic grains (rice, corn, beans, sorghum), sugar, and milk. The outcome of protection, however, was unsatisfactory for both producers and consumers. External competition did not force producers to improve the price and quality of their products, which would have benefited consumers, and the producers did not benefit significantly from the situation either. Production increased and became more efficient principally for exports that faced stiff competition. The income levels of producers of products for export increased, whereas those of producers of basic grains did not. Since productivity did not increase, despite subsidized markets—which ended up hurting consumers—the producers of basic grains (especially corn and beans) did not significantly improve their economic well-being.

Public Expenditure Policy

Agriculture also received considerable attention in public expenditure policy, which benefited coffee and banana production in particular. In the Central Valley, the principal zone for coffee production, public investment over several decades gave the region a system of highways for transporting harvests from farms to processing plants and from there to ocean ports. Likewise, railroads were constructed to connect the zones of production with ports on both the Atlantic and Pacific coasts. The railroad has played an indispensable role in the banana industry. Equally important, investments in Costa Rica's ports made it possible to increase load capacities and expedite loading and unloading operations. Support for coffee-producing zones has come mainly from public outlays, whereas banana production has been heavily backed by the producing and exporting companies, which have invested in railroads, ports, irrigation, and drainage.

Traditionally, more than one-third of the national budget has been channeled toward education and health. These expenditures have had an important impact from at least two points of view. First, following the control of certain diseases, such as malaria, the productivity of labor increased. Second, the higher level of education has enabled Costa Ricans to adopt new technologies, without which they would not have expanded banana and coffee production into profitable operations.

Institutional Aspects

Institutional organization has also contributed greatly to the success of both banana and coffee production. The following aspects of Costa Rica's institutions have been particularly important: research, technical assistance,

credit, the market, and the system of relations among producers, processors, and exporters.

RESEARCH. A striking feature of the coffee and the banana industries is their continual effort to generate new and improved technologies. Significant progress has been made in developing new varieties that are more resistant to disease. New agricultural practices have been implemented, and new imports (fertilizers, herbicides, and pesticides) have become available. As a result, the volume of production per unit of land has been steadily increasing, and Costa Rica has become one of the leading producers of coffee and bananas.

Technological advances have not been limited just to agricultural activity but have occurred in related areas as well. These advances have considerably improved the packing of fruit (banana boxes), the transportation (containers), and the processing (electronic selection of coffee beans). All of these changes have increased yields by reducing after-harvest losses while improving the quality of the product. As a result of this technological revolution, the unit costs of production have been kept under control, despite continual increases in total costs.

TECHNICAL ASSISTANCE. The new technological knowledge is applied quickly and efficiently, thanks to a high degree of integration between research and technical assistance in the banana companies and the Coffee Institute. This integration ensures that research results will not remain on bookshelves or hidden away in technical journals, but rather, will be applied efficiently to production, and that the problems confronted by producers will quickly be communicated to researchers. A large proportion of the costs of coffee research and technical assistance are borne directly by producers through fees paid to the Coffee Institute. Researchers are therefore motivated to search for new technologies that will boost the financial returns of the producers. Together research and technical assistance have helped increase coffee production from 2.7 tons per hectare in 1962 to 4.9 tons in 1979 and banana production from 22.5 tons to 38.2 tons per hectare.

CREDIT. Credit plays a relatively minor role in the banana industry since banana production can be carried out all year long and bananas can be harvested every two weeks. Also, bananas are highly perishable and therefore must be sold almost immediately. As a result, there is a constant cash flow throughout the year and banana producers rarely have to turn to the financial sector for capital. In contrast, credit plays an important role in coffee production since the harvest period for coffee lasts only several weeks of the year. In addition, coffee is not a perishable product and can be sold throughout the year. Thus producers must obtain financial assistance to run the plantations while waiting to harvest and then sell the crop. The application of new technologies, land acquisitions, or increased production all depend to a large degree on the availability of credit.

Credit for coffee production can be obtained from both internal and external sources. Coffee processing plants play an important role in the credit sys-

tem. The plants obtain financial backing from local and international banks as well as from exporters and then lend these funds to large medium and small producers. Acting as an intermediary or a rural credit agency, the plants endeavor to guarantee that the producers financed by the processor will deliver the harvest so that it can be processed and subsequently sold.

This system of financing ensures that credit can be obtained quickly, at rates in the financial markets, in order to keep operations going, and it allows producers to dedicate their profits not to the financing of recurrent costs, but instead to the investments needed to improve and expand plantations.

THE MARKET. The boom in coffee and banana production has also been due in part to the organization of markets for both products. In the case of bananas, commercialization in international markets has been largely in the hands of multinational corporations. These companies own plantations but in addition buy from independent producers. Since the product is highly perishable and must be refrigerated while it is being transported over many kilometers, a high degree of coordination is essential between the harvesting of the fruit, its packing, its transport from plantations to ports, overseas transport to foreign ports, and finally transport to the centers of consumption. Meanwhile, coffee is marketed by export companies, which buy coffee beans already prepared by the processing plants. Because coffee is not perishable, trade can be carried out at a slower pace throughout the year.

It should be mentioned that in both coffee and banana production the producer is not directly responsible for commercialization of the product. The producer delivers the fruit to the coffee processor and does not participate in the subsequent processing, storage, transport, or selling of the product. All these activities are carried out by the processors and the exporters. The banana producer also delivers the fruit, already packed to the ports, and from that point on, does not participate in the commercialization of the product. The country has had no major problems in marketing its exportable coffee production in international markets. The International Coffee Agreement, which was in effect during much of the period under analysis, did not prevent exports from increasing: The accord could to a large degree be circumvented by means of various loopholes such as sales to "new" markets, which nullified the system of export quotas.

THE RELATIONSHIP BETWEEN PRODUCERS, PROCESSORS, AND EXPORTERS. Costa Rica has a complicated system for ensuring that producers receive a relatively high proportion of the export price of coffee. Producers cannot sell their harvest on their own but must deliver it to the processor of their choice. This entity processes the coffee and sells it to exporters. Every sale made by a processor to an exporter must be registered in the Coffee Institute, which has the power to abrogate the contract if the stated price does not reflect prices on the international market at any given moment. Meanwhile, the processors make loans or cash advances to each of their clients. Later, when the coffee is

exported, the Coffee Institute establishes an average price that the processor must pay to the producer. The institute estimates the amount to be paid to the producer by deducting the exporter's commission, the cost of processing (income of the processing plant), and government taxes. In this way, the relationship among producers, processors, and exporters is regulated to ensure that producers receive a large proportion of the export price and that they (the producers) are responsive to prices on the international market.

The Role of Agriculture in Overall Growth

The direct and indirect role of agricultural growth in fostering growth in the rest of the economy has been widely documented (e.g., Mellor 1976; Bell, Hazell, and Slade 1982; Hazell and Röell 1983; Hossain 1988; Celis and Bliven 1991; Celis and Holleman 1991). This section examines agricultural growth in terms of its conceptual framework, its relationship to nonagricultural growth, the process by which its effects are transmitted, and its social and environmental effects.

Conceptual Framework

Agricultural growth not only has production linkages but also substantial indirect effects on growth in nonfarm incomes and employment. This outcome is due in part to increases in the use of farm inputs and increases in the processing, marketing, and transport services used to handle the larger output. More important, indirect effects originate from increases in household expenditures on consumer goods and services as a result of increased farm incomes.

In developing countries, export-led agricultural growth also has an impact on public finances. How government responds to substantial increases in revenues largely determines the effect on relative prices and the final outcome on overall growth. Colombia's coffee boom of the mid-1970s, for example, showed that an improvement in the terms of trade from an increase in the international price of coffee is not necessarily good for the rest of the traded sectors of the economy if this gain is not adequately offset by other policies that reduce the expenditure effect arising from the gains in terms of trade (García and Montes 1988). This does not necessarily mean cutting government expenditures, but rather redirecting expenditures in a way that will minimize the distorting effect on prices and takes advantage of the extra revenues to invest in the infrastructure and human capital needed to sustain development.

Nonagricultural Growth

Although the connection between agricultural and nonagricultural growth is difficult to establish, in Costa Rica the indirect effects of impressive growth in agriculture can be argued forcefully. Because most of the growth in the agricultural sector relied almost entirely on coffee and bananas and their output

expansion went into exports, the increase in agricultural incomes led to an increase in the effective demand for nonagricultural output. This increased demand added substantial support for the expansion of nonagricultural production, which was simultaneously stimulated within the context of the CACM.

The figures in table 9.6 show robust growth in the manufacturing and the services sectors over the study period. This growth was more than double the growth in agriculture, and it undoubtedly benefited from the latter, as can be shown with examples from the food industry. Between 1963 and 1985 the food and tobacco industry grew at an average annual rate of 20 percent, which represents almost five times that of agriculture (Ramírez and Maldonado 1988). Coinciding with this output performance was a rise in employment. More important, during the period 1962–79 the average productivity of labor in manufacturing grew at a rate of 3.6 percent, whereas average labor productivity in agriculture grew 3.9 percent per year (OFIPLAN 1982).

The Process of Transmission

Some of the policies that supported technological change in coffee and bananas—and consequently induced rapid growth in agriculture—also facilitated the transmission of direct and indirect effects to the nonagricultural sectors. For instance, monetary and foreign exchange policies kept inflation down and thus helped maintain the purchasing power of the incomes in the agricultural sector. The effective demand for nonagricultural output therefore increased.

Government investment policies before and during the period of rapid economic expansion were also important. Private investment already ac-

TABLE 9.6 Shares of real GDP and growth rates (percent), 1962 and 1979

Sector	1962	1979	Growth Rate
Agriculture	25.9	18.2	4.3
Industry	13.2	22.0	9.6
Electricity, gas, water	1.2	2.1	10.3
Construction	5.3	6.4	7.4
Commerce	20.0	18.7	6.4
Communications*	4.3	6.7	8.9
Financial services	3.6	5.1	8.8
Real estate	10.2	6.8	4.0
General government	10.8	9.7	5.8
Other services	5.5	4.3	5.5
Total	100.0	100.0	6.2

SOURCE: Banco Central de Costa Rica (1986, 1989c).

*Includes transport, storage, and telecommunications services.

counted for more than three-quarters of total investment during the period 1957-62, despite the fact that its growth had been negative during the same period (OFIPLAN 1982). A stable political climate plus a generous system of incentives granted during the import-substitution industrialization period (i.e., after 1962) attracted masses of foreign and domestic private investment. As illustrated by the change in the internal terms of trade, relative profitability in agriculture went down, in great part because of the protectionist policies that favored the industrial sector. Consequently, capital that had accumulated in the agricultural sector quickly flowed into the manufacturing and commerce sectors. During the good years of the CACM (i.e., 1962-73) private investment grew at an average annual rate of 9 percent. At the same time, government investments expanded more rapidly, at 11 percent per year. The government had continued its impressive record of investment in health and other supporting services and augmented the rate of investment in education, transport, storage and telecommunications. The final result was a mere 5 percent shift in relative importance from private to public investment during the period 1962-73. After the first oil crisis, private investment grew at a robust rate, but public investment grew almost twice as much.

During this period the government also adopted a policy of starting large, state-owned, manufacturing, processing, and transport companies. These investments account for an unprecedented growth rate of 148 percent in public investment in the industrial sector during the period from 1973 to 1979. Public investment also increased in agriculture, public utilities, financial services, and education.

The state-owned enterprises proved to be a failure. Many went bankrupt owing to the financial hardships imposed by the second oil crisis, plus the domestic and international pressure to stimulate privatization. By contrast, public investments in infrastructure, health, and education played an important role in the postcrisis economic recovery experienced during the 1980s.

Public investment brought many benefits: all-weather roads and gravel roads grew an average 4 percent per year between 1969 and 1979; the use of roads also intensified as the cargo transported by road grew 9 percent per year and passengers transported by road grew 7 percent per year; private telephone lines grew 12 percent and public telephones grew 25 percent per year; coverage of clean water supply went up from 74 percent to 82 for the country as a whole, and from 35 percent to 62 percent in rural areas; the coverage of sewerage systems went up from 38 to 91 percent for the country as a whole, and from 30 percent to 87 percent in the rural areas; electricity users quadrupled; and between 1960 and 1979 the number of primary school teachers rose 3 percent per year and the number of secondary school teachers and school buildings rose 7 percent per year.

In conclusion, the role of government has been fundamental to the strengthening of key institutions and to providing infrastructure for a healthy

expansion of the private sector. These factors, complemented by monetary and foreign exchange policies, contributed to the effective transmission of agricultural growth into overall economic growth.

Social and Environmental Effects

The impact of rapid agricultural growth and the subsequent growth in nonagricultural activities has been of special concern in the areas of urbanization, poverty alleviation, and environmental degradation.

URBANIZATION. As in many developing countries, development in Costa Rica has been accompanied by urbanization characterized by high spatial concentration. According to census data, the urban population in Costa Rica increased from one-third in 1950 to 45 percent in 1984. The troublesome feature of this expansion is that about 70 percent of the urban population was concentrated in the Great Metropolitan Area of the capital, San José. This means that roughly one-third of the entire country's population lives there!

The Great Metropolitan Area of San José is located in the Valley of the Central Plateau and includes the cities of San José, Cartago, Alajuela, Heredia, which were founded during colonial times, and their respective suburbs. These cities are separated by distances of less than 20 kilometers. Most of the country's industrial, commercial, and financial activity occurs within their boundaries.

Costa Rican authorities have taken steps to change this pattern of urbanization. For example, they have increased infrastructure and health and education services in rural areas to discourage migration to the metropolitan area. This move seems to be having some effect. Census data indicate that the growth in the proportion of urban population has slowed down somewhat. Between 1950 and 1963, the proportion of urban population increased from 33.5 percent to 34.5 percent; between 1963 and 1973 it increased from 34.5 percent to 40.6 percent; and between 1973 and 1984 it increased from 40.6 percent to 44.5 percent. The 1970s witnessed a concerted effort to establish large state-owned companies in rural areas. Unfortunately, as indicated earlier, they failed because most of them were oversized and fell into liquidity problems.

POVERTY ALLEVIATION. Although many of Costa Rica's workers increased their share of total income substantially over the study period (table 9.7), in 1971 there was a redistribution from the highest income deciles to the middle ones, and in 1977 from the lowest to the highest income deciles. In other words, development in Costa Rica has produced a wealthier middle class. At the same time, the crises in the world economy have severely affected the poorest people.

There is some anecdotal evidence to suggest that the growth in banana and coffee production has fostered growth and improved welfare in rural areas. For instance, banana plantations have attracted large numbers of migrants, who settled there permanently. The majority of these people come from Guanacaste

TABLE 9.7 Income distribution, 1961, 1971, and 1977

Deciles	Percentage of Income		
	1961	1971	1977
1-4	13.8	14.7	11.0
5-8	26.2	34.7	34.0
9-10	60.0	50.6	55.0
Total	100.0	100.0	100.0

SOURCE: OFIPLAN (1982).

Province, where the main activity is cattle ranching. During times of hardship on the banana plantations, laborers do not migrate back to their original towns; rather, they start producing maize and beans in their plots. According to a well-known story in the Atlantic region, in bad times for bananas, the Consejo Nacional de Producción's processing plant, a quasi-abandoned drying and storage facility of the price stabilization and marketing institute, opens its doors to absorb the increased supply of these two grains.

Coffee also attracts masses of seasonal migrants, including children, from both rural and urban areas during harvesting. The revenues accrued to laborers have important multiplier effects because they are generally spent locally to purchase locally produced clothing, food, utensils, furniture, and entertainment. It is also well known that revenues obtained during this period are spent in educational fees and sent as remittances to relatives. Thus, the coffee and banana industry has contributed greatly to the alleviation of poverty.

ENVIRONMENTAL IMPACT. With environmental concerns high on policy agendas around the world, people in Costa Rica have started to reevaluate the effects of both agricultural and industrial growth. As pointed out earlier, land expansion has occurred at the expense of large tracks of forests, which are fast disappearing. Also, the improved technologies for coffee and bananas make use of large quantities of chemical fertilizers with pesticides, which in some areas of Costa Rica have produced a noticeable impact on the quality of freshwater and seawater and have reduced biodiversity. Coffee varieties that in the past required shade trees have been replaced by new high-yielding varieties that do not. This is simply another form of deforestation, which in addition has deprived households of firewood and building materials, now obtained from trees outside the coffee plantations. Deforestation on coffee plantations has also caused soil erosion and the loss of fertility, since the tree species used before were legumes that fixed nitrogen in the soil. Unless measures are taken to compensate for these losses, future improvements in productivity might prove extremely costly.

Conclusions and Policy Recommendations

The period 1962–79 was one of accelerated agricultural growth in Costa Rica. The main engines of growth were coffee and bananas. Both crops experienced substantial improvements in yields per hectare thanks to natural conditions and unique schemes of research and extension that brought together government, universities, and farmers. Equilibrium in the labor market was another contributing factor. Output increases were exported in both cases; hence, agricultural growth relied on external, not domestic markets.

Although the expansion in nonagricultural output was stimulated by protectionist industrial policies, agricultural growth appears to have had a sizable direct and indirect impact on overall growth. The transmission of direct and indirect effects from agriculture into nonagriculture was vastly enhanced by government monetary, exchange rate, and investment policies. Investments in infrastructure, health, education, telecommunications, and financial services grew faster than agriculture and total output.

Although poverty appeared to decline somewhat during the period of rapid agricultural growth, there were no protective measures to prevent further impoverishment of the poorest people. In addition, agricultural development and the industrial growth it engendered had a strong negative impact on the quality of the environment.

Future agricultural and nonagricultural growth in Costa Rica will have to rely on external markets, given the small size of the domestic markets. Care must be taken to pursue a course of policy reform that takes full advantage of external market opportunities. Investment in education, health, housing, telecommunications, and other supporting infrastructure must keep pace with output expansion and the need to improve productivity and competitiveness.

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