

AGRICULTURAL PRODUCTION

and EMPLOYMENT in

COLOMBIA

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PRESENT SITUATION

Colombia is richly endowed with agricultural land suitable for crops and livestock and there exists a range of altitudes that offer a variation in climate and, therefore, a favorable environment for diversified agricultural output. Land, however, appears to be greatly underutilized. According to 1960 census, land under permanent and seasonal crops amounted to only 3.5 million hectares out of approximately 12.3 million hectares suitable for crops. Similarly, only about 14.2 million hectares were being used (mostly in a very extensive manner) for beef and dairy production--a small fraction of the potential grazing land, especially when the use of the seemingly unlimited expanse of the empty Llanos (tropical lowlands in eastern Colombia) is considered. Colombia is also relatively rich in forests, minerals, and oil deposits.

Extent of Poverty and Underutilization of Labor

In spite of the relatively rich natural resource endowment, there is widespread poverty and underutilization of human resource resulting from lack of productive employment opportunities in present day Colombia. Economic dualism is clearly visible both in the country-side and urban areas. A relatively small segment of the population constitutes the modern, high income sector which generates growth and also absorbs most of its benefits. The majority of people, however, are in the traditional, low income sector which is bypassed by economic progress. Here incomes are stagnating, often at the threshold of subsistence. Colombia's Department of National Planning has estimated that in the past decade nearly 75 percent of the total labor force was in the traditional sector, mostly in rural areas [9]. Underutilization of human resources has been recognized as the most serious

obstacle to economic development in Colombia. Much has been done in recent years to assess the size and nature of the problem so that development strategies could be devised for sustained growth and a more equal sharing of benefits. Following are some samples of recent findings which indicate the extent of poverty and underutilization of labor.

It must be noted that figures concerning the extent of poverty, the size of un- and underemployment etc., differ quite substantially. Such variation reflects both differences in survey techniques and coverage, and the conceptual difficulties of measurement and comparison. For example, it is very difficult to measure and directly compare unemployment in rural and urban areas because, in rural areas, the family and community structure clouds the distinction between those employed and unemployed. Also seasonal agricultural unemployment has no comparable parallel in urban areas. For these and other reasons the interpretation of the absolute level of unemployment and underemployment may be quite different. However, all studies agree that poverty is widespread and serious, that underemployment cuts deeply into the labor force, and that, if present trends continue, underutilization of labor and the distribution of income will become worse.

a) A thorough analysis concerning labor in Colombia has been undertaken by the International Labor Office (ILO) in 1970 [1]. According to this study unemployment in the urban sector in 1962 was estimated at about 17 percent of the urban labor force, or at half a million people out of a urban labor force of some three million. It was also found that among those employed, about one third received less than three quarters of the minimum wage of 11.20 pesos per day and, therefore, could be considered underemployed, since underemployment can also be defined in terms of incomes below a certain minimum.

Table 1. Income Distribution of the Occupied Labor Force
in Agriculture, 1960 (Percentages)

Annual Income ¹ (Thousand Pesos)	Percentage of Those Occupied in Agriculture	Cumulative Percentage of Those Occupied in Agriculture	Cumulative Percentage of Incomes
0 - 1	9	9	2
1 - 1.5	33	42	13
1.5 - 2	22	64	23
2 - 3	12	76	30
3 - 5	10	86	41
5 - 10	9	95	57
Over 10	5	100	100

Source: [1]

¹"Income" refers only to incomes from agriculture (though subsequent research shows that it makes little difference when other rural incomes are covered). Income in kind is included.

The situation in rural areas was approximated with the help of information contained in Table 1. Using the minimum wage approach and setting the minimum wage at 1,100 pesos per annum, ILO concluded that about one sixth of those tabulated received incomes below the minimum and was, therefore, underemployed. Taking both sectors together and allowing for both unemployment and underemployment, ILO estimated that in 1970 only 5 million man-years were used compared to an estimated labor capacity of 6.5 million man-years, which indicates an unemployment of about 23 percent. USAID Mission to Colombia, considering agriculture alone, found the rate of unemployment for 1968 to be much higher. According to its calculations 450 million work days were required to produce the total output of the agricultural sector for that year. On the basis of a 280-day year, it was estimated that 750 million work days were available which meant that un- and underemployment together amounted to 40 percent of the agricultural labor force [14].

b) The extent of poverty and dualism becomes evident in Urrutia's recent study concerning the distribution of incomes of rural and urban populations in 1964 [12]. Figures from this study are presented in Table 2. They reveal that incomes in Colombia are distributed very unevenly and that the situation is worse in the rural sector, in which the upper ten percent of the population receive more than half of the total rural income. It is also apparent that the absolute level of rural incomes is only half the level of urban incomes.

Projecting 1964 per capita rural income to 1970 (on the basis of the growth of value added in agriculture) an income of only \$175 per rural inhabitant is obtained as contrasted to about \$300 per capita for the total population. Poverty in rural areas is clearly quite extensive.

Table 2. Colombia: Decile Distribution of Urban and Rural Incomes in 1964

Decile	Rural Population		Urban Population	
	% Of Total Income	Average Annual Income per Person Occupied (Pesos)	% Of Total Income	Average Annual Income per Person Occupied (Pesos)
1	1.4	880	0.9	1,140
2	3.1	1,940	3.3	4,200
3	3.6	2,260	4.3	5,470
4	3.9	2,450	5.0	6,360
5	4.5	2,820	5.5	6,000
6	5.5	3,450	7.0	8,910
7	6.0	3,760	8.0	10,180
8	8.0	5,020	11.0	14,000
9	13.0	8,160	14.5	18,450
10	<u>51.0</u>	<u>32,000</u>	<u>40.5</u>	<u>51,530</u>
TOTAL	<u>100.0</u>	<u>6,274</u>	<u>100.0</u>	<u>12,724</u>

Source: [12]

c) Rural poverty and change in its extent has been the subject of a detailed investigation by the Colombian Institute of Agrarian Reform (INCORA) in 1970 [13]. In defining the concept of poverty INCORA adopted a minimum income of 14,7000 pesos per family as a poverty benchmark for 1970. It was calculated that in 1962 (deflating 1970 income to 1962 price level) there were 802,000 families with incomes below the poverty benchmark. Of this total, 85,000 families were landless, 633,000 owned less than 5 hectares of land and had incomes of less than 80 percent of the benchmark income, 34,000 were families with 5 to 10 hectares of land with incomes less than 60 percent of the benchmark, and 50,000 were tenant and sharecropper families working plots of less than 15 hectares.

In 1970 the total number of families below the poverty line was estimated to have increased by nearly 17 percent to 935,000. The number of landless families more than doubled and amounted to 190,000. Families with less than 5 hectares of land and earning less than 80 percent of the benchmark income increased to 658,000, families with 5 to 10 hectares and incomes less than 60 percent of the benchmark increased to 37,000 and only the number of tenant farmers and sharecroppers with less than 15 hectares of land remained as before at about 50,000.

This indicates a rapidly worsening situation, particularly with respect to the group of landless families. There is strong reason to believe that the distribution of rural incomes has tended toward greater inequality in spite of the rise in per capita value added which, for the agricultural sector as a whole, increased by 150 to 175 percent during the 1930-70 period.

Size of the Employment Problem

The seriousness of the employment problem becomes clearer when the

trends in the growth of the labor force and employment are investigated together. Table 3 is intended for that purpose and summarizes Colombia's experience between 1951-70. It can be seen, that over the entire period the growth of employment opportunities has lagged behind the growth of the

Table 3. Estimated Changes in the Supply of Labor and in Employment, 1951-70 (Annual Average Rates of Growth in Percentages)

	1951-1965 (Rough Estimates)	1965-1970 (Very Rough Estimates)
Growth of Population	3.1	3.3
Growth of Adult Population (10-64)	2.9	3.6
<u>plus</u> or <u>minus</u> effects of changes in over-all participation rate	-0.4	-0.4
<u>equals</u> growth of total active labor force	2.5	3.2
Total Expansion in Employment (man-years)	2.1	2.3

Source: [1].

total labor force. While in the latter part of the 60's there appeared a slight improvement in the labor absorptive capacity of the economy, there was also an increase in the growth of the total labor force. Consequently, the growth of output not only failed to reduce the existing backlog of unemployment, it also failed to absorb significant and increasing shares of the increments to the labor force.

The Government of Colombia has initiated a vigorous family planning program in order to ease the problem of employment. But even if present attempts to control the population succeed it will be at least 15 years before there is a marked effect on the growth of the labor force. Hence

it is reasonable, using 1970 as a base, to project present trends to 1985 for a numerical evaluation of the employment problem at that time.

Assuming that employment continues to grow at 2.3 percent per year and applying this rate to the 5 million jobs which were estimated to exist in 1970, the number of jobs in 1985 will total 7 million. The growth of the labor force which has been accelerating, is expected to proceed at 3.5 per year during the 70's. At this rate Colombia's labor force of 6.5 million in 1970 will have increased to nearly 11 million by 1985. On this basis, there will be 4 million persons unemployed in 1985, or more than one third of the 1985 labor force.

Changing Sectoral Distribution of Labor Force and Rural-Urban Migration.

Sectoral distribution of Colombia's labor force and changes that took place between 1951 and 1970 are illustrated in Table 4. This information yields important and interesting insights not only in the changing composition of the total labor force, but also in the direction of labor mobility and sectoral preferences. It also can be used to calculate sectoral growth of unemployment, given sectoral growth of labor absorptive capacity.

A notable characteristic is the present importance of agriculture despite the rapid rate at which agriculture's share in total labor force has been declining. Table 4 shows that in a period of nearly 20 years prior to 1970, during which the total labor force was growing between 2.4 and 3.3 percent, agriculture's share in the total declined from nearly 54 percent to about 37 percent. Nevertheless, agriculture still continues to accommodate more of the total labor force than any other sector. It is evident that agriculture's declining weight in total labor force has been caused by a rapidly diminishing growth rate of agricultural labor force, which shows a decline from 1.4 percent per year in 1951-64 to

Table 4. Sectoral Distribution of Labor Force in Numbers, Percent per year Changes

Sectors	1951 Total	%	1964 Total	%	1970 Total	%	1951- 1964 %	1964- 1970 %
1. Agriculture (includes fishing and hunting)	2.023.281	53.9	2.427.059	47.3	2.312.262	37.1	1.4	- 0.8
2. Mining	61.223	1.6	81.279	1.6	32.374	0.5	2.2	-16.6
3. Manufacturing	460.907	12.3	655.961	12.8	978.073	15.7	2.8	6.9
4. Electricity, Gas, and Water	10.472	0.3	13.276	0.3	33.619	0.5	1.8	16.8
5. Construction	132.922	3.5	220.705	4.3	267.087	4.3	4.0	3.2
6. Commerce, Hotels, and Finances	203.774	5.4	440.520	8.6	968.112	15.6	6.1	14.0
7. Transport and Communications	130.083	3.5	191.817	3.7	262.729	4.2	3.0	5.4
8. Services	598.093	15.9	925.946	18.0	1.371.544	22.1	3.4	6.8
9. Other Activities	134.854	3.6	177.562	3.4	---	---	2.1	---
10. TOTAL	3.755.609	100.0	5.134.125	100.0	6.225.800	100.0	2.4	3.3

Source: [10].

slightly a negative -0.8 percent per year in 1964-70. The latter means that the agricultural labor force may have stabilized, or is beginning to decline in absolute numbers, a fact which may mark an important turning point, provided the trend persists. It can be calculated that if this trend continues through 1985, agricultural labor force will decline to slightly over 2 million, while the urban labor force will double from 4 million in 1970 to 8 million in 1985.

It is clear, however, that while agriculture has been, to some extent, relieved of the pressure generated by rapid population growth, the problem of employment has merely shifted to sectors outside agriculture. Table 4 shows, for example, that the growth of labor force in the three most important nonagricultural sectors, manufacturing, commerce plus finances, and services, have doubled or more than doubled to 6.9, 14.0, and 6.8 percent per year, respectively, between 1951-64 and 1964-70. Since employment in these sectors has grown at a much slower rate, e.g. at 2.0 percent per year in manufacturing between 1965-70, unemployment here, and in nonagriculture in general, has been increasing at a faster rate than in agriculture.

Underlying the changes in the composition of Colombia's labor force is a complex rural-urban migration pattern. Colombia has approximately one hundred towns with over 100,000 inhabitants, some thirty of which have more than 300,000 inhabitants. The pattern of migration indicates that in most cases rural migrants move to villages and small towns, while the residents of these move on to larger towns. This means that smaller towns, which are very important in the strategy of rural development, are losing much of their more dynamic entrepreneurs while gaining migrants with few skills. The flow of migrants has been increasingly unidirectional

and growing in numbers. In 1938 only 31 percent of total population was in urban areas while in 1964 over 52 percent resided in cities with population over 100,000. By 1985 nearly 73 percent of the estimated population of 33 million is expected to have left the rural sector. In recent years the largest four cities in Colombia have been growing by nearly 7 percent a year, approximately twice as fast as the growth of total population.

Sectoral Output Performance.

Un- and underemployment in Colombia continue to persist in face of a relatively good aggregate output performance. Since the beginning of the 50's the growth of the GNP, in real terms, has been close to 5 percent per year until about the mid 60's. From then on the rate has gradually increased to about 7.0 percent per year in 1970. The output of agriculture, whose share in total output declined from 40 percent in 1950 to about 31 percent in 1967, has grown at a somewhat more uneven and fluctuating rate: at about 2.8 percent per year in the periods 1950-55 and 1960-67, and at about 4.4 percent per year in 1955-60. Recent estimates for the early 70's again place agricultural output growth at a higher rate of 5.4 percent per year [9]. It is important to note that agricultural output generates 75 percent of foreign exchange earnings and provides 50 percent of inputs for domestic industry.

Nonagricultural output during the same period has shown a faster growth, averaging at 5.7 percent per year with some fluctuations. The growth of manufacturing has proceeded at a relatively stable rate of about 7.0 percent per year but without too much dynamism, showing only a slight increase to about 8.0 percent per year at the beginning of the 70's. The share of manufacturing in total output has now increased to 18 percent.

FACTORS CONTRIBUTING TO UNDEREMPLOYMENT AND UNEMPLOYMENT

For economic development to take place at least two conditions must be satisfied: a) increased availability of goods and services, and b) greater equality in consumption, education, health and opportunities. To attain the former there must be sufficient growth of output, to attain the latter, there is a definite need for improved incomes for the masses of the poor through the generation of productive employment. It was shown in the preceding section that while there has been a relatively satisfactory growth of output accompanied by structural change towards greater industrialization, underutilization of labor and the distribution of incomes have actually worsened. It is, therefore, reasonable to conclude that Colombia's underdevelopment rests on the failure of the economy to generate sufficient employment.

The basic factors responsible for this failure in the Colombian setting are not too difficult to find and are discussed next. However, it must be realized that these factors are difficult to isolate fully because of their complex and intimate interdependence.

Unequal Distribution of the Ownership of Land

There is little doubt that the nature of land ownership constitutes one of the principal obstacles to economic development and employment generation not only in rural areas, but also outside agriculture. Land ownership in Colombia like the distribution of incomes, is highly concentrated. Two recent studies attest to this. a) According to ILO findings for 1960 quoted in [1], nearly 45 percent of cultivable and pasture land was in the hands of only 1.2 percent of the population with average holdings around 700 hectares. In contrast, 65 percent of the population owned

Table 5. Sectoral Distribution of GNP (Percentages)

Sector	1950	1955	1960	1967
Agriculture	40.0	35.5	34.6	30.9
Minerals	3.8	3.6	4.1	3.5
Manufacturing	13.9	15.1	16.7	17.6
Construction	2.8	3.9	3.2	3.7
Commerce	12.8	13.6	12.7	12.9
Transportation	5.3	6.9	6.1	6.3
Services	8.0	7.5	7.6	7.3
Other	<u>13.4</u>	<u>13.9</u>	<u>15.0</u>	<u>17.8</u>
Total	100.0	100.0	100.0	100.0

Source: [7].

5.5 percent of land with average holding size of less than 2 hectares and with 25 percent of them owning holdings of 0.5 hectares. b) More recent figures, which take into account the results of the agrarian reform of the past decade, are quoted in [9] by the Department of National Planning. These cover the size distribution of nearly 1.4 million farms with a total area of 23.5 million hectares. The picture is not much different. About 70 percent of all farms have an area of less than 5 hectares, and occupy only 5.6 percent of total farm area. Furthermore, 32.5 percent of all farms are smaller than 1 hectare. On the other end of the scale, holdings of more than 50 hectares represent only 5.9 percent of the total number of farms, but occupy 72.3 percent of total farm area. Farms of more than 300 hectares (0.8 percent of total farms) cover 40.7 percent of the total within which holdings of more than 1,000 hectares (0.2 percent of total farms) control 22 percent of total area.

These findings reflect the co-existence of a modern, high income export oriented subsector, and a low income or subsistence level traditional subsector supplying the domestic market, which to some extent is still non-monetized. Since the largest part of the agricultural population is confined to a small fraction of total land, increases in rural population can only lead to two alternatives: further fragmentation of land, thus depressing incomes and widening the extent of poverty, or outmigration to urban areas in search for new employment opportunities.

Employment opportunities on large farms in the modern subsector are quite limited because of capital intensive production techniques. Farm mechanization in Colombia appears quite extensive. According to FAO information, quoted in [8], there is one tractor for roughly every 150 hectares of land, close to the level found in labor-scarce, land-rich economies of Australia and the USSR, where agricultural production is an extensive

operation. The pattern of mechanization is clearly linked to the uneven distribution of farm sizes: farms bigger than 50 hectares have 66 per cent of total tractors.

The unequal distribution of land thus creates a power structure which highly discriminates against the poor in the traditional subsector by depriving them of adequate incomes and opportunities to fully satisfy their basic needs. The large land owner in the modern subsector is excluded from any adverse effects of poverty since the product of his land is sold in external markets and the gains from trade are at his disposal at favorable terms as will be indicated below. Poverty in the traditional subsector may even be beneficial to the land owner in the modern subsector by providing large supplies in cheap labor. Existing institutes which provide employment, education, justice, housing, health and other public services, are built along the lines of dualism and reflect the highly unequal distribution of land. They, therefore, do not adequately respond to the needs of the poor who own little or no land at all.

Industrialization by Import Substitution and Distorted Factor Prices

Another principal obstacle to full employment is the existing distortions in the relative prices of capital and labor. The prices of capital, credit and foreign exchange have been artificially lowered below their equilibrium and, therefore, distorted in relation to labor. In addition, imported farm and other machinery are also fully or partially exempt from tariffs. This explains why in a labor surplus economy such as Colombia, labor saving is made economically rational.

Existing distortion of factor prices in Colombia is a direct consequence of industrialization by import substitution policies. Initiated after the Great Depression in the 30's import substitution became a

deliberate policy for economic development after World War II. Such policy was prescribed to achieve a) a lower dependence on imports and a higher self-sufficiency in consumer goods b) a more healthy industrial basis with higher employment opportunities outside agriculture and c) a rising level of manufactured exports. These aims, it is conceded in [9], have not been approximated, and the unsatisfactory performance of industry is presently of much concern.

While Colombia now produces a large quantity of consumer goods, satisfying most of its domestic demand, it is also necessary to import for their production much larger and increasing quantities of intermediate and capital goods. In 1956, for example, 12 percent of imports were composed of consumer goods, 35 percent of intermediate goods. In 1964, while imports of consumer goods declined to 6 percent, imports of intermediate goods increased to 46 percent. The net effect has been that import requirements to sustain manufacturing have actually increased in relative and absolute terms making manufacturing output and employment much more dependent on foreign sources of supply than before.

Colombia's manufacturing industries have been built with the help of artificially cheap capital, credit and foreign exchange, built behind protective tariffs which in some instances even today involve duties as high as 200 percent in value terms [9]. There have also been quantitative import restrictions in the form of quotas and licenses. The promotion of import substitution has been indiscriminate. That is, there have not been serious attempts to concentrate on industrial sectors which might have had a potential comparative advantage. As a result, most industrial enterprises in Colombia are capital intensive, relatively inefficient and inward looking. Moreover, the government being anxious to secure benefits of domestic competition (since protectionist policies

suspend foreign competition) encouraged too many firms to enter. The result has been the emergence of numerous firms with too small an output capacity facing a very limited market so that frequently even the small output capacity could not be utilized fully.

The extent of capital misallocation and waste is revealed in a study by the Department of National Planning which discloses that it is possible in most industries to duplicate present output without additional investment in fixed capital [9]. In other words, about 50 percent of the capital in manufacturing industries is in fact idle. This greatly explains why the growth of manufacturing output has resulted in a disappointingly low rate of employment creation, and why the service sector in accommodating the majority of migrants from rural areas has fulfilled essentially the same function as the low income subsistence agricultural subsector.

The contribution of the manufacturing industries to exports has been equally disappointing. In 1966 industrial exports amounted to only about 13.6 percent of total exports. In 1969 this figure increased to about 17.4 percent as a result of special export promotion measures. These figures, however, as indicated in [9], seriously overestimate the actual share of manufactured exports in the total, because the import content of manufacturing is much higher than that of agriculture.

Lack of dynamism in manufacturing exports and employment is due mostly to the prevalence of high tariffs and excessive protection from international competition. Of particular relevance is the concept of effective tariff (the percentage by which the value added in domestic industry can exceed what this would be in the absence of protection) as contrasted to the concept of nominal tariff (the percentage by which prices of protected goods exceed their world prices). In most cases the

effective tariff in Colombia is very high, much higher than the tariff for intermediate or capital goods. Under such circumstances incentives to increase production efficiency are eliminated and it is difficult to bring the cost of production down to international levels. In fact, it is more profitable to produce at high costs for the protected domestic market than to specialize and seek international outlets. Hence, import replacement industry in Colombia has not been able to gain competitive advantage in export markets.

Population Growth

The characteristics of demographic trends have been high fertility rates, rapid decline in infant mortality, high and increasing population growth rates, and a growing proportion of young people. Accelerating growth rates are reflected in the following: it took 33 years, between 1905 and 1938, for the population to double the first time in this century, but only 26 years, between 1938 and 1964, for this to happen the second time. It is estimated that the population will double again by 1986, in only 22 years. In the same time period, i.e., since the beginning of the 20th century, world population has been doubling, on the average, every 42 years, that of Latin America, every 26 years.

While Colombia is relatively rich in land and natural resources and there is even underutilized and idle capital resources, rapidly doubling population is clearly a serious factor responsible for continued underdevelopment, the extensive poverty and the difficulties of generating productive employment for the increments to the labor force. Although the government is channeling additional resources in administration, education, housing and other services to break the circle of low productivity and

low incomes, rapidly rising numbers to whom these services are applied make it very difficult to increase their quality and efficiency. As a result, dualism continues and the number of the poor increases.

Other Obstacles

There are also a number of other reasons which explain the lack of productive employment opportunities in Colombia. These, however, seem to exist mostly as a consequence of the first two major institutional obstacles and because of rapid population growth, and are, therefore, discussed in less detail.

a) Internal demand. It was emphasized that mostly as a consequence of the unequal distribution of land, incomes in the traditional subsector, especially in rural areas, are very low and stagnating. Under such circumstances effective demand, i.e., demand supported by the purchasing power is also very low and stagnating. Moreover, given the relatively high income elasticity of demand for food at low income levels, increases in incomes are spent mostly on food. Hence, the growth of output and employment in manufacturing is seriously limited by lack of adequate and vigorously increasing internal demand, the principal incentive of production.

While the initial process of import substitution brought about quite substantial industrial growth, it appears to have been a once-for-all expansion with little subsequent reinvestment. This is not only because of insufficient and stagnating internal demand, but also because the process of import substitution is not thought feasible to be carried further to the domestic replacement of intermediate inputs, and finally, because import-replacement industry can not yet successfully compete in export markets.

b) High yielding varieties and rural institutions. Yields of major food crops, although rising quite rapidly in recent years, are still relatively low and lagging behind those of most other countries. According to FAO data for 1970 [15], Colombia's corn yields amounted to 12.5 thousand kilograms per hectare (kg/ha) as contrasted to 45.0 thousand kg/ha in the USA, 35.9 thousand kg/ha in Chile, and 32.2 thousand kg/ha in Japan. The wheat yields in Colombia registered 9.4 thousand kg/ha, behind Mexico with 28.4 thousand kg/ha, Japan with 20.7 thousand kg/ha and Chile with 16.9 thousand kg/ha. Only in terms of paddy rice, Colombia's yields of 29.7 thousand kg/ha ranked somewhat more favorably as compared to 28.6 thousand kg/ha in Mexico, 31.3 thousand kg/ha in Chile and 56.4 thousand kg/ha in Japan.

Relatively low yields reflect the limited spread of high yielding varieties, with the exception of paddy rice for which nearly 85 percent of total area was found under improved varieties. Also the use of fertilizers, pesticides and insecticides is still quite low. Thus, in 1968 only 22 percent of total area under the 12 major crops received fertilizers and only about 1.3 percent of all farms used insecticides and pesticides [9].

The last decade, however, has seen a wider adoption of high yielding varieties and other modern inputs as a result of vigorous agricultural research and dissemination of knowledge, originating mostly in the agricultural research station at Palmira, operated by the Colombian Institute of Agriculture (ICA), and in the International Center of Tropical Agriculture (CIAT) in the Cauca valley. However, extension efforts to acquaint farmers with new methods and seeds resulting from research still do not reach too far beyond the more progressive, better educated and more well-to-do

farmers. Most of the small farmers are ignorant of the new technology and those who have heard about it generally are distrustful of it.

Some 60 extension units, a number far too small for the needs of the country, exist over the country, each usually staffed with an agronomist, an animal scientist or veterinarian and a home economist, plus five or six agricultural technicians who live in the immediate area. The spread of extension work to more satisfactory levels is hampered by financial and skill constraints. In Colombia as in most developing countries, the great majority of extension workers and researchers do not originate from rural areas, but come from towns or cities and are professionally qualified on the basis of academic and theoretical education in a college and/or university. Hence, they lack first hand experience of actual farm operations and of farm people, which leads to difficulties in communication, to suspicion and sometimes hostility on the part of poorly educated farmers.

Farm credit, which is needed to adopt the new technology is available only in very limited amounts and on a selective basis. To be eligible for a loan from the agricultural credit bank a farmer must present a farm plan worked out by an ICA licensed agronomist or livestock specialist, for whose services he must pay a fee. The farmer then is advanced part of his loan and receives the balance only after an inspection in mid-season shows that he is following the plan. Smaller farmers who cannot afford the services of a professional planner may qualify for the remittance of the fee, but although the intent of the credit policy is to help them, the prevalent power structure of dualism is such that farm credit goes mostly to the bigger farmers. It has been estimated that roughly only about one-third of small farmers with farms of 20 hectares or less

received institutional credit in 1970. When the definition of the small farmer is set at a lower limit, the coverage of institutional credit is much smaller which indicates that there is a large and urgent need of improving credit availability to the small farmer.

c) Education and skill levels. Most of the people in the traditional subsector are illiterate, only a few of them having had as much as two or three years of schooling. The situation is especially serious in rural areas as reflected in the following figures for 1970. Out of every 100 students attending primary schools 64 were in the urban areas and 36 in the rural areas. Of urban children 48 percent of those initially enrolled completed the third grade, and 38 percent the fifth grade. But in rural areas only 10 percent were able to obtain three years of primary education and only 3 percent completed the fifth grade [9]. Primary education is suffering from a shortage of funds, schools, and instructors. The very low level of basic education is a serious impediment to economic progress. Lack of knowledge strengthens the acceptance of the status quo and weakens the prospects of change in response to economic stimulus. Investment in human capital has been a major source of growth in advanced countries, but in Colombia the small amount of investment in basic education has done little to extend the capacity of the people to meet the challenge of development. Equally serious is the deficiency in secondary education, especially in technical skills. Some of the most critical manpower shortages are for managers, administrators, scientists, engineers, agronomists, economists, accountants, and technical personnel.

Of particular handicap is the low level of knowledge and skills in the sector of agriculture. In order to modernize and to accept new

equipment, seeds, insecticides etc., the quality of labor needs to be improved first as an input in its own right. As was pointed out earlier, land is not a limiting factor of production per se, it can be made available on a more equal basis, but agricultural transformation may not succeed without higher levels of knowledge and skills.

Finally, the success of population control policy clearly requires new knowledge of birth control and a change of traditional beliefs and social institutions that have sustained fertility at a high level. Evidence in a number of countries (e.g., India, Korea) where regional planning projects have been quite successful, tends to indicate that literate and more educated populations are more responsive to population control policies.

d) Inflation. Import substitution policies in Colombia have been accompanied by relatively strong inflationary pressures. It seems to be quite impossible to ascertain quantitatively to what extent inflation as such has obstructed the growth of output and employment. Qualitative impacts are somewhat easier to describe. Since Colombia has displayed a strong propensity to maintain fixed exchange rates, inflation has introduced a progressive tendency toward exchange rate overvaluation, balance of payments difficulties and, hence, has been a cause of increasing protectionism and capital intensive bias in production. All this, as explained earlier, has helped to divert resources away from export industries toward high cost import substituting industries and has resulted in the loss of economic efficiency. Distortions caused by increasing prices appear to be quite influential in farm mechanization, for example. It has been estimated that as a result of inflation farmers purchasing farm machinery, mostly tractors, have been paying back only about 85 to 90

percent of the initial loan [8].

EMPLOYMENT PLANNING AND SPECIFIC EMPLOYMENT GENERATING STRATEGIES

Development planning in Colombia is of recent origin. It is only since the constitutional reform of 1968 that economic planning has assumed broader and more comprehensive perspectives, has acquired authority and has been based on a more realistic assessment of the existing situation [9].

Early development plans emphasized high GNP growth rates assuming that high rates of growth would lead to full employment and more equal distribution of income. By the end of the 60's it was abundantly clear that in the Colombian setting of dualism and unequal ownership of land, there does not exist a complementary relationship of any consequence between GNP growth and employment and that, therefore, major structural changes must be planned and brought about with explicit employment and income redistribution objectives in mind.

The case of Colombia has received much attention. Several strategies for action have been suggested and are described below.

ILO Full Employment Strategy

This strategy, described in [1], is essentially based on the realization that trends in the rural-urban migration will continue, that the urban component of the population will increase and that, therefore, major emphasis on structural change must be in nonagriculture. The strategy sets 1985 as a target year by which 95 percent of the total labor force becomes fully employed. The task involves the creation of 5 million new jobs in a time span of 15 years. Of this the nonagricultural sector is required to absorb 85 percent.

The strategy is that of selective industrialization and more modern agriculture, and is based on planned changes in the labor absorptive capacities of various sectors, changes which have to be enforced to attain the desired objective of full employment. To illustrate the details the nonagricultural sector is broken down in three subsectors: alpha, beta, and gamma. The alpha subsector comprises mining, manufacturing, public utilities, and transport and is defined as relatively capital and skill intensive. The beta subsector which consists of construction, handicraft, commerce, and personal services is relatively labor intensive, and the gamma subsector, embracing banking and other services, is skill intensive.

The basic aspects of the strategy are illustrated in Table 6. The rate of growth of labor productivity in agriculture is required to increase, implying a shift from traditional low-yielding production to more efficient modern methods making wide use of high yielding plant varieties, the application of fertilizers, insecticides, irrigation, and some mechanization. The nonagricultural sector, in contrast, is required to shift to much more labor intensive production in order to absorb the bulk of the unemployed. This is indicated by falling productivity growth rates in all of the three composite subsectors.

The implementation of the ILO Strategy clearly involves drastic changes and a major dislocation of vested interests both in agriculture and nonagriculture. The growth of agricultural output is planned to increase from 3.4 percent per year in 1964-70 to 5.4 percent per year in 1970-85. The underlying growth in agricultural productivity is not possible under existing land fragmentation because the greatest majority of farms are so small that they cannot hope to adopt modern inputs and thus improve their incomes and purchasing power. The latter are needed to

Table 6. Colombia: Growth Rates of Employment, Labor Productivity and Value Added by Sector: Estimates for 1964-70 and Hypothetical Strategy for 1970-85 (annual cumulative growth rates in percentages).

	Employment		Labor Productivity		Value Added	
	1964-1970	1970-1985	1964-1970	1970-1985	1964-1970	1970-1985
Sector:						
Agriculture ^{1/}	1.4	1.8	2.0	3.5	3.4	5.4
Nonagriculture of which:	3.2	7.0	2.5	1.8	5.7	8.9
Capital-intensive and Skill-intensive ^{2/}	2.5	6.9	4.0	2.9	6.6	9.1
Not capital-inten- sive nor Skill- intensive ^{3/}	3.6	6.9	1.4	1.5	5.1	8.5
Skill-intensive ^{4/}	3.3	8.3	1.8	1.0	5.1	9.3
All Sectors	2.3	4.8	2.9	3.2	5.2	8.1

^{1/} Agriculture, livestock, forestry, and fishing.

^{2/} Mining, modern manufacturing, public services, and transportation.

^{3/} Construction, artisanal production, trade, and personal services.

^{4/} Financial and government services.

Source: [1].

enlarge the domestic market which in turn is called for as part of the program of industrial growth and overall development. ILO strategy, therefore, appears feasible only under a major land reform which gives to the majority of rural people the opportunity to participate in domestic and export markets from family size farms or communal enterprises.

Since the bulk of productive employment is to be generated in non-agriculture a major effort is required to speed up its structural change and increase the growth of output to nearly 9.0 percent per year, by more than 50 percent in comparison to 1964-70. In order to achieve the employment objective the productivity growth of labor must decline to 1.8 percent per year from 2.5 percent per year in the last part of the 60's. For this to take place a basic change in the production techniques and in the output mix is required. Such change must include the elimination of the existing capital intensive bias, a readjustment of factor prices to reflect the abundance of labor, a downward adjustment in the exchange rate, a change in the protective tariff system, the loss of special preferences for domestic and foreign firms importing capital goods, the redirection of industrial credit to labor-intensive, small-scale industries, including handicraft, catering to the demand of the rural population, etc.

The task of this dimension will impose a challenge of unprecedented magnitude on Colombia's administrative and managerial capacity to identify measures and techniques which would fit development needs best, then to change the present structure accordingly. The challenge will also exert a heavy pressure on the country's educational system which will be required to sharply increase the quality and quantity of skilled manpower to ensure a successful implementation of the full-employment strategy.

Consistency Check Within an Input-Output Framework

The central idea of economic planning is to describe the economy in such a way that the effects of an initial change in any part (sector) of it can be traced to all other parts (sectors) qualitatively and quantitatively. This is possible in an input-output framework, which ensures internal consistency of any projections within such framework. For example, given the inter-industry matrix of coefficients one can calculate if an expected increase in the final demand can be sustained with present technology, i.e., present input structure, including labor.

An attempt to check the feasibility within an input-output framework of full employment in Colombia by 1985 has been recently made (for details see [4]). There are two major conclusions which result from the study. First, an agreement with other findings that if the present productive and technological structure is not basically altered, future prospects are for a rapidly worsening employment and income distribution situation, mainly because of the balance of payments constraint which will make it impossible for the GNP to increase at 8 percent per year as postulated by the ILO. Second, a drastic structural change, such as proposed in the ILO strategy (described above) may not be feasible on the grounds of consistency. The results of the input-output study are compared to those of the ILO proposed strategy in Table 7. ILO's target growth rate of GDP of 8 percent is substantially higher than the growth rates ranging between 5.2 and 6.1 percent which were found possible in the input-output study. Substantial differences also appear in the sectoral growth rates of labor productivity. As a consequence, the rate of employment generation which results from the ILO strategy appears very high, 4.8 percent annually, in comparison to 2.8 - 3.3 percent in this study. Finally, the sectoral growth rates of value added in the ILO alternative do not appear

Table 7. Colombia: Comparisons of Results Obtained in Consistency Study Under Alternatives I and II with ILO Full Employment Strategy, 1966-1980 (compound annual growth rates 1966-1980).

Sectors	Growth Rates of Value Added			Growth Rates of Employment			Growth Rates of Labor Productivity		
	r _{vi}			r _{ei}			r _{pi}		
	Alt.I	Alt.II	ILO	Alt.I	Alt.II	ILO	Alt.I	Alt.II	ILO
Agriculture	3.8	4.6	5.4	1.8	2.2	1.8	2.0	2.4	3.5
Alpha ^{1/}	6.1	7.0	9.1	2.8	3.4	6.9	3.3	3.6	2.9
Beta ^{2/}	5.3	6.3	8.5	3.9	4.4	6.9	1.4	1.9	1.5
Gamma ^{3/}	5.7	6.3	9.3	3.8	4.0	8.3	1.9	2.3	1.0
GDP	5.2	6.1	8.1	2.8	3.3	4.8	2.4	2.8	3.2

^{1/} Alpha sectors are the capital and skill-intensive sectors: mining, manufacturing, utilities, and transportation.

^{2/} Beta sectors are neither capital nor skill-intensive, i.e., construction, craft industry, commerce, and personal services.

^{3/} Gamma sectors are skill-intensive, i.e., finance, government services, and other services.

Source: [4].

to be internally consistent from the demand side. A growth rate of agricultural value added of 5.4 percent seems very high given likely values of the income elasticity of demand for food in Colombia and the export prospects.

More Labor Intensive and More Productive Agriculture

Since nonagriculture may not be in the position to absorb most of the unemployed productively, it may be necessary to place a major emphasis on agriculture and investigate to what extent is it possible to create employment there. Then nonagriculture could be planned to absorb the residual.

The last two decades have seen the successful spread of high yielding varieties along with modern agricultural inputs which have increased output per area quite substantially and improved incomes in the small farm sector. The new technology has also proven more labor intensive, therefore, there is a considerable scope of employment generation especially on larger farms if excessive mechanization is avoided. What matters most, however, is the fact that by adopting the new technology even the very small farmer may be in the position to improve consumption and ensure more adequate level of nutrition until such time when manufacturing industries and services develop more dynamism and are capable of offering more rewarding employment opportunities outside agriculture.

A full employment strategy which assigns key importance to agriculture has been developed by the FAO. It is based on a careful and detailed investigation of labor absorptive alternatives at the micro level, namely at the level of individual crops. In the Colombian context of dualism, agricultural production takes place in two distinctive subsectors:

(1) using labor-intensive, traditional ways of cultivation, accomplished with simple hand and animal methods, and (2) using fully mechanized, capital intensive methods. If agriculture is to play its assigned role in the full employment strategy, a mixed or intermediate technology will have to be planned (to the extent that it does not presently exist) and become dominant. Such technology would involve the use of high-yielding varieties, fertilizers, insecticides, irrigation, and selected mechanization.

The scope for employment planning appears quite large since labor requirements for different crops vary substantially, depending on the technology used. The average for Colombia indicates that labor requirements per hectare are increased by 45 percent if traditional agriculture is modernized by means of intermediate technology, but are reduced by 34 percent if mechanization is included in modernization [8].

The basic finding of the study, described in [3] is that, if the intermediate technology is favored, productive employment in agriculture can grow quite rapidly, at as much as 3.5 percent per year, while output increases at about 4.5 percent per year. While productivity and incomes in the high income group will grow at a declining rate, those in the low income group will increase more rapidly, thus bringing about a sizable redistribution in favor of the poor. Such changes are clearly in line with the objective to stimulate internal demand and make the growth self-sustained.

FAO's full employment strategy via more labor intensive and more productive agriculture is designed within a framework which maintains internal consistency and limits the analysis to feasible alternatives only. The methodology, described in [2], checks the feasibility from several

standpoints. First, a macro model is used to determine GNP growth alternatives, a possible range of growth based on balance of payments, exports and other macro variables. Second, on the basis of alternative income distributions and export prospects likely to prevail in the future (e.g. in 1980), maximum possible agricultural demand, by crops, is determined. Third, the feasibility of reaching projected demand levels from the production side is checked under alternative technologies (i.e. check of input requirements against their availability at national level). Fourth, a check is made as to what extent the actual growth of value added corresponds to the growth in income implied by the underlying income distribution objective. That is, to what extent is the growth self-sustained within agriculture and to what extent resource transfers into agriculture may be required to sustain the income distribution objective.

Multiple Strategy Approach - Las Cuatro Estrategias.

As a result of the recent re-examination of social and economic realities in Colombia, Colombia's Department of National Planning is now evaluating a strategy which involves simultaneous action on four fronts [9]. The four-pronged approach, in fact, combines the two previously described strategies and thus seems to indicate a preference towards a more balanced and selective pattern of development. Concentration of determinate action is proposed in the following areas: urban construction, agriculture exports and income distribution. The first three concern productive activities and are expected to contribute significantly to increased productivity, output and employment. The third is a corrective action, planned to redistribute incomes toward a greater equality by direct government intervention where the economic process is judged unable to do this on its own accord.

Emphasis on construction (residential, public, commercial) stems from the realization that economic development in Colombia today is inseparable from urban development. The strategic importance of the sector of construction to serve as an inducement mechanism for sustained growth is due to the following. a) Housing is badly needed, there is a large but presently dormant demand for it. b) Construction is quite labor intensive requiring large numbers of unskilled labor. Furthermore, there exist strong and widespread backward linkages with other manufacturing sectors, with services and agriculture. Hence, the direct and indirect labor requirements associated with an increase in the final demand for housing is expected to be quite substantial and will greatly stimulate productive activities throughout the economy (quantitative estimates of linkages can be found in [10]). c) High labor component and linkages will mean that an increase in construction investment will have an immediate increase in incomes and consumption, thus stimulating and widening the presently limited domestic market and spreading the growth to the rest of the economy. d) The import content of construction is very low, hence no undue pressure on the balance of payment can be expected. e) Public construction will increase badly needed facilities for education.

The strategy concerning agriculture aims toward more productive, more modern technology avoiding undue labor displacement by mechanization. However, specific emphasis is placed on more extensive redistribution of land to achieve greater equality. The Planning Department makes it quite clear that productivity in latifundia is quite low, even lower than in minifundia and that a well-planned redistribution of land can significantly contribute not only to higher productivity and output, but also to rising incomes and consumption for a large segment of the rural population.

Increase in exports is considered sine qua non to sustain the growth of manufacturing industries, including construction and also to cope with growing payments on foreign debt. Exports are expected to provide significant additional employment of their own in manufacturing as well as in agriculture. The measures which are suggested to stimulate exports and make them more competitive in world markets are along the lines already discussed.

While the three measures just described are designed to increase output, the fourth concerns itself with a more equal distribution of the gains from growth. The generation of additional employment, as envisioned by the strategy, will by itself improve the existing distribution, especially if the employed come from the ranks of un- and underemployed. However, there is a definite need to mobilize additional funds for administrative and social services, which are badly needed, especially funds for education. For this reason, the income distribution aspect of the strategy proposes a progressive income tax, carefully designed not to lessen incentives. In this way the fruits from economic growth may be directed where the need is greatest for the benefit of all.

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