RURAL-URBAN MIGRATION AND ITS RELATION TO UNEMPLOYMENT IN THE URBAN AREA OF VALLE DEL CAUCA, COLOMBIA

Dissertation for the Degree of Ph. D. MICHIGAN STATE UNIVERSITY ALFREDO ROA MEJIA 1974



This is to certify that the

thesis entitled

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has been accepted towards fulfillment of the requirements for

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ABSTRACT RURAL-URBAN MIGRATION AND ITS RELATION TO UNEMPLOYMENT IN THE URBAN AREA OF VALLE DEL CAUCA, COLOMBIA By Alfredo Roa Mejia

to us to understand (1)

High rates of urban unemployment, considered by many an important aspect of many related problems of Colombia. motivated this study. The primary objective of this research was the analysis of rural-urban migration and its relation to unemployment in the urban areas of Valle, especially Cali, and to determine the causes of the high rates of urban unemployment. The specific objectives were: (1) to formulate a decision model on rural-urban migration under conditions of urban unemployment and imperfect knowledge on the part of the prospective migrants, (2) to formulate a model for estimating the labor force of urban Valle and particularly Cali, (3) to develop a theoretical framework that explains the limited labor absorption of Valle's manufacturing sector for unskilled labor, (4) to estimate the number of jobs needed to (a) prevent unemployment from increasing and (b) lower unemployment rates in urban Valle during the period 1974 to 1980, and (5) to identify and examine policy alternatives with respect to labor employment.

1 -. -11 . -j: ¥., 12 7 : ī. . . 3:e : : : a:es . 1007 2 :16 ie ur ≷e la ₹:0s ^{ce} rej Urban unemployment rates have risen every year during the period 1960 to 1969 and will continue to be high if basic changes are not affected in the economic organization and activity of Valle. The unemployment rate in Cali was estimated at 18.3 percent in 1969.

Migration to the urban centers, which continued during the 1960s despite high unemployment rates, takes place under imperfect knowledge on the part of the prospective migrants. Investment/disinvestment theory helps us to understand (1) migration under imperfect knowledge, (2) high urban unemployment rates, (3) the high proportion of young people and females among migrants and (4) people living in both rural or urban areas under very difficult economic conditions without being able to seek better opportunities in other places.

The lack of educational opportunities causes a low rate of conversion of unskilled to skilled labor. This fact along with migration to urban areas, high fertility rates, and the increasing participation of women in the labor force, results in large numbers of unskilled laborers in the urban zones of Valle, especially in Cali.

The demand for unskilled labor grows very slowly in the urban zone because the industrial sector has a low demand for additional unskilled labor. Manufactured goods are largely produced in big firms with high capital-labor ratios while labor-intensive small and medium-sized firms are relatively few and absorb little labor. The total number of jobs that need to be created during the period 1964 to 1980 to give everyone of the projected labor force the opportunity to find a job and to eliminate low paid jobs in Cali are estimated at 114,000 to 162,000 under three alternative assumptions about migration to Cali.

In the past, policies oriented toward production growth and productivity have produced (1) high unemployment and underemployment rates. and (2) uneven income distribution. Agricultural and manufacturing sectors of Valle are characterized by an acute dualistic system. Under dualism policies oriented to increase agricultural and manufacturing production in the modern sectors can hurt the traditional sectors. In this study policies aimed at (1) lowering urban unemployment rates, (2) obtaining more even distribution of income, and (3) increasing production were identified and examined. The specific policies considered were: (1) revision of labor code especially as it affects unskilled laborers and small and medium-sized enterprises, (2) reduction in growth of total labor force, (3) changing composition of labor force and upgrading of skills, (4) slow down the rate of migration to the large urban centers such as Cali, (5) creation of jobs in urban areas for large pool of unskilled workers, and (6) improvement in the performance of the labor market. The first four policies are aimed at affecting the amounts and kinds of labor at the large urban centers of

Valle. Policies to create additional jobs in urban Valle are focused in (a) relative price of different kinds of labor and different kinds of capital, (b) factor proportions used by size of enterprises, (c) use of installed capacity, and (d) amounts and kinds of labor absorbed by different products. The lack of information on urban wages and employment opportunities on the part of the prospective rural migrants and the existence of urban unemployment and rural underemployment despite high migration rates to the urban areas of Valle suggested the need for improving the performance of the labor market.

Research on recent migratory currents and the effect of the present National Development Plan on employment in the last two years should be carried out as data becomes available. Also, future research is needed on (1) the kinds of products being produced by small and medium-sized enterprises, the prices they received for their products and on its costs of production; (2) estimates of elasticities of substitution between different kinds of labor and capital and between imported and domestically produced inputs; and (3) performance evaluation of public institutions created to help small farmers and manufacturing firms.

Department of Agricultural Economics

RURAL-URBAN MIGRATION AND ITS RELATION TO UNEMPLOYMENT IN THE URBAN AREA OF VALLE DEL CAUCA, COLOMBIA

By

Alfredo Roa Mejia

To my parents Pedro and Lolls, and to my wife, Lucila

A DISSERTATION

Submitted to Michigan State University in partial fulfillment of the requirements for the degree of

DOCTOR OF PHILOSOPHY

Department of Agricultural Economics

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The author wishes to express his gratitude to his major professor, Dr. Glenn L. Johnson who offered several useful suggestions for improving this thesis. The suchor is particularly grateful to him for the patience he displayed throughout the author's graduate program.

Dr. Garald 1. Trant suggested the copic and read the first draft of this study. His advise and friendly atcirule to highly appreciated. Then a suggest of the copic and the suggest To my parents Pedro and Zoila, and to my wife, Lucila

The Rockefeller Foundation gave the discribil ataiolance necessary for the undertaking of my post-project studies, and for the preparation of this study for which the author is very grateful

The Corporación Autónome Regional del Ceuce, CVC, kindly allowed the author the time necessary for the preparation of the study while an employee of the corporation, and encouraged the author by its interest in the subject of rural-urban migration and unemployment.

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Bereafter Valle del Cauca will be referrer to in a short form--Valle.

CHAPTER I

INTRODUCTION

The purpose of this study was to analyze rural-urban migration and its relation to unemployment in the urban areas of the Department Valle del Cauca¹ and particularly in Cali, the department's largest and capital city. Thus the area of study is the department of Valle but frequent references are made to other areas of Colombia when considering migration. The location of Valle, in the southwest area of Colombia and the location of other departments can be seen in the map included on the following page.

Need for the Study

High unemployment rates have been found in Colombia, especially in the big cities like Cali, where the rate has exceeded 18 percent. Analyzing the simultaneous existence of such high urban unemployment and rural underemployment despite high migration rates to the urban areas of Valle is the central focus of this research.

Studies relating rural-urban migration and unemployment

¹Hereafter Valle del Cauca will be referred to in a short form--Valle.



Map 1. Colombia

have not been carried out for Valle. Data on migration are also quite limited. Approximations on migratory currents in Valle were possible, however, as a result of the Universidad del Valle's detailed analysis of the 1964 population census data wherein information was made available about the Valle's non-native population. These figures were utilized as proxy variables for migration. Unemployment rates in Cali have only been estimated for four different years beginning in 1965.²

There are recent studies of unemployment for Colombia as a whole. The Colombian government requested and received an economic mission of the International Labor Organization (ILO) which undertook the study of unemployment and employment of the Colombian labor force. The mission presented its report in 1970.³ This effort was a general analysis of the Colombian labor force and the economic situation of the country. The study recommended several policies to lower the unemployment rate to 5 percent by 1985. The Colombian government adopted an Economic Development Plan⁴ in 1972 to achieve a similar goal but the policies and strategies differ from those suggested by ILO. There was, in fact, a significant

²See Chapter VI, Table 6.2.

³Oficina Internacional del Trabajo, <u>Hacia el Pleno</u> <u>Empleo</u>. Bogotá: Imprenta del Banco Popular, 1970.

⁴Departamento Nacional de Planeación, DNP, <u>Las Cuatro</u> Estrategias. Bogotá: DNP, 1973.

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difference in the policy formulated in one of these two approaches. The Economic Development Plan gives the construction sector (houses and urban growth) the leading role in absorbing the expanding labor force while ILO's proposal stresses agricultural and manufacturing growth using labor intensive methods. Hence, it was felt important to examine the difference in policies suggested by ILO and the ones adopted by the Colombian government. More importantly it was felt necessary to examine the specific applicability of these general recommendations for Valle. All efforts which enhance understanding of the magnitude of unemployment in Valle, the identification of possible means of reducing it, and the evaluation of the effectiveness of policies designed to lower the unemployment rates, are of prime importance.

ment decision where pot Objectives mis choose that siter-

The present study has the following specific objectives: 1. To formulate a decision model on rural-urban migration under conditions of urban unemployment and imperfect knowledge on the part of the prospective migrants.

- To formulate a model for estimating the labor force of urban Valle and particularly of Cali.
- To develop a theoretical framework that explains the limited labor absorption of Valle's manufacturing sector for unskilled labor.
- To estimate the number of jobs needed to (a) prevent a rise in unemployment and (b) lower unemployment rates

in urban Valle during the period 1974 to 1980.5. To identify and examine policy alternatives with respect to labor employment.

Theoretical Framework for the Study

Initially we will consider the basic theory to be used in formulating decision models for use in understanding rural-urban migration under conditions of (1) differentials between the cost of adding laborers to the farm economy and the returns obtainable from off-farm migration and, (2) imperfect knowledge.

The flow of rural-urban migration which is quite heavy in Valle despite the high rate of urban unemployment has attracted the attention of many economists. The migration decision is viewed in this study as an investment/disinvestment decision where potential migrants choose that alternative which maximizes the present value of the expected income streams. An early explanation to rural-urban migration when there is unemployment in the recipient areas was used by Glenn L. Johnson⁵ which was later redeveloped by Michael P. Todaro⁶ and John R. Harris and Todaro.⁷ The

⁵Glenn L. Johnson, "Allocative Efficiency of Agricultural Prices as Affected by Changes in the General Level of Employment," unpublished Ph.D. thesis, Department of Economics, University of Chicago, 1949.

⁶Michael P. Todaro, "A Model of Labor Migration and Urban Unemployment in Less Developed Countries," <u>American</u> Economic Review, Vol. 59, No. 1 (1969).

⁷John R. Harris and Michael P. Todaro, "Migration,

basic idea is that when the expected real urban income, that is, the real urban income adjusted by the probability of getting employment in a given period of time is greater than the rural real income $E(Y_{,}) > Y_{,}$ there will be ruralurban migration. Therefore there is a level of unemployment consistent with equilibrium in the labor market, when E(Y,) = Y. Glenn L. Johnson's more recent investmentdisinvestment theory⁸ more adequately explains rural-urban migration when there is imperfect knowledge in the urban areas. If the expected salvage value of rural workers, that is earnings available to them in urban industries. times the probability of finding a job in the urban areas in a given period of time is greater than wages or marginal value products (MVPs) of rural laborers, then migration will take place. Since the decision to stay on the farms or to migrate is taken in an uncertain situation, the risk taking attitude of the migrants has to be considered. Under uncertain situations right and wrong decisions will be taken with respect to staying or moving out of agriculture and the possibility of reversing wrong decisions has to be examined. This means that many individuals and groups of people can be

Unemployment and Development, A Two-Sector Analysis," American Economic Review, Vol. 60, No. 1, (1970).

⁸See, for instance, Glenn L. Johnson and C. Leroy Quance (editors), <u>The Overproduction Trap in U.S. Agricul-</u> <u>ture</u>. Baltimore: Johns Hopkins University Press, 1972.

simultaneously overcommitted to both agrarian and urban pursuits. Thus, we see how the simultaneous existence of high urban unemployment and rural underemployment despite high rural-urban migration, the central focus of this thesis as we said before, can be understood.

We turn now to the second objective which is to formulate a model for estimating the labor force of urban Valle and particularly of Cali. The labor force can be imperfectly divided into two broad categories: skilled and unskilled workers. The supply of skilled labor reflects investment in human capital during the period of training and preferences of workers between greater income and leisure time. The slope of the supply function should be positive for low income levels and, according to some theories, has a backward bending segment for high salaries. In the case of the unskilled labor supply human investment is much less relevant.

In Colombia the unskilled labor supply function appears to be a stepped supply function. Colombian labor legislation established 25 as the minimum number of laborers working for a given firm to form a union. Thus, for the first 24 workers the relevant salary is the minimum legal wage; for 25 workers and over a higher salary is generally established on the basis of collective bargaining agreements between the firm owner and the union. Unemployment of unskilled workers in Valle and Cali is very serious and consequently special attention will be concentrated on them in this study.

It is postulated that for a given wage the additional number of unskilled workers entering the labor market depends on the following factors: The rate of growth of the native population of working age living in the urban areas, the flow of rural-urban migration, the rate of the participation of women in the labor market, and the rate of conversion of workers from the unskilled to the skilled labor market.

The rate of growth of the native population depends on birth and mortality rates. The rate of feminine participation is expected to increase both as a consequence of technological change which makes domestic tasks easier and allows the substitution of manufactured for home-made goods, and the need to contribute to family income. The flow of rural-urban migration is quite heavy despite the high rate of urban unemployment. The conversion rate of workers from the unskilled to the skilled labor market is a function of the difference between the wages of skilled and unskilled workers, the unemployment rates for both kinds of labor, the proportion of the income which can be invested in training, educational and training facilities available, and the distribution of income.

In what follows, the basic ideas and hypothesis for developing a theoretical framework for the third objective, that is, to explain the limited labor absorption of Valle's manufacturing sector for unskilled labor will be presented.

Under perfect competition the demand for labor when

the entrepreneurs are profit-maximizers is given by L = f(VMP) where L is the quantity of labor and VMP is the value of marginal physical product of laborers. When firms have monopolistic power, the demand for labor is L = f(MRP) where MRP is marginal revenue product, that is the marginal physical product multiplied by the corresponding marginal revenue. Under uncertainty, entrepeneurs maximize non-monetary as well as monetary values.

The kinds of capital, the capital-labor ratio, and cost structure are related to size of firms. For handcraft and very small manufacturing industries. labor is the most important factor input. For medium size enterprises, the capital-labor ratio is lower than in large firms and labor cost is relatively high. Increases in the cost of labor have different effects on medium size firms. Those firms with enough funds can acquire labor-saving capital and do not hire over 25 workers to avoid unions and labor cost increases. Other firms which cannot afford changing technology may decide to hold the number of laborers below 25. For these firms laborers, when unionized, make labor more expensive than capital, that is, the ratio between marginal value product of labor and marginal factor cost of labor is less than the ratio between the marginal value product of capital and the marginal factor cost of labor-saving capital. The largest firms in Valle were inaugurated with big plants and modern equipment and therefore need a number of workers

greater than the legal minimum number for unionization. Most of their capital saves unskilled labor but is complementary with skilled labor, especially in the intermediate, durable and capital goods producing industry.

We will study factor proportions in Valle's industry examining elasticities of substitution for industrial branches. Also we will examine the effects on employment of (1) an increase in the aggregate demand for consumption goods and (2) an equal decrease in the aggregate demand for durable, intermediate, and capital goods. To examine this, an input-output table of the Colombian manufacturing sector will be utilized, transformed in such a way that it only shows the labor input of each of the industrial sectors. We will also analyze the relation between cost of labor and the level of utilization of installed capacity.

With respect to the fourth objective, that is to estimate the number of additional jobs that need to be created in urban Valle (1) to prevent a rise in unemployment and (b) to lower unemployment rates during the period 1974 to 1980, we will investigate alternative assumptions with respect to rate of migration. The difference between the number of people of working age estimated under alternative assumptions with respect to migration (using the model for estimating the labor force of Valle developed in this study) and the number of jobs that will be created in the manufacturing and service sector if the same trends observed

ur findings and the conclusions to be drawn from these

in the past continue until 1980, will give us the additional jobs that need to be created to prevent further increases in unemployment. Additionally we will estimate the total unemployed and low paid jobs at the end of 1973 using some parameters estimated by ILO for Colombia.

Finally, we will identify policy alternatives with respect to labor employment and to estimate their consequences, the fifth objective of this study. The conclusions on employment policies of this study are compared with the present Colombian economic and social development plan as well as the suggested policies by ILO made in 1970.

Organization of the Study

The study consists of eight chapters. This introduction is Chapter I. Chapter II presents selected aspects of population growth and the economic activity of Valle and Cali. These aspects are important for the analysis carried out in the following chapters. Chapter III contains a model that is used to explain rural-urban migration when there is urban unemployment and imperfect knowledge on the part of the prospective migrants. Chapters IV and V contain the analysis of the number of laborers looking for jobs in the urban areas of Valle and labor absorption in those areas. respectively. In Chapter VI the unemployment rates of the urban areas of Valle and particularly in Cali are quantified and analyzed. In Chapter VII employment policies are identified and examined. Finally, Chapter VIII contains a summary of our findings and the conclusions to be drawn from these.

CHAPTER II

DEMOGRAPHIC AND ECONOMIC CHARACTERISTICS

FOR CALI AND VALLE

As a basis for a sound comprehension of the extent of unemployment in the region, some of the economic and demographic data for Cali and Valle are presented in this chapter. Special attention is focused on the population growth rate, geographic distribution, migratory patterns, regional production, and income distribution. We will deal first with information for Valle as a whole, then for Cali.

Population of Valle

Figures from the census of 1951 and 1964 show that the population of Valle has grown at a rate of 3.5 percent a year. This implies Valle's population will double in the next twenty years if the same rate continues. The growth rate for this department is higher than the national level of 3.2 percent according to the same census.

Table 2.1 shows the population of Cali, Valle, and Colombia in the census years 1951 and 1964. It will be observed that the rate increase in the population of Cali is twice the rate of increase in the population of Colombia, and almost doubles that of Valle.

Table 2.1. Comparison of the Rates of Growth of Total Population of Colombia, Valle and Cali, 1951 and 1964.

Item	Ye	Annual	
mostly from the count	1951	1964	Growth Rate
women. ² The urban po	Numbe	r	Percent
City of Cali	241,357	618,215	7.5
Department of Valle	1,106,927	1,733,053	3.5
Colombia do the rure	11,548,209	17,484,508	3.2

Source: DANE, Censos de Población de Colombia, 1951 and 1964.

The total population of Valle in 1973 is estimated to be 2,361,972, and the population of Cali to be 1,115,042. Cali thus has 47 percent of the total population of Valle.

The urban population, those living in administrative centers called <u>cabeceras municipales</u>,¹ has grown during the years 1951 and 1964 at the rate of 6.3 percent, while the rural population decreased at the rate of 0.6 percent. In 1964, 70.4 percent of the Valle population was classified as urban, and 29.6 percent as rural. The <u>cabecera municipal</u> of Cali had 52.3 percent of the Valle's urban population in 1964 while the <u>cabeceras municipales</u> of Buenaventura, Buga, Cartago, Palmira and Tuluá had 29.2 percent of the Valle's urban population in the same year.

The difference between the two rates is largely explained by the phenomenon of migration from the country

¹The definitions of rural and urban areas are discussed in Chapter III.
to the city. As the distribution of the population by age and sex shows, a high proportion of young persons and women is concentrated in urban areas.

It is a known fact that the population which migrates mostly from the country to the city are the young and the women.² The urban population between 15 and 64 years of age doubled in the period from 1951 to 1964, while the same age group in the rural sector decreased at an annual rate of 1.5 percent during the same period, as can be computed from data given in Table 2.2.³ In the urban sector the female population is larger than the male in both census years, whereas in the rural areas the situation is reversed, there are more men than women (see Appendix A.1).

The concept of economically-active population is useful in understanding the participation of the population in the labor force and the rate of economic dependence. We use here the definition of economically active population adopted by the National Administrative Department of Statistics (DANE) for application in the 1964 census, which states:

²The reasons for higher rates of migration for young people and females are discussed in Chapter III.

³The age group less than 15 years of the rural population is the only age group which has an increase in the number of people, showing high birth rates in the rural area of Valle.

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Population	64.
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Age Groups and Residence	Total Population	Year 1951 EAP ¹	Proportion	Total Population	Year 1964 EAP ¹	Proportion
ate ula UII	humbe	art	Percent-	Numbe	r1	Percent-
Total Contract	1,106,927	398,746	36.0	1,733,053	529,544	30.6
Less than 15 Years Old	441,492	13,974	on h call urba	770,206	16,553	ob lon o pay the this
15-64	634, 329	373,560	58.9	915,032	499,616	54.6
65 and Over	31,106	11,212	wee aqt Lab	47,815	13,375	pop 12) d d goo fa pec r, r, or
Urban	550, 558	197,117	35.8	1,219,837	369,030	30.5 99
Less than 15 Years 01d	207,424	6,825	he a	525,673	8,393	tion mon and y he s he sal cen scon
15-64	325,248	185,206	56.9	658,977	352,580	53.5
65 and Over	17,886	5,086	to i	35,187	8,057	via cer of ckin
Rural	556, 369	201,629	36.2	513,216	160,514	31.3
Less than 15 Years 01d	234,068	7,149	and nEas	244,533	8,160	all yes or the ily list
15-64	309,081	188,354	60.9	256,055	147,036	57.4 57.9
65 and Over	13,220	6,126	4 20	12,628	5,318	0 1
	0		B	ad	50	

cally Active Population. DANE, Censos de Población de Colombia, 1951 and 1964. ^LEconomically Active Population. Source:

"Economically active population includes all those of age twelve (12) or more, who received income from a job held during the census year, in the production of goods and services, or who worked without pay as family helpers in the enterprise of the respective head of family, for at least a third of normal working hours. During the census year, the census establishes a limit of continuous or discontinuous activity for nime months in order to discriminate between employed and unemployed."⁴

pulation of Call

Upon comparing the economically active population with both the total population and with the population between the ages of 15 and 64, one notices that in the period under consideration the proportion of the population which is economically active diminished in both rural and urban areas as shown in Table 2.2. Moreover, in 1964, only 53.5 percent of the urban population between the ages of 15 and 64 was classified as economically active. This percentage of participation in the urban labor market of the working-age population is lower than the participation rate of rural Valle which was 57.4 percent while for the department as a whole was 54.6 percent during the same year.

The percentage of the economically active population with respect to the total population was 30.6 percent in 1964, which illustrates a high rate of economic dependency in the Valle's population.

The low rate of participation in the economically active part of the population of working-age is due to various

⁴DANE, "XIII Censo Nacional de Población. Resumen del Valle del Cauca," Bogotá: Dane 1967.

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causes: (a) the high proportion of women dedicated to homemaking, which was 78 percent in 1964, (b) students and incapacitated, who constituted 7.5 percent of the male working age population, and 5.4 percent of the females in the same age group, and (c) unemployed, retired and beggars.

Population of Cali

In 1951, 25.7 percent of the population of Valle lived in Cali, but in 1964 a third of the department's population was living in the capital.⁵ This concentration shows the attraction of Cali for inhabitants of other departments, and of other municipalities of Valle. In 1973 it is estimated that Cali includes 47 percent of the total population of the Department of Valle.

The urban population of Cali grew at the rate of 7.5 percent annually between 1951 to 1964, which implies Cali's population will double in ten years, only half the time which it will take the Department of Valle, if the same rates continue. This high growth rate reflects the fact that Cali is a greater absorber of population than Valle.

The population of the city of Cali is young, with a high proportion of women, especially between the ages of 15 to 64.⁶ As was said before, this is characteristic of centers which receive a great number of migrants.

⁵These proportions were computed from data given in Table 2.1.

⁶The distribution of the population by age, sex and place of residence may be consulted in Appendix A.

The economically active population of Cali shows the same decreasing tendency observed in Valle. The rate of economic dependency in Cali was 32.2 percent in 1964.⁷ The rate of participation in the labor market in 1964 is similar to the rate of the department and the same reasons explain this situation.

As we have seen, Valle and the capital city, Cali, receive large numbers of migrants. Many migrants come from outside the department of Valle, many change residence within the department, and the majority of these come to Cali. Statistics on these different types of migration are scarce; the only reliable data is that from the census of 1951 and particularly for the census of 1964.⁸ During the preparation of the present research, primary information on the causes of rural-urban migration in some zones of Valle was obtained; the analysis of those results is presented in Chapter III.

Migration to Valle

The high level of migration to Valle from other departments is shown by the high proportion of the population of

 7 In Table 6.2 of Chapter VI on unemployment, it is seen that the economically active population rose from 32.2 percent in 1969 to 47.7 percent in 1971; this is due to the Panamerican Games.

⁸The Universidad del Valle with collaboration from DANE published more detailed data on migration for the census year of 1964. See Universidad del Valle, Comité Universitario de Investigaciones sobre población, CUIP, <u>Censo de Población para</u> <u>el Departamento Del Valle</u>, Vol. II, Cali, 1968. Valle born in other departments of Colombia. If the total population of Valle is compared with the number of those born in other departments, in 1951, 37.5 percent were born outside Valle, and in 1964, 33.4 percent.

The annual increase of the migrant population in the period between 1951 and 1964 was 2.6 percent, while the total increase of the population each year was 3.5 percent.

In Table 2.3, the non-native born population of Valle is distributed by age groups. This shows that more than 75 percent of this group is constituted by persons of working age, for both census years, confirming the fact that the young are the most mobile.

In Table 2.4 the previous residence of the migrants to Valle is identified. The categories include the original department of Caldas (subsequently subdivided into three departments), Antioquia, Cauca, and two groups which include several departments. The first of the two groups includes Cundinamarca, Nariño, and Tolima. The second group contains Atlántico, Bolívar, Boyacá, Chocó, Huila, Magdalena, Norte de Santander, Santander, and the Intendencias and Comisarías.

Caldas, Antioquia, and Cauca account for 67 percent of the migration to Valle in 1951, and 63.1 percent in 1964. In 1951, 38 percent of the total migratory group arriving in Valle came from Caldas, and 36 percent came from Caldas in 1964.

The different kinds of migratory currents among non-native born population of Valle and their relative importance shows

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Place of Birth	Year	1951	Year 1964		
and Group Ages	Total	Proportion	Total	Proportion	
estimate the rural-ur	Number	Percent	Number	Percent	
Caldas	159,300	38.3	209,586	36.2	
Less than 15 Years Old	36,744	49.8	50,456	46.1	
15-64 Years	117,869	36.1	150,809	34.1	
65 Years and Over	4,687	30.3	8,321	30.9	
Antioquia	65,710	15.8	73,391	12.7	
Less than 15 Years Old	7,329	9.9	9,877	9.0	
15-64 Years	54,052	16.6	57,555	13.0	
65 Years and Over	4,329	28.0	5,959	22.1	
Cauca	56,488	13.6	82,724	14.3	
Less than 15 Years Old	9,317	12.6	14,095	12.9	
15-64 Years	44,879	13.8	64,567	14.6	
65 Years and Over	2,292	14.8	4,062	15.1	
Group I*	87,761	21.1	140,181	24.2	
Less than 15 Years Old	14,259	19.3	24,168	22.1	
15-64 Years	71,102	21.8	110,679	25.0	
65 Years and Over	2,400	15.5	5,334	19.8	
Group II**	39,394	9.5	63,612	1.0	
Less than 15 Years Old	5,457	7.4	9,405	8.6	
15-64 Years	32,528	10.0	51,559	11.7	
65 Years and Over	1,409	9.1	2,648	9.8	
Foreigners	6,856	1.7	9,733	1.7	
Less than 15 Years Old	706	1.0	1,569	1.4	
15-64 Years	5,815	1.8	7,522	1.7	
65 Years and Over	335	2.2	642	2.4	
Total	415,509	100.0	579,227	100.0	
Less than 15 Years Old	73,812	100.0	109,570	100.0	
15-64 Years	326,245	100.0	442,691	100.0	
65 Years and Over	15,452	100.0	26,966	100.0	

Table 2.4. Place of Origin of Valle's Non-Native Population, 1951 and 1964.

*Cundinamarca-Narino-Tolima

**Atlántico-Bolivar-Boyacá-Chocó-Huila-Magdalena-Norte de Santander-Intendenias y Comisarias.

os living in other departments

Source: Universidad Del Valle, CUIP "Estudios de Población," Cali, 1970 (mimeo). :-E . ::: ë i. • 11 :1 1 : . 11 . . • . : • . in Table 2.5. The <u>cabeceras municipales</u> are considered urban areas, but this is not really a valid picture of reality, for there are many <u>cabeceras</u> in which the inhabitants primary activity is agricultural. For this reason, the figures underestimate the rural-urban migration.⁹ Table 2.5 shows four kinds of migratory currents: (1) urban-urban, (2) urban-rural, (3) rural-urban, and (4) rural-rural migration. Urban-urban migration involves the highest proportion of the Valle nonnative born population, 56.5 percent followed by rural-urban . migrants 16.9 percent, rural-rural migrants 13.8 percent and urban-rural migrants, 12.8 percent. A higher proportion of men than women migrate to rural areas while a higher proportion of females than males migrate to urban areas.

If Valle's native and non-native migrants are considered, the relative importance of the four kinds of migratory currents do not change substantially: 54.8 percent for urban-urban migrants, 17.5 percent for rural-urban migrants, 13.9 percent for urban-rural migrants and 13.8 percent for rural-rural migrants.¹⁰ However, we can see that Valle native population is more mobile from the country to the city and between rural areas.

Out migration of natives for Valle, measured as the change in the number of Vallecaucanos living in other departments

⁹A discussion of this definition is found in Chapter III.

¹⁰Rural-rural migration was also found by CVC in the flat and mountainous rural areas of Valle, as pointed out in Chapter IV of this study.

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ive	MIL	80	9	ment	icipios had to 1964
ten avo	ale	9,54	88,32	arte	her municipies of
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denc	gin er P le	226	953	de P	mts in 1964; ¹²
(2) thesi	Oth Oth Ma	45,	45,	uso	migration in Valle; 13
(3) thete was	e of) al	966	399	Ce .	natives of Valle
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of Colombia between 1951 and 1964 was estimated at 272,000 people, while the number of immigrants was 400,000 people during the same period.¹¹

Migration Within Valle

It was said above that Valle's <u>municipios</u> had in 1964 over half of their population born in other <u>municipios</u> of Valle and of other departments, indicating Valle's high population mobility. L&pez Toro found the following characteristics with respect to migration within Valle: (1) ruralurban migration within a <u>municipio</u> was not very important in the period 1951 to 1964, while there are high potential rural-urban migration between <u>municipios</u>, especially in <u>municipios</u> with less than 45,000 inhabitants in 1964;¹² (2) there is little evidence of stepwise migration in Valle;¹³ (3) there was urban-rural migration among natives of Valle from 1951 to 1964;¹⁴ (4) Valle's <u>municipios</u> with less than 45,000 inhabitants had considerable immigration and outmigration during the period 1951 to 1964;¹⁵ (5) when the immigration

11_{Alvaro López} Toro, "Nota sobre los Fenómenos migratorios del Valle del Cauca." Bogotá (Mimeo).

¹²<u>Ibid</u>., p. 4. ¹³<u>Ibid</u>., pp. 11-12. ¹⁴<u>Ibid</u>., p. 18. ¹⁵<u>Ibid</u>., p. 14.

rates to the Valle's municipios for the periods 1952 to 1958 and 1958 to 1963 are compared, Cali's migration rate was stable while the other municipios, classified in three groups according to their population¹⁶ had increasing immigration rates: 17 (6) outmigration rates from Valle's municipios increases as the municipios' population decreases and, thus, Cali had the lowest outmigration rate: Cali did not have evidence of outmigration. 18 the proportion of women is higher

Migration to Cali population of working Of the persons who migrate to Valle, a high percentage. age arriving in Cali was esti-72 percent, settle in Cali. In 1964, 37.5 percent of the total population of Cali came from departments other than Valle, the natives of Valle not born in Cali constituted 18.6 percent, foreigners 1.2 percent. Thus 57.3 percent of the population of Cali was born elsewhere. Alvaro López Toro showed that the other cabeceras municipales also have over half of their population born in other localities although the proportion is not as high as that for Cali.¹⁹ Thus, the population in percent of all Valle is very mobile. between 15 and 64, which signifies that

¹⁶Group I: 5 <u>municipios</u> with more than 65,000 inhabitants Group II; 14 <u>municipios</u> with more than 20,000 and less than 65,000 inhabitants, Group III: 19 <u>municipios</u> with more than 10,000 and less than 20,000 inhabitants. The municipios of San Pedro, Ulloa and Vijes with less than 10,000 inhabitants were excluded.

17 Ibid., pp. 12-13. de Cali, "Estudio Preliminar de Valle 18 Ibid., p. 14. artcos de Call 1969, pp. 16 and 75. 19_{Ibid., p. 6.}

Ŷ : : 2 : . 1 1 : i ĩ 1 ł Ċ - The different kinds of migratory currents among nonnative born population of Cali are shown in Table 2.6. Migrants to the rural area of the <u>municipio</u> of Cali are few: 1.7 percent come from urban areas and 0.8 percent from other rural areas, while migrants to urban Cali are 97.5 percent of the total. Urban-urban migrants have the highest proportion among all migrants, 77.6 percent and rural-urban migrants are 19.9 percent. The proportion of women is higher in both urban-urban and rural-urban migrants.

The annual increase of the migrant population of working age arriving in Cali was estimated at about 8 percent.²⁰ This rate is more than three times the estimated rate for all age groups arriving in Valle which, as was said before, is 2.6 percent.

Upon comparing the classification by age between the persons born in Cali and those born elsewhere, Table 2.7 shows that 68.8 percent of the native born are under age 15, while only 17.7 percent of the non-natives belong to this age group. On the contrary, 76.8 percent of the non-native born population of Cali is between 15 and 64, which signifies that a large section of those who arrive in Cali are of working age, while only 30.2 percent of the native <u>Caleños</u> fall into this category.

²⁰Planeación Municipal de Cali, "Estudio Preliminar de la Población de Cali," (Mimeo) 1960, and Universidad del Valle, <u>Estudios Demográficos de Cali</u>, 1969, pp. 16 and 75.

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Place of Origin	in		Present	Reside	nce		21		
or eer (S) ve ae di	Cabecer	as (Urba	n Zone)	0	ther Pla	ces	d	Total	
	Male	Female	Total	Male	Female	Total	Male	Female	Total
Cabeceras (Urban Zone)	129,611	154,138	283,749	3,459	2,828	6,287	133,070	156,966	290,036
Other Places (Rural Zone)	32,378	40,361	72,739	1,489	1,246	2,735	33,867	41,607	75,474
Total	161,989	194,499	356,488	4,948	4,074	9,022	166,937	198,573	365,510

Universidad Del Valle, CUIP, <u>Censo de Población Para el Departamento Del Valle</u>, Vol. II, Cali, 1962. Source:

Table 2.7.Distribution of the Population of Cali by Place
of Origin, Sex and Age Groups, 1969.

Age Groups			Place o	f Orig	in					
	Во	rn in Ca	.li	Born	Outside	Cali				
	Male	Female	Total	Male	Female	Total				
			Per	cent						
0-15 Years Old	35.0 33.8 68.8 8.7 9.0 17.7									
15-64 Years Old	14.2	16.0	30.2	33.0	43.8	76.8				
65 Years and Over	0.4	0.6	1.0	2.3	3.2	5.5				

Source: Universidad del Valle, CUIP, "Estudios de Población," Cali, 1970 (Mimeo).

The population data presented show a high native population growth, considerable migration to the department of Valle, different kinds of migratory currents including a strong current of rural-urban migration, and that within Valle, Cali is the destination of the majority of the migrants. The high birth rate combined with accelerated migration, determine the extremely high population growth rate in the department and in Cali.

The major part of those who migrate to Valle and to Cali are between 15 and 64 years of age, and more of them are female. (See Table 2.7). The proportion of the noneconomically active population is high and rising. Valle is a highly urbanized department (70.4 percent), while the rural population is decreasing in both absolute and relative terms.

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Production in Valle

In the period from 1958 to 1969, the gross product, in 1959 prices, grew in Valle at an annual rate of 5.6 percent, while the economically active population grew only 2.2 percent. This rate is even lower than that of total population growth in Valle, which was 3.5 percent annually.

Valle produces a high percentage in terms of aggregate value and in terms of gross production, of both Colombian industrial and agricultural goods. The aggregate value of the manufacturing sector of Valle has been calculated by using the figures given by the DANE, and adjusting them by coefficients calculated on the basis of information from <u>Sociedades Anónimas</u>, since some intermediate consumption such as telephones, insurance, publicity, etc. were not included in the calculations made by the DANE.

The figures for the industrial sector are for the period from 1956 to 1968, since the data for more recent years are not yet available. The aggregate real value of the output of the industrial sector of Valle in this period, according to the aggregate value at current prices adjusted by the price index for wholesalers calculated by the Banco de la República, grew at an annual rate of 7.5 percent. The real value of production shows a growth rate per year of 7.3 percent. These figures reflect the accelerated development of the industrial sector, which is the same rate proposed as a target for gross internal product by the Development Plan for the period from 1970 to 1973 to which is the

required rate to absorb the new labor force.²¹ However, unemployment has grown in Valle, as we shall demonstrate in Chapter VI.

The fact that the growth rate of aggregate value is higher than that of production, indicates the large volume of production of intermediate goods and capital in the department.

The number of workers employed by the manufacturing sector increased at a rate of 3.3 percent a year, which is below the rates for industrial production.²²

It was not possible to obtain information on the agricultural sector for exactly the same period, since information on prices for agricultural goods from 1956 to 1959 are not available. Therefore, we will consider the period 1960 to 1970. Agricultural production grew during this period at an annual rate of 6.5 percent. The value of industrial production is greater than the value of agricultural production and grows at a higher annual rate. In Table 2.8 the data on the total value of agricultural and manufacturing production in Valle, in 1958 prices, are shown for the 1960 to 1970 period.

²¹Ministerio de Agricultura, "El sector agropecuario frente al problema del desempleo," Bogotá, 1971, (Mimeo), p. l

²²In Chapters V and VI we examine the fact that the manufacturing sector employs a low percentage of the labor force in Valle.

Table 2.8. Total Value of Manufactured and Agrarian Production of Valle Measured in 1958 Constant Prices for the 1960 to 1970 Period.

Year	Manufacture Production ¹	Agricultural Production ²
	Current Cold (in thou	ombian <u>Pesos</u> sands)
1960 1961 1962 1963 1964	2,015,163 2,229,039 2,583,170 2,646,803 2,797,146	461,521 525,407 565,430 492,601 602,695
1965 1966 1967 1968 1969 1970	2,798,130 3,145,903 3,115,741 3,542,136 3,381,879	563,293 607,609 706,440 737,148 838,083 851,777

¹The index price of wholesales calculated by Banco de la República was used as deflactor.

²The implicit price index of the Colombian national account was used as deflactor.

Source: CVC, "Plan de Desarrollo Agropecuario del Valle del Cauca," Unpublished preliminary draft, 1974, Banco de la República, and Planeación Departamental del Valle del Cauca, Unpublished data. Since the population of the rural sector has decreased at the rate of 0.6 percent a year, and production has increased at an annual rate of 6.5 percent, agricultural production per capita has risen and at a faster rate of industrial production per capita. Undoubtedly, this has been due to the increasing use of better technology and mechanization. However, production per occupied person is low when compared with the industrial sector. In 1964 the value of manufactured goods was 4.6 times the value of agricultural goods, but occupied only one-third the manpower.²³

The manufacturing and agricultural sectors of Valle are a dual economy. Dualism has been defined as a dispersion of firm and farm sizes, output levels and factor proportions.²⁴ There is a highly mechanized modern sector where production per worker is high, and a traditional sector with low productivity. A brief description of the characteristics of the four subsectors follow.²⁵

The modern agricultural subsector has developed on Valle's flat land with high fertility. The main crops are

²³This comparison is made for the year 1964 due to the availability of the census data. The values of industrial and agricultural production are shown in Table 2.8. The population employed in the industrial sector was 50,045, and in the rural sector it was 147,036.

²⁴R. A. Berry, "Special Problems of Policy Formation in a Dualistic Agriculture: Colombia," Department of Economics, University of Western Ontario, London, Ontario, Canada, December 1972, Mimeo, p. 5.

²⁵The characteristics of modern and traditional agriculture are described for the case of Valle in CVC, "Plan

sugar cane, cotton, soybeans, grain, sorghum, corn and rice. Nontraditional inputs are used like chemicals to control diseases, insects, and weeds. Cultivation is by tractors, with little use of hand cultivation, while harvesting is less mechanized. The scale of operation is large in relation to traditional crop culture. In the traditional agricultural subsectors most of the farms are located in the mountainous areas although there are many minifundia areas in the Valle's flat land (See Appendix B.5 and B.6). The main crops are <u>yuca</u>, beans, plantains and cane for <u>panela</u>. Farms are not specialized on production and several crops are mixed on a given piece of land. Inputs are mainly traditional and cultivation by hand is the rule. The education and training level of traditional farmers is low.

In the modern manufacturing industry the firms are similar to typical firms in the same industry in more developed countries. Some companies in Valle are subsidiaries of U.S. companies with highly mechanized machinery and are managed by foreigners. The firms in the modern manufacturing

de Desarrollo Agropecuario del Valle del Cauca," Cali, unpublished preliminary draft, 1974 and for Colombia in L. Jay Atkinson, <u>Agricultural Productivity in Colombia</u>, Foreign Agricultural Economic Report No. 66. Washington: U.S. Government Printing Office, 1970, pp. 85-9. The characteristics of modern and traditional manufacturing industry are analyzed in Richard R. Nelson, T. Paul Schultz and Robert L. Slighton, <u>Structural Change in a Developing</u> <u>Economy: Colombia's Problems and Prospects</u>. Princeton: Princeton University Press, 1971, pp. 77-156.

industry are "somewhat smaller, with somewhat lower value added per worker, capital per worker, and labor quality, than firms in the same industry in a developed country but they were using roughly the same kind of technology."²⁶ The traditional manufacturing industry is composed of "small craft firms using significantly less modern equipment, employing quite different (and less related to formal education) labor skills, and creating far lower value added per worker. To a considerable degree these two groups produced different products."²⁷

Finally, it is important to point out that Valle has one of the highest economic growth rates among departments of Colombia, and this fact has created an imbalance development process in Colombia.

Income Distribution

In a market economy, income is formed in the productive process as conctractual income in the form of salaries, interest, rent, and as residual income in the form of benefits. It is possible to analyze income distributions both according to recipients (personal) and function.

Personal distribution data on incomes show the total amount received by the persons involved in a given period of time. Despite the fact that this information is valuable,

²⁶Nelson, Schultz and Slighton, <u>op</u>. <u>cit</u>., p. 115.
²⁷Idem.

it does not elucidate the source of the income: personal work, property, entrepreneurial activity. By contrast, functional distribution pinpoints the sources of income.

In the following section, we will consider the personal distribution of income in Valle as a whole, in the rural and urban zones of Valle, and in the City of Cali. In 1965, 1,284 families were interviewed in the department.²⁸ Of these, 864 lived in the urban zone and 420 in rural areas. The income distributions according to these interviews are shown in Table 2.9. It may be observed that as income rises, the percentage of families decreases in both the rural and urban sectors. It may also be observed that the rural sector has a much higher percentage of low incomes.

The data gathered from the sample taken by a study undertaken by the CVC in July, 1972, confirm the fact that income is highly concentrated in a few families in the rural area. Table 2.10 presents the data showing the distribution of income comparing the flat valley with the mountainous zone of rural Valle. A higher percentage of the high income group is found among those with property in the flat lands.

The information pertaining to the income distribution of residents of Cali comes from a survey conducted by <u>Planeación Municipal de Cali</u> in August 1969.²⁹ Table 2.11

²⁸DANE, "Encuesta de la Investigación Nacional de la Morbilidad, 1965," Bogotá, DANE.

²⁹<u>Plan General de Desarrollo - Encuesta Urbana de</u> empleos e ingresos del área urbana de Cali. Cali, 1969.

Table	2.9	. Distr	ibution	of	Family	Income	in	Valle.	1965.

Average Family Income	Proportion of Families Living In				
	Urban	Rural	Total		
Current Colombian Pesos	Percent				
Less than 3,600	17.5	44.8	27.9		
3,601 to 6,000	19.0	29.0	22.8		
6,001 to 12,000	24.0	10.7	19.0		
12,001 to 30,000	12.1	2.6	8.5		
More than 30,000	6.4	1.4	4.5		
Undetermined	21.0	11.5	17.3		

Source: DANE, "Encuesta de la Investigación Nacional de Morbilidad, 1965," Bogotá, DANE.

Table 2.10. Distribution of Family Income in the Rural Sector of Valle, According to Sample, July 1972.

Average Family Income	Proportion of Families With Respect to the Total Living In	
	Flat Region	Mountainous Region
Current Colombian Pesos	Percent	
Less than 10,000	26.3	34.7
10,000 to less than 20,000	30.5	29.7
20,000 to less than 30,000	11.0	13.8
30,000 to less than 50,000	9.3	9.4
50,000 to less than 100,000	9.3	12.8
100,000 and over	13.6	2.2

Source: CVC, "Estudio Socio-Económico del Sector Rural de Valle," Unpublished preliminary draft, 1973.

Table 2.11. Distribution of Family Income in Cali, August 1969.

Average Family Income	Proportion
Current Colombian Pesos	s Percent
Less than 1,000 1,000 to 1,500 1,501 to 2,000 2,001 to 3,000 3,001 to 6,000 6,001 to 10,000 More than 10,000	21.531.020.013.84.15.83.8
Source: Planeación Mur Plan General o Encuesta Urbar e Ingresos de	nicipal de Cali, de Desarrollo, na de Empleos L Area Urbana

illustrates the unequal distribution of income in the city, where it may be noticed that the concentration of income is higher than in the department as a whole.

Cali, 1969.

de Cali.

The figures cited clearly show the uneven distribution of income in Cali, and in the department of Valle, and emphasizes the fact that the situation is most acute in the rural zone.

We have presented in this chapter selected information relevant to the thesis's subject with respect to the population and the economic activity of Valle and Cali. We showed the high growth rates of the population living in urban areas of Valle, 6.3 percent, and the capital city, Cali, with a rate of 6.4 percent, but the non-native working age population of

Cali growing at a 8.0 percent rate.³⁰ These high rates are, in part, the result of strong rural-urban migration. Rural population decreased with a rate of 0.6 percent. Agricultural and industrial growth of Valle is quite satisfactory, 7.5 percent for industrial production and 6.5 percent for agricultural production which equal the rates proposed for the country by the national development plan in 1970. The Valle industry produces large volume of intermediate and capital goods. When the industrial growth rate is compared with its rate of manpower absorption, 3.3 percent, it is clear that production increases due mainly to improvements in productivity rather than through utilization of more manpower. Dualism is the rule in the Valle's agricultural and manufacturing industry. Income is highly concentrated in Cali and especially in the rural areas of Valle where a highly mechanized modern sector exists together with a traditional sector with low productivity.

³⁰This figure was given by <u>Planeación Municipal</u> as we said before. In Chapter IV we estimated an increase of 7.6 percent for males non-natives and 7.2 percent for females non-natives.

CHAPTER III

DECISION MODEL FOR RURAL-URBAN MIGRATION

The tremendous increase in Valle's urban population while its rural population decreased, as it was shown in Chapter II, is largely explained by the phenomenon of ruralurban migration. However, we showed in Chapter II that other migratory currents have also taken place in Valle. Over half of the migrants (54.8 percent) went from urban to urban areas while only 17.5 percent went from rural to urban areas. The relative importance of the kinds of migratory currents were computed on the basis of defining urban areas as the cabeceras municipales and as rural areas the other zones of a municipio. These definitions were approximations to the concepts of urban and rural areas in order to be able to identify migratory currents using census data. This definition is not conceptually clear since other factors like economic dependency on agriculture and the social organization of the community should be taken into account. However, there are not clear cut criteria to decide when an economy is not depending upon agriculture and the community is socially organized in such a way that is more urban than rural. There are difficulties in classifying some productive activities as belonging to the agricultural sector or to the industrial or

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service sectors. Therefore, for practical purposes, an arbitrary number of people in an aggregate is used to classify a group as urban or rural. The author believes the figure 1,500 people used by the Colombian census is low; thus has suggested 2,000 and 10,000.¹

If a <u>cabecera municipal</u> that has 10,000 is defined as a rural area, urban-urban migration will be less while ruralurban migration will increase. High potential rural-urban migration exists in the Valle's small and medium size <u>municipios</u> as López Toro pointed out (see Chapter II) and even higher potential rural-urban migration exists in the <u>municipios</u> of other departments of Colombia from where the majority of the migrants to Valle come from (See Table 3.4).

There were 129,000 urban-rural migrants (17.5 percent of the total migrants of Valle) involving a high proportion of Valle's natives, between 1951 to 1964. This fact together with (a) the high mobility of the Valle's population, and (b) the higher immigration rates observed to smaller and more rural <u>municipios</u> during the period 1958 to 1963 when compared to the period 1951 to 1958 show the important role of the rural violence of the late 1940s and the first part of the 1950-1959 decade.

Rural-urban migration, underestimated by the definition of rural and urban areas, should have been high during the

¹William L. Flinn, "Rural to Urban Migration: A Colombian Case." Madison: Land Tenure Center, University of Wisconsin, July 1966, p. 18.

period of violence but it was not permanent migration for some migrants as discussed above. More recently, with violence disappearing in the countryside, rural-urban migration continues to play an important part in the geographic distribution of the Valle's population determining high increase in its urban population and decrease in the rural population. There are still potential areas for high migration in Valle and other departments, as discussed above. Thus, it is important to determine the factors for this kind of migration to be able to develop policies aimed to help combat unemployment in the urban areas.

Factors Affecting Rural-Urban Migration

There is an extensive literature discussing factors of rural-urban migration for different localities around the world.² The authors agree that the predominant cause of

²See for instance William L. Flinn, <u>Op. cit.</u>; Harris and Todaro, and Todaro in different articles cited frequently in this study (see bibliography); Derek Byerlee and Carl K. Eicher, "Rural Employment, Migration and Economic Development: Theoretical Issues and Empirical Evidence from Africa," paper presented at a Conference of the International Economic Association on the Place of Agriculture in the Development of Developing Countries, Bad Godesburg, Germany, 1972; Juan F. Gaviria G., Francisco J. Gómez P., and Hugo López C., Centro de Investigaciones Económicas (CIE), Universidad de Antioquia, <u>Contribución al Estudio del Desempleo en Colombia</u>. Bogotá: DANE, 1971; Sunday M. Essang and Adewale F. Mabawonku, "Determinants and Impact of Rural-Urban Migration: A Case Study of Selected Communities in Western Nigeria," East Lansing: African Rural Employment Research Network, Department of Agricultural Economics, Michigan State University, 1974; Derek Byerlee, "Research on Migration in Africa: Past, Present and Future." East Lansing: African Rural Employment

rural-urban migration has been economic, in terms of income or wage differentials in favor of urban places or better economic opportunities as perceived by the migrants, rural poverty, and low agriculture productivity. Besides some apparent noneconomic factors are really economic ones like education since returns to education are generally very low in rural areas compared with urban areas and the distance between the sending and receiving areas can be explained in terms of economic factors such as the additional cost of acquiring information and of moving.³ Other factors frequently mentioned are tendency to migrate to places where the migrants have relatives, and freedom offered by town where the control of older generation is avoided.

For the Colombian case William L. Flinn⁴ interviewed 196 migrant families to the working barrio El Carmen of Bogotá. The important factors influencing migration were: (1) monetary reasons (wage differentials) as the most frequently mentioned by 42.5 percent, (2) violence in rural areas, 13.2 percent (3) dependents, youngsters who migrate with their families 12.3 percent, (4) "other reasons," 10.4 percent.

³Derek Byerlee, <u>op</u>. <u>cit</u>., p. 11. ⁴<u>Ibid</u>., pp. 6-14.

Research Network, Department of Agricultural Economics, Michigan State University, 1972; Josef Gugler, "The Impact of Labour Migration on Society and Economy in Sub-Saharan Africa: Empirical Findings and Theoretical Considerations," <u>African</u> <u>Social Research</u>, 6, December 1968, pp. 463-86; Nelson, Schultz and Slighton, <u>op</u>. <u>cit</u>., pp. 45-76. Albert Berry, <u>Development</u> <u>of the Agricultural Sector in Colombia</u>, forthcoming.

These factors were followed by better living conditions, (5.7 percent) health (3.8 percent), education (3.8 percent), compulsory military service (3.8 percent). No reason or no response from 5.7 percent. As argued before some of the nonmonetary factors are of economic significance; these include: dependency, better living conditions, health, and education among others.

Gaviria, Gómez and López, researchers at the <u>Universidad</u> <u>de Antioquia</u> argue that the answers given by migrants are only the result of the predominant political ideology and do not reflect what they believe is the real cause of migration, capitalistic agricultural exploitation which takes the land away from peasants.⁵

Nelson, Schultz and Slighton developed a model of interregional migration in Colombia. Their basic hypothesis is that "people migrate because they have reason to believe that, by migration, they can improve their conditions and that of their family."⁶ Factors that affect the decision to migrate from rural to urban areas are: (1) interregional inequalities as measured by wage differentials, (2) distance from the rural locality to the receiving city, (3) population pressure in the rural areas, (4) relative educational opportunities: the level of education of rural people and the educational facilities offered by urban areas, and (5) violence.

⁵<u>Ibid</u>., p. 59. ⁶Ibid., p. 56.
They estimated local rates of migration by a linear function of six independent variables: local wage rates in agriculture, the estimated local rate of population increase in the absence of migration, distance to the nearest large town, the level of political violence, and two measures of schooling: school enrollment rate for children between 5 and 9 years and the school enrollment rate for children between 10 and 14 The main findings were (1) if rural wages were years. doubled (and city wages held constant) migration might be reduced by about 70 percent. No effect of rural wages on male migration rates is evident after age 26; (2) 20 percent reduction in surviving fertility in rural areas is associated with a 40 percent reduction in the outmigration of men and a 50 percent reduction in the outmigration of women; (3) the variable distance to city helps to account for differences in migration rates among the cabeceras but does not appear to affect the propensity of the rural population to migrate; (4) violence in rural areas produce outmigration: one death by violence is associated with a net outmigration of approximately 40 persons for the immediate rural area, and (5) rural school enrollment for the 10-14 age is associated with outmigration but, contrary to what was expected, school enrollment from the 5-9 age group was not associated with outmigration.

Albert Berry argues that "in the event that commercial farming continues to gain ground relative to small-scale farming, and neither exports nor other rural sources of

incomes for small farmers take the pressure off, then the only way out for the small-scale farmer is migration."⁷

For the Valle case the two most frequent reasons for migrating given by prospective migrants in a survey carried out by CVC in the flat and mountainous zone of Valle were (1) marriage and (2) better economic opportunities.⁸ Answers of prospective migrants interviewed to test Todaro's model, for the purpose of this study cited better economic opportunities and higher wages, or monetary factors as the more important factors in migration.

Thus, most studies have revealed income differences to be the main factor in explaining rural-urban migration though there are other monetary and nonmonetary factors as well which are of socio-economic consequence.

Decision Model for Rural-Urban Migration with Urban Unemployment

An economic model which explains rural-urban migration in terms of income differentials when there are high unemployment rates in urban areas, as is the case in urban Valle as a whole and Cali,⁹ assuming perfect knowledge on the part of the prospective migrants was proposed by J. R. Harris and

⁹See Chapter VI.

⁷<u>Development of the Agricultural Sector in Colombia</u>, Chapter I, forthcoming.

⁸"Estudio Socio-Económico de la Población Rural del Valle," <u>op</u>. <u>cit</u>.

Michael Todaro.¹⁰ It is a model for well-informed rural laborers and poor owner-operators who plan to go to the cities to look for a job. The model is not intended to cover the case of wealthy migrants bringing capital to the urban areas in search of the best opportunity for investment. The fact is that there are reasons to believe that a high proportion of the Valle migrants are poor uneducated people¹¹ in need of a subsistence job and thus the Harris and Todaro model is relevant. We turn now to a brief description of the Harris and Todaro model.

The Harris and Todaro model looks at migration as an investment decision where potential migrants choose that alternative which maximizes the present value of their expected real income streams and since the receiving urban places have unemployment the model takes account of this fact and uses the concept of expected income. Harris and Todaro calculate the salary expected in the urban sector, by multiplying the real salary by the probability of finding a job within a certain period of time. It is assumed that when there are more prospective workers than jobs, a periodic system of chance selection exists. The probability of finding a job is estimated by the relation between the number of workers employed in the city and the number of persons of

^{10&}quot;Urban Employment in East Africa: An Economic Analysis
of Policy Alternatives," East African Economic Review, Vol.
4, No. 2 (1968), pp. 17-36.

¹¹See Chapters II and IV.

working age resident in the urban area.¹² They said that if the rates of unemployment rise, as is the case of Valle and Cali, the expected wage diminishes, migration to the city falls off until reaching an equilibrium level of unemployment. If the level of unemployment falls then the expected wage in the urban area goes up, and if rural wages and living conditions do not change, new migratory currents begin, and the cycle repeats itself until equilibrium is reached again, and migration ceases once more.

The fundamental assumption of the model is that ruralurban migration to cities with unemployment occurs when the expected wage in the urban area is a certain amount greater, or simply more than the rural wage. Harris and Todaro explain the model thus:

"The crucial assumption to be made in our model is that rural-urban migration will continue so long as the expected urban real income at the margin exceeds real agricultural product--i.e., rural migrants behave as maximizers of expected utility."¹³

In symbols, as long as $W_u^e > W_r$ migration will occur. Migration ceases when $W_u^e - W_r = 0$. As Harris and Todaro point out, this is arbitrary, and one may suppose that migration will cease when $W_u^e - W_r = \alpha$ where α may have any

¹²An analysis of employment probabilities is found in Michael P. Todaro, "Model of Labor Migration and Urban Unemployment In Less Developed Countries." <u>Op</u>. <u>cit</u>.

¹³"Migration, Unemployment and Development: A Two-Sector Analysis," <u>op</u>. <u>cit</u>., p. 127.

given value. The value of α depends on the possible differences in inconveniences and ways of life in city and country, the expenses involved in moving, or preferences for one place or another. Similar reasoning can explain a large part of urban-urban migration when this involves people moving from small or medium-sized urban areas to the metropolis with a greater degree of economic development.

In order to test the Harris and Todaro model in Valle, 500 families from the <u>municipio</u> of Palmira, <u>corregimientos</u> Rozo, Acequia and Latorre were interviewed.¹⁴ This locality was chosen in order to take advantage of the fact that professors from the University of Florida, with financial aid from the World Bank and collaboration from the CVC, were carrying out research on the benefits of rural electrification in the area. The questionnaire is included in Appendix D.

The head of the family of each farm was interviewed. This fact might cause some distortion in the information, since the migrating persons themselves were not interviewed. Instead of asking the causes for migration already undertaken, the questions were framed for those still on the farm

¹⁴Empirical verification of the Todaro model using regression analysis and rural-urban income differentials as the explanatory variable of rural-urban migration have been difficult due to lack of adequate data and the theoretical problems in measuring the relevant rural and urban income and comparing the two incomes as explained by Byerlee, <u>op. cit.</u>, and Essang and Mabawonku, <u>op. cit</u>.

in terms of whether they were thinking of migrating, and if so where to and for what reasons. Finding recent arrivals in Cali was a task impossible to undertake at the moment when this study was prepared.

The persons interviewed were asked if they were planning to change their residence; if they had information about the wage levels in Cali; how those levels compared with their present income; what information they had about unemployment and the magnitude of unemployment in Cali; and what reasons they would give for migrating. An analysis of the responses to these interviews allows us to venture some judgements about the model under consideration, which follow.

Table 3.1 shows that 54 of the total of 447 persons were thinking of moving to the city, which constitutes 12 percent. Of these 91.5 percent had some idea of the existence of unemployment in cities, especially Cali. This percentage is about the same than those for persons who plan rural-rural migration or who are not planning to migrate. Table 3.1 shows also what the prospective migrants know about the relative magnitude of unemployment in the cities. The majority (73.4 percent) said unemployment in the cities is large or little (see Table 3.1) but 16.7 percent said there is not unemployment in the cities, a statement that this study proves is incorrect. With respect to wages prospective rural-urban migrants are less informed than on unemployment. Only 31 percent had some idea of the wages

Corregimientos	
of Palmira,	
m Municipio	
; Sample fro	
in the City	73.
nemployment	Latorre, 19
Knowledge of U	Rozo, Acequia,
Table 3.1.	

Migration Status	Number in				Unemployment	in the	City Is		
	Sample		None		Little	L	arge	Don	t Know
		No.	Percent	No.	Percent	No.	Percent	No.	Percent
Urban - Rural	54	6	16.66	9	9.00	35	64.81	4	9.53
Rural - Rural	16	e	18.75	e	18.75	80	50.00	2	12.50
No Migrants	377	55	14.59	40	10.61	238	63.13	44	11.67
Total	447	67	14.99	49	10.96	281	62.86	50	11.18

Persons who did not answer were included in the column "Don't Know".

being paid in cities, especially Cali. This percentage is much greater, however than that for the persons who had some information but were not thinking of migrating (9 percent). Sixteen persons were going to change jobs without changing place of residence and all of them were ignorant of wage levels in the urban area. In conclusion, lack of knowledge existed among many prospective migrants with respect to urban employment and wages in spite of the proximity to the cities of Palmira and Cali. However, those who planned to move to the city were somewhat better informed than the rest with regard to wages in the city.

Table 3.2 shows the answers given by the 54 persons who were thinking of migrating, to the question on urban unemployment and relative wages in urban and rural areas. Sixteen of them, (30 percent) said they had information on wages and unemployment. Of the sixteen, fourteen said that they knew that unemployment was high in the city, and eight thought they could earn more in the city. The other six, considered despite unemployment levels, that they should be able to earn at least the same if not better wages. Again, we have to point out that the majority of the prospective migrants did not know about relative wages and unemployment. We might conclude that Harris and Todaro's model seems valid for those relatively few well-informed prospective migrants if one compares the changes in urban and rural wages over the period of a lifetime of a rural worker.

Table 3.2. Knowledge of Unemployment and Relative Urban Wages of Prospective Migrants From the Countryside to the City; Sample from <u>Municipio</u> of Palmira, Corregimientos Rozo, Acequia, Latorre, 1973.

Unemployment in	U U	Urban Compared with Rural Wages Are							
the City is	Less	Equal	Just Superior	Superior	Don't Know				
None	-	-	1	-	8				
Little	-	-	1	-	5				
Large	3	3	3	5	21				
Don't Know	-	-	-	-	4				

Persons who did not answer were included in the row and column "Don't Know".

The rural worker sees that his urban income will be nil, at the beginning, while he is a jobless worker and inferior or equal to his actual income as a rural worker upon receiving his first job in the city. However he anticipates that once he finds a job in the city, he will have a good chance to improve his income. This implies that expected present value of the urban income stream even with high levels of urban unemployment (the probability of finding a job (P) is very low) is greater than the present value of the rural income However, we have to consider the relevant time stream. horizon for the income stream of the prospective migrants. If they have a high time preference for income, we will have to use high discounting rates. Thus, the expected present value of the urban income stream will be less likely to exceed the present value of the rural income. We will now consider a more complete model which includes other factors

on migration, imperfect knowledge on the part of the migrants, and explains why people with very low wages or unemployed remain in their localities, urban or rural, unable to move and look for better opportunities.

Decision Model For Rural-Urban Migration Under Imperfect Knowledge

A relevant decision model for rural-urban migration for the case of Valle should taken into account the following factors:

- Dualism in the agricultural and manufacturing sectors of Valle,
- 2. The relative high economic growth rate of Valle,
- High unemployment rates in the urban areas of Valle, especially in Cali,
- Differences in living conditions between rural and urban areas,
- 5. Age, size and education of the population,
- 6. Imperfect knowledge on the part of the prospective migrants. Under imperfect knowledge persons make mistakes with respect to both (a) migrating to urban areas and, (b) staying on the farms.

Glenn L. Johnson developed an investment/disinvestment theory 15 where acquisition costs (Pa) and the salvage values

¹⁵See for instance Glenn L. Johnson and C. Leroy Quance, <u>op. cit.</u>, and Dale E. Hathaway, <u>Government and Agriculture:</u> <u>Public Policy in a Democratic Society</u>. New York: The Macmillan <u>Co.</u>, 1963, pp. 110-130.

(Ps) of inputs are differentiated. A fixed asset is one for which the marginal value product (MVP) in its present use neither justifies acquisition of more of it nor its disposition, that is Ps < MVP < Pa. This theory recognizes that acquisition cost of an asset is greater than its salvage value; this modification of the traditional economic theory has important implications in the least cost combination of factors of production. If we consider two factors of production we get four expansion and contraction paths (isomarginal value product lines) and four "high profit" points as shown in Figure 1. In this figure, line CB represents a locus of points at which the marginal value product of labor equals the salvage value of labor for different levels of Line AD represents a series of points where the marginal land. value product of labor equals the acquisition cost of labor. Lines AC and DB represent the same series of points with lines AD and CB respectively, but for capital instead of labor. If there is a high profit point at A and the business is organized below line f labor can be expanded and the high profit point A will be reached provided that capital by mistake has not been used beyond line g; if capital is used between lines g, and h, it is a fixed asset and labor can be expanded moving vertically to a point on the line AD; and if capital is used beyond line h labor can be expanded and capital can be disposed of until reaching point D. If the business is mistakenly organized above line e the high profit point A will not be attainable; mistakes are partially

corrected by disposing of labor (1) by moving to point C if the firm was between lines e and g, (2) by moving to point B if the firm was between lines e and h and, (3) by moving vertically (capital is a fixed asset) to a point on the line BC if the firm was between lines e, g, and h. If the business is organized with the four lines (CD, AD, AC, and DB) both labor and capital are fixed and the mistakes can not be corrected.



Figure 1. Segments of iso-MVP lines when acquisition price is greater than salvage value for both inputs.

Hathaway borrowing from Johnson defined the acquisition cost of a farmer as the opportunity cost of the income foregone by not entering another occupation at the time he entered farming and the salvage value of an agricultural laborer as the earnings that are available to him in other industries after he has become a farmer.¹⁶ Labor can be treated as stock or flow input. Similarly Johnson earlier defined stock acquisition cost as the cost of attracting a laborer into farming for more than one unit of time.¹⁷

Salvage value is the net value received by releasing that stock of labor services from farming. For the case of an owner-operator stock acquisition cost is the cost of adding another similar employee to farming perhaps for his lifetime and (the stock) salvage value is the present value of the MVP's of the future stream of labor (excluding capital earnings and land rents) services which he will generate if he left the farm. Interpreted on a flow basis, the acquisition cost of an owner-operator is the cost of acquiring a unit of service for one unit of time through the acquisition of another unit of owner-operator stock. Also on a flow basis, the salvage value of a unit of owner-operator labor is the net received for giving up a unit of owner-operator.

With urban unemployment the salvage values of rural owner-operators and rural laborers have to be adjusted by the probability of finding a job during a given period of time. We compute the expected salvage value of rural people similar to the computation of the expected real urban income of

¹⁶Dale Hathaway, <u>op</u>. <u>cit</u>., pp. 120-1.

¹⁷See Glenn L. Johnson and C. Leroy Quance, <u>op</u>. <u>cit</u>., p. 29 for a later version.

Todaro's model. With higher urban unemployment rates the expected salvage value of rural people decreases and will increase as the urban employment rates decrease.

Thus, the difference between acquisition price and expected salvage value ($P_a > P_s^e$) increases with rising unemployment rates, provided urban and rural wages hold constant. Another reason explaining the difference between P_a and P_s^e is the cost of moving from rural to urban areas, which change with age, family status, seniority or lack thereof. The wage differential adjusted by the probability of finding jobs in a given period of time is not the only factor for the decision to immigrate. Other factors discussed above (1) greater education and health facilities in the are: cities, (2) relatives living in urban centers, (3) freedom offered by towns to young people, (4) compulsory military service, and (5) recreation facilities. The model takes account of these "other factors" in a variable, say $\boldsymbol{\alpha}_{\mathbf{u}},$ which can take any value different from zero. Nonmonetary factors in favor of rural areas are taken into account by α_r . When MVP + $\alpha_r > P_a + \alpha_u$ urban-rural migration will take place. When $MVP_x + \alpha_r < P_s^e$ labor will move out of agriculture until $MVP_x + \alpha_r = P_s^e$. When $P_s^e < MVP_x + \alpha_r < P_a + \alpha_u$ labor is a fixed asset in rural areas. In Figure 1 rural labor (X) and capital (K) are represented in the vertical and horizontal axes respectively.¹⁸ If the quantity of labor used falls

 $^{^{18}}$ To simplify, the values of the two α_{s} are equal to zero in Figure 1.

below line f more labor will move to agriculture because the MVP of labor is greater than the acquisition price of labor (P_a) and labor income will be maximized when MVP_x = P_a . If the quantity of labor used falls above line e labor will move out of agriculture since MVP_x is less than the expected salvage value of labor (P_s^e) . The high profit point A is not attainable and the distance to A depends on the difference between the acquisition price and the expected salvage value of both labor and capital, and the values of α . Thus, for a given value of α_u and α_r more rural-urban migration will take place with either one or a combination of the following economic conditions: (1) high urban wages, (2) low urban unemployment and (3) low rural wages or poor agricultural productivity. If the quantity of labor used falls between lines e and f labor is a fixed asset and we have $P_s^e < MVP_x < P_a$.

Dualism in agriculture, a characteristic of the rural area of Valle as argued in Chapter II, tends to increase the difference between the modern and the traditional subsectors, unless adequate policies are taken to balance the rate of growth of both subsectors. In the modern sector, farms are cultivated with more nontraditional inputs such as tractors. Tractors are labor substitutes and are used as MVPs of tractors are greater than its MFC. The use of labor substitutes further lowers the MVPs of labor such that MVP of labor falls below the price of labor. Hence rural laborers lose their jobs and have to leave agriculture. Small farm owners in the flat land like the <u>minifundistas</u> who cannot use modern agricultural production systems to reduce cost of production also find their MVPs falling below their expected salvage value and are better off leaving agriculture. The salvage value for rural laborers and farm owners are the urban minimum legal wages.

Evidence supporting the effect on rural-urban migration of wage differential between urban and rural areas was found by Flinn, and by Nelson, Schultz and Slighton. As we pointed out before, Nelson, Schultz and Slighton found that high local rural wages reduce outmigration and this variable seems to have greater effect in rural-urban migration than interurban Relation between daily agricultural wages and migration. rural-urban migration is stronger for men than for women. No effect of rural wages on male migration rates is evident after age 26 and on female migration rates after age 21.¹⁹ Flinn found that wage differentials were the most frequently mentioned factor (42.5 percent) among migrants to a poor barrio in Bogotá. However, the urban unemployment rates in Colombia during the period 1951 to 1966, when Nelson, Schultz and Slighton and Flinn studies were carried out, were lower than they are today.

The minimum legal wages established for both urban and rural areas take regional cost of living into account. The payment of minimum legal wages and the payment of a legal fringe benefits increase daily wage by 30 percent, are strictly enforced by judiciary authorities in the urban

¹⁹Nelson, Schultz and Slighton, <u>op</u>. <u>cit</u>., Table 17, p. 70.

areas while in rural areas, especially in the more isolated <u>municipios</u>, enforcement of minimum wages is very difficult.

Another factor which tends to increase the difference between urban and rural wages is difference in productivity between agricultural and manufacturing labor productivity as noted in Chapter II. Total value per worker is more than 10 times that in agriculture in Valle and for Colombia. Nelson, Schultz and Slighton found value added per manufacturing worker is more than four times that in agriculture and that average wage rates are three times as great.²⁰

The survey carried out in the rural area of Rozo, Acequia and Latorre in January 1973 as well as the CVC survey in the flat and mountainous zones of Valle in August 1973 show monetary factors as the more important factors in ruralurban migration. In the CVC survey rural-urban migration is more notable in moves from the flat lands. This is explained, in part, by the mechanization of medium and large farms and relative low productivity of farmers who cannot reduce production costs. The most frequent answer for migration found by CVC was marriage. This reason for migrating reflects the excessive labor force in the rural areas, which in part is a result of the distribution of land, which has been concentrated in the hands of a few with a tendency toward greater concentration in recent years.²¹ Dualism in the rural area of Valle

²⁰<u>Op</u>. <u>cit</u>., p. 78.

²¹CVC, "Reforma Agraria en el Valle," Cali, unpublished preliminary draft, 1973. The excess labor force was found significant for outmigration in rural areas by Nelson, Schultz and Slighton, as was said before.

with decreasing rural population and the high proportion of migrants coming from relatively less developed departments than Valle where wages are lower both indicate that the MVPs of rural laborers of Valle and other departments are lower than P^e, and this difference is an important factor of ruralurban migration. But, of course, we cannot neglect the importance of time preference for income, which may eliminate or even change the inequality $P_s^e > MVP_y$ when rural migrants are unemployed for a considerable period of time.²² Support from relatives can overcome this factor. Also, rural laborers who lose their jobs will go to the cities even if they realize the low probability of finding a job suitable to their lack of skills. The reasons for this is that, on the one hand, they can get some free or very cheap services in the city such as medical care and can get some income as streetvendors, yardmen, washmen, etc., and as beggars or by means of "underground" activities while, on the other hand, they are unable to provide even food in the country.

The value of α_r is expected to be positive for people with preferences for rural life and positive values of α_u are associated with greater education and health facilities in the cities, relatives living in urban centers,²³ freedom

²²Seventy-three percent of the unskilled labor find a job in a period less than twelve months. <u>OIT</u>, <u>Op</u>. <u>Cit</u>., p. 404.

²³Not necessarily providing economic support to the migrants.

offered by town to young people, and recreation facilities. We already discussed evidence found in Colombia for some of these factors, such as the importance of education facilities estimated by Nelson, Schultz and Slighton. The attraction of the city is a real phenomenon as shown by the laborers of the sugar cane plantations who prefer to live in Cali and Palmira even though they could stay in the plantations for less money in a better house than the ones they rent and which have some of the conveniences found in the cities like electricity.²⁴

Urban-rural migration was an important migratory current during the period 1951 to 1964, as has been pointed out several times before. This migratory currency is explained by (a) the number of people returning to their farms once the violence was over in their rural areas, (b) construction of rural physical infrastructure,²⁵ and (c) the displacement of extensive cattle raising from the flat lands by agriculture, to crop mainly sugar cane and cotton.

Some owner-operators' assets become fixed assets and some farmers themselves have expected salvage values above their own rural labor income find it better to stay in farming since taking their labor and assets together they are fixed resources.

²⁵Alvaro López Toro, <u>op</u>. <u>cit</u>., p. 13.

²⁴Presently the Economic Studies Section of CVC is carrying out a study to determine, among other things, differences in cost and living conditions of sugar cane workers living in Cali and Palmira.

Young people and females migrate in greater proportion than old people and males, as was established in Chapter II and is again pointed out in Chapter IV. The main reason for the greater tendency of younger rural people to migrate is they are not yet fixed in farming.²⁶ Older peasants with large families and with some investment in the rural areas and who have lower expected salvage value outside agriculture are less likely to migrate. Females are common among migrants because they have few opportunities in rural areas where their MVPs are lower than their expected salvage values in spite of the fact that their off-farm wages are also quite low.

There are some farmers who overestimated their wages in urban jobs and thus decided to migrate. After living for some time in the cities they realize their mistake but find themselves trapped between lines e and f as urban unskilled labor and, thus, cannot get back to their rural areas. Others who take the apparently right decision at the time of migration but are later replaced by labor-saving capital²⁷ cannot go back to the rural areas since they are fixed in the urban area. This is also why many unemployed native urban unskilled laborers or those with low paid jobs cannot move to other urban or rural places in search for jobs. These people have to stay in urban slums barely surviving and engaging in some cases in illegal activities.

 $^{^{26}{\}rm This}$ is consistent with the findings of Nelson, Schultz and Slighton mentioned above.

²⁷See Chapter V.

The risk taking attitude of rural laborers has also to be considered in discussing migration. Many poor farmers stay in the rural areas longer because they have less ability to handle uncertain situations. Some prefer to purchase flexibility²⁸ and stay in the rural areas at the cost of underemployment and low wage rates while they obtain enough information to decide whether or not to migrate. On the contrary, risk-taking farmers will migrate to the cities and will buy flexibility for him and his family at the cost of the foregoing income and living expenses while looking for jobs in the city. Errors committed during this process may be impossible to correct later, as explained above.²⁹

The investment/disinvestment asset theory as developed here and the concept of flexibility helps us to understand (1) flow of people to areas with more economic growth, (2) migration under imperfect knowledge, (3) high urban unemployment rates, (4) the high proportion of young people and females among migrants, and (5) people living in both rural or urban areas under very difficult economic conditions without being able to move to other places looking for better opportunities.

²⁹We also have to reorganize the effect of probabilities. One can make the "right" decision and be "wrong" because the low probability occurred.

²⁸"Flexibility is an allocation of resources <u>now</u> which enables an entrepreneur to reallocate his resources more effectively later on the basis of improved information, i.e., so as to raise his expected future income in a noncertain situation" as defined by Glenn L. Johnson, "Allocative Efficiency of Agricultural Prices as Affected by Changes in the General Level of Employment," <u>op. cit.</u>, pp. 43-44.

CHAPTER IV

THE URBAN LABOR FORCE AND SUPPLY

As a factor of production, the labor force is heterogeneous, since the workers and employees have different physical and intellectual characteristics, different tastes and attitudes, and above all, different levels of schooling and preparation. As a result, there are many different types of labor supplied to the market, as many different types as there are homogeneous groups of workers and employees. Here we shall consider two types of labor, skilled and unskilled, classified according to their special knowledge, or lack of it. Although aggregation of the labor supply in these two groups overlooks other heterogeneous factors present in the labor force, and we recognize the limitations imposed by this process, there are valuable conclusions to be drawn using this level of analysis which justify its use.

The labor supply function is defined as the relation between the minimum wages, and the number of hours per time unit that persons between 15 and 64 years of age are willing to work, full-time students and housewives being excluded. The variable "amount of work" may be measured as the number of hours per day or per week that a given person or group of

persons is willing to work, or as the number of persons who offer their work daily or weekly in a certain time period.

Skilled Labor Supply

Skilled labor supply on a short-term basis shows a positive curve in the first section, showing that when salaries are low, the employee is willing to work for longer hours, in order to raise his income. In other words, the effect of income predominates over the effect of the substitution of leisure for labor time. Upon reaching a certain income level, which the employee considers high enough, the effect of leisure over income begins to take effect, and the labor supply curve goes backward.¹ This second section implies high income; in Cali and Valle the number of persons with sufficiently high incomes for this effect to be noticeable is extremely low.² However, according to observations, some relatively poor people upon reaching a higher income level, but far from being wealthy or rich, like to take things easy and work equal or less time than before. Also there are people getting only their food to survive, like some fishermen, and do not bother to look for more work and additional income.

²See Chapter II for information on income distribution.

¹Milton Friedman, <u>Price Theory</u>, Chicago: University of Chicago Press, 1962, p. 203.

The supply of skilled labor reflects the investment made in human capital through education and training. This investment in human capital has two parts: The price of education and the opportunity cost³ given by the income which the student could earn while studying. This opportunity cost grows as the person ages, to a certain limit. If the cost of education is held constant (the average price for all types of training), those with few and only low paid opportunities and hence a low opportunity cost, are the youngest. They would require a relatively low wage, while this income would have to increase in order to attract persons with higher opportunity costs. This means that in the long run, the skilled labor supply has a positive slope curve.

In order to have a skilled labor force, it is necessary that the discounted income stream over the lifetime of these workers be at least equal to the discounted income stream over the lifetime of the unskilled worker. This equality and the period of negative income of the skilled workers, determines that the wages of the latter must be higher than the wages of the unskilled worker.⁴ Consequently,

³This concept is defined as the highest income the person would have received if he had not chosen to study instead of work.

⁴It is assumed that there are no preferences as to type of work, and differences in risks are ignored. The cost of acquiring skill can be seen as negative income.

the greater the difference in wages between these two classes of workers, the greater the number of persons desiring training.

Where do the persons who enter the training process come from? There are two sources: (1) Persons under 15 years of age, who are not part of the labor market as hypothesized here, and (2) the unskilled workers. The difference in wages offered to skilled workers and unskilled workers and their employment opportunities are not the only condition necessary for these persons to begin training. This depends on how much of the family income must be spent to pay for the education, and on the distribution of income.

The price of education is cheaper for those under 15 and for unskilled workers who would be sacrificing the lowest wages. Youth under 15 from families with average and high incomes are the principal source of skilled labor.

The rate at which unskilled workers pass over to the group of skilled workers depends on the difference in wages received by the two groups, the relative levels of employment of the unskilled and skilled labor, the relation between the cost of training and family income, the availability of educational and training programs, and the distribution of income. The difference in wage levels tends to produce a high conversion rate but this tendency does not hold for the lowest income group because they cannot cover the cost even though the cost of training is low due to low opportunity costs; therefore, the conversion rate of unskilled labor

toward skilled labor is quite low. Unemployed skilled labor, those with high school, technical or university education, amounts to one-third of the unemployed, but about 82 percent of the unemployed skilled laborers find a job in a period--twelve months or less--as compared to 73 percent of the unskilled labor.⁵ The training of personnel already employed, with the cost absorbed by the company or society, seems to be a solution to the education problem and, indeed, the only solution for the lowest income group.

In Valle, given the high cost of training and the concentration of income already described in Chapter II, the growth rate for skilled labor is very low and there is a low conversion rate from the ranks of unskilled labor. For example, the education coefficients, defined as the number enrolled with respect to the corresponding age group, are very low. Even at the primary level, the coefficient is only 0.625 at the secondary level it is 0.136.⁶ The Servicio Nacional de Aprendizaje, SENA, Valle section, trains employees of affiliated companies, but not at a rate significant enough to reduce notably the supply of unskilled labor and, moreover, part of the training is further specialization of skilled workers.

⁵Oficina Internacional del Trabajo, <u>op</u>. <u>cit</u>., pp. 401-4. ⁶Mendoza and Olarte, "Diagnóstico de la Educación Media. Bases de Política," Cali: Secretaría Departamental de Educación del Valle, 1972.

Unskilled Labor Supply

Unskilled labor supply is very different from skilled. The relevant wage for the unskilled laborer is the minimum legal wage or lower.⁷

The total number of persons between the ages of 15 and 64, able and willing to work for this wage, determine for any given moment one point and, thus, the supply of unskilled labor is not defined except as a vertical line.⁸ There is little considerations for investment in human capital. There is little relation or choice between more or less salary and more or less leisure. It is mainly an "all or nothing" proposition.

If the minimum legal wage remains constant from one year to the next, the increase in the unskilled labor supply in a given place, in graphic terms forming a horizontal line running left to right, depends on four factors: (1) the rate of conversion of unskilled labor to skilled, (2) the rate of population growth of the native-born, (3) the participation rate in the labor market of those in the relevant age-group, and (4) migration to the place under consideration.

⁷The effect of unions are discussed later in this chapter.

⁸Several authors, for example, W. A. Lewis, <u>Economic</u> <u>Development with Unlimited Supplies of Labor</u>, London: <u>Manchester School, 1954; Amartya Kumar Sen, La Selección de</u> <u>Técnicas. Un aspecto de la Teoria del Desarrollo Económico</u> <u>Planificado</u>, México: Fondo de Cultura Económica, 1969, <u>speak of a perfectly elastic labor supply at the level of</u> the minimum legal wage.

It should be recalled here that the conversion factor was analyzed with relation to the supply of skilled labor, remembering that increases in this factor will tend to decrease the unskilled labor supply.

With respect to growth of the native-born population of Valle, the factors which determine this process are birth, mortality and out-migration rates. The mortality rate is higher in the rural area, and in the lowest income group in the city, and lower in the urban area and especially among the highest income group, due to access to better medical care, and generally better health of these groups. During the period between the census, 1951-1964, the native working age population of Valle increased at the rate of 3.4 percent annually.

There is a notable difference between the sexes in regard to the rate of participation in the labor market. A great many women dedicate their time to being housewives. In underdeveloped areas, women do not enjoy the advantages of technological development of labor-saving devices for housework. Factors which influence a greater participation of women in the labor market are the necessity of contributing to family income, and the possibility of employing cheap domestic help. In 1964, the percentage of male residents in urban areas of Valle between 15 and 64 who were full-time students, retired, or incapacitated was 13.7 percent which means a rate of participation of 86.3

percent. The corresponding rates for women are 67.2 percent for housewives, 7.3 percent for students or disabled, and 25.5 percent for the rest of the females.⁹

Migration is an extremely important factor in the increase in the labor supply of this section of the country. In Chapter II, we described the type of migrant received by Valle and Cali. The calculation of the growth rate of this working-age group may be made on the basis of the data on the change in the non-native population; this will give us an approximation of the impact of migration on the labor market. In Chapter II, we found that the annual increase rate of increase in the non-native population for all of Valle is 2.6 percent. The rate of growth of the working age non-native population for urban areas is considerably higher, 7.1 percent for Valle and 7.4 percent for Cali. The greater rate for Cali is explained by greater migration from outside Valle to Cali and migration from other cabeceras municipales of Valle to Cali. In Chapter III we developed a model to explain why uneducated people of the rural and small towns migrate to the cities and we showed that the main reason for migration is wage rate differences. To further examine the fact that the

⁹The participation rate of men in both urban and rural areas of 0.863, of women, 0.255. Upon comparison with the urban rates, one may conclude that women in rural areas have a low rate of participation in the labor market, and that men in rural areas participatate more than those in urban areas.

great majority of persons who migrate from rural areas and small towns are poor uneducated people who arrive in the cities to swell the ranks of the unskilled workers we examine the characteristics of these people with respect to education, age and sex.¹⁰

In the flat land, 115 families consisting of 839 persons with an average of 5.4 persons per family were interviewed. In the mountainous zone, 165 families consisting of 948 persons with a family average of 5.7 were surveyed. The families from the flat lands were more likely to migrate. Of a total of 245 migrants, 132, or 53.9 percent, were from the valley floor, and 133 from mountainous areas. However, not all migrated to cities. Thirteen point six percent of the migrants from flat lands went to other rural areas, and 23.9 percent of those from hilly sections changed residence within the rural area.

Of the total population in the flat lands, 13.6 percent have migrated to their present urban area in the last ten years. Of these, 41.7 percent are between 20 and

¹⁰This information of the characteristics of the migrant population of Valle is from the preliminary analysis of the questionnaire administered by the Department of Economic Studies of CVC, which is part of a socio-economic study of the rural sector of Valle under preparation. The sample was randomly selected to represent both flat and mountainous rural areas of Valle. The head of each household was interviewed. Questions about personal characteristics and employment were asked for both members in the family living in the farm and those who have migrated in the last ten years. CVC, "Estudio Socio-Económico del Sector Rural del Valle," <u>op. cit</u>.

30 years of age, as is shown in Table 4.1, and 50.7 percent correspond to the age groups of 15-20, and 30-64. Thus 92.4 percent of the migrants are of working age. The greater part of the 15 to 20 year old migrants are women. The figures are similar for the mountainous zone. Of the 92 percent of working age, 48.7 percent are between 20 and 30 years of age. The reasons for higher rates of migration for rural young and females were analyzed in the previous chapter. (See Table 4.2.)

With respect to formal education the great majority of the migrants have received little education. While 71.8 percent have received some primary education, most of these had not gone past the third grade. They are barely literate, according to Tables 4.3 and 4.4. The proportion of migrants with any secondary, technical or university training is very low for migrants from either type of rural zone. Of those from the flat land, 20.5 percent had finished more than primary, 7.6 percent had entered a university though very few finished, and 0.8 percent had completed a technical course, as may be observed in Table 4.3. The statistics on the migrants from the mountainous areas indicate even less education, since only 15 percent had advanced beyond primary level. Four point four percent of the migrants from the valley areas and 7.1 percent of those from the mountains had received no schooling at all. (See Table 4.4.)

Population of the Flat Zone of Rural Valle by Sex and Age, Migrating to Urban Valle during 1964 to 1973. Table 4.1.

Age Groups		fen	Mc	omen	To	tal
	Number	Percent	Number	Percent	Number	Percent
Less than 15 years old	9	10.3	4	5.4	10	7.6
15-20 years old	6	15.5	29	39.2	38	28.7
20-30 years old	28	48.3	27	36.5	55	41.7
30-64 years old	15	25.9	14	18.9	29	22.0
65 years and over	0	0	0	0	0	0
Total	58	100.0	74	100.0	132	100.0

Data from a CVC survey in 1973 to be published in"Estudio Socio-econômico del Sector Rural del Valle." Source:

Population of the Mountainous Zone of Rural Valle by Sex and Age, Migrating to Urban Valle During 1964 to 1973. Table 4.2.

Age Groups	X	en	Mc	men	To	tal
	Number	Percent	Number	Percent	Number	Percent
Less than 15 years old	4	6.7	5	9.4	6	8.0
15-20 years old	13	21.7	21	39.6	34	30.1
20-30 years old	33	55.0	22	41.6	55	48.7
30-64 years old	10	16.6	5	9.4	15	13.2
65 years and over	0	0	0	0	0	0
Total	60	100.0	53	100.0	113	100.0

Data from a CVC survey in 1973 to be published in "Estudio Socio-Económico del Sector Rural del Valle." Source:

Education	1	len	Women		То	tal
	Number	Percent	Number	Percent	Number	Percent
Primary	34	58.6	54	73.0	88	66.7
High School	15	25.9	12	16.2	27	20.5
College	6	10.3	4	5.4	10	7.6
Technical	1	1.7			1	.8
Without Studies	2	3.5	4	5.4	6	4.4
Total	58	100.0	74	100.0	132	100.0

Table 4.3. Levels of Education of People From the Rural Flat Zone of Valle, Migrating to Urban Valle During 1964 to 1973.

Source: Data from a CVC survey in 1973, to be published in "Estudio Socio-Económico del Sector Rural del Valle."

Table 4.4. Levels of Education of People from the Mountainous Zone of Rural Valle, Migrating to Urban Valle During 1964 to 1973.

Education	N	len	Wo	men	Total	
	Number	Percent	Number	Percent	Number	Percent
Primary	48	80.0	40	75.5	88	77.9
High School	10	16.7	7	13.2	17	15.0
College						
Technical					'	
Without Studies	2	3.3	6	11.3	8	7.1
Total	60	100.0	53	100.0	113	100.0

Source: Data from a CVC survey in 1973 to be published in "Estudio Socio-Económico del Sector Rural de Valle." The data show that there is a high rural-urban migration by young, poorly educated people. One may safely conclude that they may be classified as unskilled workers upon arrival in the city where many join the ranks of the unemployed, or make their living working in the small craftsmen firms as the substantial increase in the number of firms with less than nine workers suggests¹¹ (see Table 5.15).

One hypothesis which, unfortunately, is impossible to test with the 1964 census data on migration is that outmigration from rural areas is mainly of poor uneducated people that go to intermediate towns while out-migration from these towns are the most educated and trained people. This phenonenon would lower the human resource quality of intermediate towns.¹²

Unions' Effect on the Supply of Labor

Under Colombian labor legislation, a firm must employ a minimum of 25 laborers to be eligible for formation of a labor union. This rule causes a modification in the supply of unskilled labor to the firm. For the first 24 workers, the relevant salary is the minimum legal wage; however, when 25 workers are reached, a higher salary is established on

¹¹Nelson, Schultz and Slighton argue that manufacturing firms with less than 9 workers are craftmen firms, <u>op</u>. <u>cit</u>., pp. 115-120.

¹²Hypothesis proposed by William McGreevey, "Causas de la Migración Interna en Colombia," <u>Empleo y Desempleo en</u> <u>Colombia</u>. Bogotá: Universidad de los Andes, CEDE, 1958, quoted by Alvaro López Toro, <u>op</u>. <u>cit</u>., p. 12.
the basis of a collective-bargaining agreement for a period of about one year. This salary is paid, in general, to both the unionized and nonunionized laborers of a given firm. If W_1 is the minimum wage and if we suppose that the wage for unionized labor is the same for all firms $(W_{1,1})$, we have a stepped supply function of labor for a firm: $W = W_1$ when X < 25 (X = number of workers) and W = W₁₁ when $X \ge 25$. However, not all groups of workers with 25 or more members become unionized. In some cases the entrepreneurs prevent the creation of unions by offering salaries above the minimum wage along with other benefits. In practice this wage tends to be equal to W_{11} , but entrepreneurs have the advantage of facing fewer labor conflicts and strikes. However, the laborers can decide to unionize at any time. We will see later that conflicts, strikes and the expectation of frequent pressure to raise salaries make labor more expensive non-monetarily as well as monetarily for firms employing over 25 persons.

The Labor Force in the Urban Zone of Valle

One may quantify the contribution of the migrant population to the labor force in the urban area of Valle, discriminating by sex and place of birth, in the following manner, using the census year as the basis:

 $X_{\rm H}$ = the migrant male population between 15 and 64 born in urban areas of Colombia, and living in the urban zone of Valle in 1964.

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- X_M = the migrant female population between 15 and 64 born in urban areas of Colombia and living in the urban zones of Valle in 1964.
- $Y_{\rm H}$ = the male population between 15 and 64 born in rural areas of Colombia and living in urban zones of Valle in 1964.
- Y_M = the female population between 15 and 64 born in rural areas of Colombia and living in urban areas of Valle in 1964.
- r_i = the weighted growth rate of each of the four populations. T_i = the rate of participation of each of the four populations.

It follows that the population of male migrants from urban zones now (in the year t) living in urban areas of Valle, will be: $X_{Ht} = T_1(1+r_1)^t X_H$; the population of women migrants from urban areas residing (in the year t) in urban areas of Valle will be: $X_{Mt} = T_2(1+r_2)^t X_M$. The formulas for the other two types of migrants will be $Y_{Ht} = T_3(1+r_3)^t Y_H$ and $Y_{Mt} = T_4(1+r_4)^t Y_M$. Labor composed of migrants in the year t is: $M_{it} = X_{Ht} + X_{Mt} + Y_{Ht} + Y_{Mt}$.

The demographic information analyzed in Chapter II does not directly give us the value of the variables and rates required to calculate the supply of migrant labor in the census year, but it does allow us to approximate these values, as will be explained below.

That part of Valle's population which was born in other departments may be taken as representative of the migrant population. In 1964, 76.4 percent (see Table 2.3) was between the ages of 15 and 64. The application of this percentage to the total non-native population residing in

:::: e; cf ::::: i. 35 1 2 2 2 2 urban centers (see Table 2.5) gives us the following values for 1964:

 $X_{H} = 117,902$ $X_{M} = 131,923$ $Y_{H} = 32,373$ $Y_{M} = 24,468$

The participation rates of males, X_{H} and Y_{H} are assumed equal, with a value of 0.863, and the rates of participation of women, X_{M} and Y_{M} are assumed equal with a value of 0.255, these parameters having been discussed above.

The census of 1951 does not contain information about the number of natives and non-natives by sex, age and residence as does the 1964 census,¹³ making it impossible to estimate r_i for the four kinds of population defined above. A rudimentary way of estimating the urban growth rate of the working age population by sex will be used; it follows:

 A) weighted growth rate of non-native males between 15 and 64 years living in the urban zones of Valle.

The growth rate of Valle's native population between the ages 15 and 64 was 3.4 percent from 1951 to 1964.¹⁴ The male population of Valle between

¹³Valle is the only department of Colombia which has some detail data on migrating population for the census year, thanks to the Universidad del Valle (See Chapter II of this study).

¹⁴Computed from data in Table 2.3.

the ages of 15 and 64 residing in the urban zone grows at a rate of 5.5 $percent^{15}$ and the proportion of males born outside of Valle is 58.8 percent.¹⁶ This gives us:

5.5 (100) = (58.8) (X) + (41.2) (3.4) which gives us X = 7.0

This estimated growth rate of the working age non-native population is the best approximation of the migrant population, adopted as the growth rate for the population $X_{\rm H}$ and $Y_{\rm H}$.

B) Weighted growth rate of non-native females between15 and 64 years living in the urban zone of Valle.

The female population of Valle between the ages of 15 and 64 residing in the urban zone grows at the rate of 5.7 $percent^{17}$ and the proportion of females born outside of Valle is 59.9 percent.¹⁸

This gives us:

5.7 (100) = (59.9) (X) + (40.1) (3.4) which gives us X = 7.2 percent.

This estimated growth rate of the working age non-native population is adopted as the growth rate for the population X_M and Y_M .

¹⁶Computed from data on Table A.5 and A.1 of Appendix A.
¹⁷Computed from data on Table A.1 of Appendix A.

¹⁵Computed from data on Table A.1 of Appendix A.

¹⁸Computed from data on Table A.6 and A.1 of Appendix A.

The high growth rates of native urban population of working age for males and females show the importance of rural-urban migration while the even higher growth rates of non-native urban population of working age for males and females show the importance of migration from people of other Colombian zones to the urban areas of Valle. Migrant females have higher growth rates than males, as was expected.

The population of both men and women born in the urban area of Valle, Z_H and Z_M , between 15 and 64 years of age, is estimated by subtracting the migrants already estimated, from the total population of this age group. The results are:

 $Z_{\text{H}} = 303,616 - 150,275 = 153,341$

 $Z_{M} = 355,361 - 156,391 = 198,970$

Rates of participation are assumed constant at 0.863 for men and 0.255 for women. The growth rate for both native populations is 3.4 percent.¹⁹

Consequently, the labor force for the urban zone of Valle in the year t is: $M = (X_H + X_M + Y_H + Y_H + Z_H + Z_H)$ and the components are estimated as follows:

> $X_{H} = 117,902 (.863)(1 + .070)^{t}$ $X_{M} = 131,923 (.255)(1 + .072)^{t}$ $Y_{H} = 32,373 (.863)(1 + .070)^{t}$ $Y_{M} = 24,468 (.255)(1 + .072)^{t}$

¹⁹Computed from data on Table 2.3.

$$Z_{H} = 153,341 (.863)(1 + .034)^{T}$$

 $Z_{M} = 198,970 (.255)(1 + .034)^{T}$

The labor force in urban Valle estimated with the above six equations for the period 1964 to 1980 are presented in Table 4.5.

The Labor Force in the City of Cali

Following the same methodology used to estimate the labor force in Valle to estimate that of Cali, including both native and migrant population, we may proceed as follows: $X_{\rm H}$ = migrant men between 15 and 64 born in urban areas of Colombia resident in Cali in 1964. X_M = migrant women between 15 and 64 born in urban areas of Colombia resident in Cali in 1964. $Y_{\rm H}$ = migrant men between 15 and 64 born in rural areas of Colombia resident in Cali in 1964. Y_M = migrant women between 15 and 64 born in rural areas of Colombia resident in Cali in 1964. Z_{μ} = native male population of Cali between 15 and 64 in 1964. Z_{M} = native female population of Cali between 15 and 64 in 1964. r_i = the weighted growth rate of each of the six population groups above. T_i = the rate of participation of each of the six population groups. The contributions of manpower in the year t of any of the six groups is estimated in the formula $M_{i+} = M_0 \times T_i (1+r_i)^{U}$

Seventy six point eight percent of the non-native population of Cali falls in the age group 15 to 64. When this percentage is applied to the population arriving in Cali (see Table 2.6) we get:

1980.
1964 to
Period
the
During
Migration
Without
and
W1 th
Valle
in
Force
Labor
Urban
4.5.
Table

Year			Irban Labor	Force Wit	h Migration			Urban Labor	Force Witho	ut Migration	
	Чх	Жx	Ч	м ^х	2 _H	MZ	Total T ₁	P _H	PM	Total T2	Difference T ₂ - T ₁
1964 1965 1966 1968 1968	101,749 108,871 116,492 124,647 133,372	33,640 36,062 38,659 41,442 44,426	27,938 29,894 31,986 34,225 36,621	6,239 6,688 7,170 7,686 8,239	132,333 136,832 141,485 146,295 151,269	50, 737 52, 462 54, 245 56, 090 57, 997	352,636 370,809 390,037 410,385 410,385	262,020 270,929 280,140 289,665 299,514	90,616 93,697 96,883 100,177 103,583	352,636 364,626 377,023 389,842 403,097	 6,183 13,014 20,543 28,827
1969 1970 1971 1973	142,708 152,698 163,387 174,824 187,062	47,625 51,054 54,729 58,670 62,894	39,185 41,928 44,862 48,003 51,363	8,833 9,469 10,150 10,881 11,664	156,412 161,730 167,229 172,915 178,794	59,969 62,008 64,117 66,257 68,551	45 4, 732 478, 887 504, 474 531, 590 560, 328	309,697 320,227 331,115 342,373 354,013	107,104 110,746 114,511 118,405 122,431	416,801 430,973 445,626 460,778 476,444	37,931 47,914 58,848 70,812 83,884
1974 1975 1976 1977 1978	200,156 214,167 229,159 245,200 262,364	67, 423 72, 277 77, 481 83, 059 89, 040	54,958 58,958 62,972 67,326 72,039	12,504 13,405 14,370 15,404 16,513	184,873 191,159 197,658 204,378 211,327	70,881 73,291 75,783 78,360 81,024	590, 795 623, 105 657, 373 693, 727 732, 307	366,050 378,495 391,364 404,671 418,429	126,593 130,897 135,348 135,348 139,950 144,708	492,643 509,392 526,712 544,621 563,137	98,152 113,713 130,661 149,106 144,708
1979 1980	280,729 300,380	95,451 102,323	77,083 82,478	17,702 18,977	218,512 225,942	83,779 86,627	773,255 816,727	432,656 447,366	149,628 154,715	582,284 602,081	190,971 214,646
[,] ₩x [,] Hx	Y _H , Y _M ,	Z _H and Z _M we	re defined	on page 8	0, and P _H	, P _M were	defined on	pages 92.			

,

 $X_{H} = 99,541$ $X_{M} = 118,378$ $Y_{H} = 24,866$ $Y_{M} = 30,977$

The difference between the total number of men in the urban zone of Cali²⁰ and the migrants of the same age group gives us the values of Z_M and Z_H .

 $Z_{M} = 187,767 = 149,375 = 87,381$ $Z_{H} = 156,428 - 124,407 = 32,021$

The values of the Z population of Cali, especially the value of Z_H appear very low. The value of Z_H of Cali is only about one-fifth of the corresponding value of urban Valle and the value of Z_M of Cali is only about one-half of the Z_M value of urban Valle. The reason for this big difference is that for the case of urban Valle the native urban population migrating between Valle's <u>municipios</u> are classified in the Z_H and Z_M population while, for the case of Cali, natives of Valle migrating to Cali are classified in the corresponding X and Y populations. The difference between the Z population of urban Valle and Cali indicates the importance of migration within Valle during the period 1951 to 1964.

The rate of participation in the labor market (men and women) is the same as that for all of Valle (.863 and .225, respectively).

²⁰See Table A.5 of Appendix A.

The growth rate r_i , given the lack of historical data permitting precise calculation, is estimated in the same manner as was done for Valle. In Cali migration is a more important factor than the native birth rate, in the growth rate, precisely the inverse of the factors for the Valle as a whole. Migration produces an annual growth of 8 percent in the non-native population of Cali.²¹

A) Weighted growth rate of the non-native males between
 15 and 64 years living in Cali.

The male population of Cali between the ages of 15 and 64 grows at a rate of 6.3 $percent^{22}$ and the proportion of males born outside Cali is 70.1 percent.²³ This gives us:

6.3 (100) - 70.1 (x) + 29.1 (3.4) which gives us X = 7.6.

This estimated weighted growth rate of the working age non-native population is the best approximation of the migrant population adopted as the growth rate for the population X_H and Y_H. B) Weighted growth rate of the non-native females

²¹Data on non-native and native population for Cali in 1951 was not available. The growth rate of 8 percent is used in Planeación Municipal de Cali "Estudio Preliminar de la Población de Cali" (Mimeo) and Universidad de Valle, CUIP, Estudios Demográficos de Cali, 1969, pp. 16 and 75.

²²Computed from data on Table A.5 in Appendix A.
²³Computed from Table 2.5 and Table A.5 in Appendix A.
²⁴Computed from data on Table A.5 in Appendix A.

between 15 and 64 years living in Cali.

The female population of Cali between the ages of 15 and 64 grows at a rate of 6.7^{24} and the proportion of females born outside Cali is 82.8 This gives us: 6.7 (100) = 82.8 (X) + 21.2 (3.4) which gives us X = 7.2.

This estimated growth rate of the working age non-native population is adopted for the growth rate for the population X_M and Y_M .

Consequently, the labor force in the urban zone of Cali in the year t is given for:

 $X_{H} = 99,541 (.863)(1 + .076)^{t}$ $X_{M} = 118,378 (.255)(1 + 0.72)^{t}$ $Y_{H} = 24,866 (.863)(1 + .076)^{t}$ $Y_{M} = 30,997 (.255)(1 + .072)^{t}$ $Z_{H} = 32,021 (.863)(1 + .034)^{t}$ $Z_{M} = 87,381 (.255)(1 + .034)^{t}$

The labor force in Cali estimated with the above six equations for the period 1964 to 1980 are presented in Table 4.6. The high growth rate of the working age urban population of Valle, and especially Cali reflect the high migration rates to these areas of Colombia. It also reflects the low out-migration rates as well as high birth and low mortality rates observed during the period 1951 to 1964. It is

²⁴Computed from data on Table A.5 in Appendix A.

Table 4.6. Urban Labor Force in Cali With and Without Migration During the Period 1964 to 1980.

	Difference $T_2 - T_1$	0 5,956 12,363 19,874 27,949	36,857 46,662 57,443 69,280 82,262	96,484 112,047 129,058 147,641 167,917	190,070 214,134	
rce ion	Total T ₂	195,369 202,012 209,080 215,982 223,325	230,918 238,769 246,888 255,282 263,962	272,936 282,216 291,811 301,733 311,992	322,600 333,568	
an Labor Fo hout Migrat	PM	60,372 62,425 64,547 66,742 69,011	71,357 73,783 76,292 78,886 81,568	84,341 87,209 90,174 93,240 96,410	99,688 103,077	
Urb	Р _Н	134,997 139,587 144,533 149,240 154,314	159,561 164,986 170,596 176,396 182,394	188,595 195,007 201,637 208,493 215,582	222,912 230,491	e 92.
	Total T _l	195,369 207,968 221,443 235,856 251,274	267,775 285,431 304,331 324,562 346,224	369,420 394,263 420,869 449,374 479,909	512,670 547,702	ined on pag
	MZ M	22,828 23,040 23,823 24,633 25,470	26, 336 27, 232 28, 158 29, 115 30, 105	31,129 32,117 33,281 34,413 35,583	36,793 38,044	P _M were der
h Migratio	Ηz	27,634 28,574 29,545 30,550 31,588	32,662 33,773 34,921 36,108 37,336	38,605 39,918 41,275 44,130	45,630 47,182	, and r _H ,
r Force Wit	MA	7,904 8,473 9,083 9,737 10,438	11,190 11,995 12,859 13,785 14,777	15,841 16,982 18,205 19,515 20,921	22,427 24,042	ιpage 84
Urban Labo	н	21,459 23,090 24,845 26,733 28,765	30,951 33,303 35,834 38,557 41,488	44,641 48,034 51,684 55,612 59,839	64,386 69,280	defined on
	Чx	30,186 32,359 34,689 37,187 39,864	42,735 45,811 49,110 52,646 56,436	60,500 64,856 64,856 74,531 74,531 79,893	85,650 91,817	² H, Z _M were
	к _H	85,904 92,432 99,458 107,016 115,149	123,901 133,317 143,449 154,351 166,082	178, 704 192, 286 206, 899 222, 624 239, 543	257,784 277,337	, ^Y H, ^Y M, ⁱ
Year		1964 1965 1965 1967 1967	1969 1970 1971 1972 1973	1974 1975 1976 1977 1978	1979 1980	W _X . H _X

unfortunate that geometirc growth rates have to be computed from long intercensus periods of time and that recorded data differ from census to census making it impossible to calculate growth rates for subpopulations and age groups. However, the above equations are useful to assess unemployment rates in urban Valle and Cali.

The demographic analysis and the decision model on migration presented in the previous two chapters allow us to make the following points with respect to future migration:

1. Potential areas for urban-urban and rural-urban outmigration are decreasing, although there are a good number of <u>municipios</u> in both Valle and other departments with large growing populations.

2. The growth of modern agriculture with lower labor input and the pressure of the modern sector on the small farm owners tend to drive people out of agriculture.

3. The greater educational, health and amusement facilities in the large cities tend to attract people from other areas.

4. High unemployment rates in the large urban center of Valle²⁵ tend to diminish or abolish the gap between urban and rural earnings and, thus, to slow down or eliminate its effect on rural out-migration.

²⁵Urban unemployment in Valle and Cali are between 17 and 20 percent, see Chapter VII.

Some of the above factors tend to maintain or accelerate outmigration while others tend to slow down migration. We do not have enough information to be able to establish possible changes in the equation parameters from 1964 to date of the equations for estimating the labor force in urban Valle and Cali. However, we will use the above equations to estimate the labor force in urban Valle (See Table 4.4) and in Cali (see Table 4.5) for the period 1964 to 1980. We want to make it quite clear that the above equations of population growth using weighted growth rates are more useful for shortrun projections. For instance, the native populations of Valle and Cali, given a constant migration rate, will tend to increase when descendents of non-native population are born there, changing the weights used and the the composition of the estimated population.

Using the above equations we will project the population of urban Valle and Cali assuming no migration. We will also examine the differences with respect to the above estimates when there is migration in order to isolate the effect of migration on the urban labor force.²⁶

The procedure used to estimate the labor force of Valle and Cali without migration is: (a) aggregate the work age

²⁶For example, the four points made above with respect to future migration act in such a way that migratory currents do not change. In Chapter VI we examine the reliability of the equations with migration rates equal to those in the past and with no migration.

male populations $(X_{H}, Y_{H} \text{ and } Z_{H})$ of Valle and Cali for 1964 in one group, P_{H} , and the working age female population $(X_{M}, Y_{M} \text{ and } Z_{M})$ of Valle and Cali for 1964 in another group, P_{M} ; and (b) apply the native Valle's population of working age growth rate from 1951 to 1964 which is 3.4 percent. Thus, the equations are:

A) For Valle

 $P_{H} = 303,616 (.863)(1 + .034)^{t}$ $P_{M} = 355,361 (.255)(1 + .034)^{t}$

B) For Cali

 $P_{H} = 156,428 (.863)(1 + .034)^{t}$ $P_{M} = 236,756 (.255)(1 + .034)^{t}$

The labor force P_{H} and P_{M} estimated for 1964 to 1980 and the difference with previous estimates for labor force with migration are presented in Table 4.5 for Valle and Table 4.6 for Cali.

The estimated labor force under two alternative hypotheses ((a) equal migratory currents observed in the past will hold until 1980, and (b) no migration will take place in the future) will be analyzed with respect to the effect on levels of employment and unemployment (Chapter VII) and the possible need and design of employment policies (Chapter VIII).

In conclusion, high urban unskilled labor growth rates were observed during the period 1951 to 1964. Factors causing these high growth rates were (1) low conversion rates from unskilled to skilled labor and (2) high birth and migration rates. In Chapter VI we will examine possible changes in the migration rates from 1965 up to the present. The urban unskilled labor force tends to concentrate in Cali. Participation rates in the labor market are high for men of working age (15 to 64 years) and low for women of working age.

CHAPTER V

URBAN LABOR ABSORPTION

A great number of people are settled in the urban areas of Valle, especially in the capital city, Cali. Average expected urban earnings above the average rural earnings and the structural changes occurring in the rural area of Valle where a growing modern sector cannot absorb all rural laborers are causing small farmers to migrate out of agriculture. The relative low earnings of Valle's meighboring departments and the attraction of the cities are all factors determining migration to urban Valle, as discussed in the previous two chapters. The purpose of this chapter is to examine the absorptive capacity of Valle's manufacturing industry for unskilled labor.

In Valle the urban labor employment in the manufacturing industry is very low with respect to the other sectors and has fluctuated between 12.5 and 14.5 percent of the total urban employment with no tendencies toward changes during the period 1960 to 1969, as shown in Table 5.1.¹ The annual

¹DANE defines a manufacturing firm with less than 5 laborers as craftsmen. Nelson, Shultz and Slighton classified firms with less than 9 workers as craftsmen. If this definition is adopted the proportion of the urban force employed in the manufacturing industry will drop about two percentage points.

Year		Labor For	ce Employed			Annual Growth	
	Indu	stry	Other Sectors ¹	Total	Industry	Other Sectors	Total
	Number	Percent	Number	Number	Number	Number	Number
1960	42,220	13.8	263, 349	305,569		-	1
1961	44,209	13.9	273,233	317,442	1,989	9,884	11,873
1962	48,218	14.6	282,514	330,732	4,009	9,281	13,290
1963	49,841	14.5	294,225	344,066	1,623	11,711	13,334
1964	50,045	14.0	307,753	357,398	204	13,528	13,332
1965	51,759	13.8	323, 357	375,116	1,714	15,604	17,718
1966	52,439	13.5	334,914	387,353	608	11,557	12,237
1967	50,597	12.6	352, 353	402,950	-1,842	17,439	15,597
1968	52,835	12.6	336, 338	419,173	2,238	13,985	16,223
1969	56, 366	12.9	379,681	436,047	3,531	13, 343	16,874

Total Manpower Employment in the Urban Sector of Valle, 1962 to 1969. Table 5.1.

Source: DANE, <u>Anuario General de Estadística</u>. Bogotá, DANE, 1959-1972. l Includes transportation, communication, government and other services.

increase in industrial employment has fluctuated from 200 to 4,000 persons, disregarding the year 1967 when there was a decrease.² The average annual growth of employment in the Valle's manufacturing sector was 3.3 percent.

In Table 5.2 the Valle's industry is subdivided into three groups: a) the industrial branches producing consumption goods like food, beverages, clothing, tobacco, wooden furniture; b) industrial branches producing intermediate goods, like wood, paper, textiles, leather, rubber products, chemicals, non-metallic minerals, and basic metals; and c) industrial branches producing durable and capital goods like metallic products, non-electric machinery, electric machinery, and transportation materials. Most manufacturing laborers are employed in the consumption goods subsector, followed by the intermediate goods subsector.

The annual growth of employment was 2.3 percent in the consumption goods branches, 4.0 percent in the intermediate goods branches, and 8.8 percent in the durable and capital goods branches.

Foodstuffs has the most employees among all Valle's manufacturing branches absorbing 22 percent of all industrial workers. Chemical products follow with 11 percent, metallic products with 8 percent, textiles with 7 percent, clothing

²The figures on the annual increases in urban employment vary between 13,000 and 17,000 persons with a slight upward trend between 1960 and 1969. (See Table 5.1.)

Year	Lab	or Force Employed	ч	Change	e From Preceding	Year
	Consumption	Intermediate	Capital	Consumption	Intermediate	Capital
			Number			
1956	13.704	12.792	3.606	1	1	1 1 1
1957	15,575	14,342	4,679	1,871	1,550	1,073
1958	14,891	14,588	5,198	- 684	246	519
1959	15,820	14,879	6,106	1,329	291	908
1960	16.936	15.508	6.508	1.116	629	402
1961	17,173	16,963	7,295	237	1,455	787
1962	17,807	18,152	8,517	634	1,189	1,222
1963	18,532	18,668	8,717	725	516	200
1964	18.567	18.734	8.968	35	66	251
1965	19,050	19,666	9,170	483	932	202
1966	19,223	19,780	9,435	173	114	265
1967	17,918	19,388	9,284	-1,305	- 392	- 151
1968	18,002	20,518	9,980	84	1,130	696
lDoes n sidere	ot include all d between this	branches due to table and Table	lack of da 5.1 is a c	ta. The differ onsequence of a	ence in the period vailability of dat	d con- ta.

Total Manpower Employment in the Consumption, Intermediate, and Capital Producing Goods of Valle's Manufacturing Industry, 1956 to 1968. Table 5.2.

Computed from DANE, Boletines Mensuales de Estadística Nos. 113 and 118 and nonpublished data collected by DANE. Source:

with 7 percent, paper and derivative products 6 percent. In Table 5.3, the annual rates of growth of industrial employment are shown. Industries with the highest growth rates of employment are the industries producing intermediate, durable and capital producing goods.

The relative importance of the different industrial centers of the department of Valle in relation to utilization of manpower is presented in Table 5.4. It may be noted that industry located in Cali represents about 60 percent of industrial employment in Valle as a whole. The cities of Cali, Palmira and Yumbo may be considered as one industrial complex. Together, they absorb nearly 83 percent of all industrial employment in Valle. The great majority of these workers live in Cali.

Thus, the Valle's manufacturing sector, largely concentrated in the cities of Cali and the neighboring cities of Palmira and Yumbo, shows very little absorption of new laborers during the period 1956-1969, below the growth rate of the urban labor force. The industrial branches producing durable and capital goods are absorbing labor at a faster rate than industrial branches producing intermediate and consumption goods.

We turn now to the objective of this chapter, an examination of the reasons for the low absorption labor rate of Valle's industry. First of all we present some theoretical ideas.

Industrial Sector	Annual Rates of Growth
Basic metals	14.40
Metal products	10.70
Non-Electric machinery	10.30
Electric machinery	10.10
Diverse industries	7.70
Woods	7.60
Paper	6.40
Printing and publishing	6.30
Chemistry	6.00
Non-metallic minerals	4.40
Transportation materials	4.20
Food	4.00
Rubber products	1.65
Leather, leather products except shoes	1.18
Clothing	0.90
Textiles	0.86
Beverages	0.25
Wooden furniture	0.18
Tobacco	-3.50

•

Table 5.3. Employment Growth Rates in the Industrial Sector of Valle, 1956 to 1968.

Source: DANE, <u>Anuario General de Estadística</u> Bogotá, DANE, 1958 to 1972.

Table 5.4. Percentage of Total Employment Absorbed by the Principal Industrial Centers of Valle, 1965 to 1969.

Cities			Year	5	
	1965	1966	1967	1968	1969
			Perce	nt	
Cali	61.2	60.2	58.0	59.3	61.7
Yumbo	12.3	14.0	15.0	14.4	15.0
Palmira	8.6	8.5	9.2	9.0	8.5
Buga	6.4	4.3	4.3	3.7	3.7
Tulvá	1.3	1.3	1.3	1.0	1.7
Buenaventura	0.7	0.5	0.6	0.7	0.9
Cartago	0.7	0.4	0.7	0.7	0.3

Source: CVC, "La Industria fabril del Valle del Cauca," Unpublished preliminary draft, 1974.

Demand for Labor

As mentioned previously, labor as a factor of production is very heterogeneous and there are as many different demands for labor as there are kinds of labor used in the productive process of a community. Though this chapter treats laborers as a homogeneous group, considerable attention is paid to the unskilled laborer.

In markets for factors of production, those making the demands are the producers; in the case of labor, those who produce offer labor services are consumers as well as suppliers. This is an important difference from the markets for goods where consumers demand and producers supply.

Traditional economic theory assumes that all producers try to maximize earnings (not excluding the non-monetary) by

using their productive resources as well as possible, subject to the technical restrictions given by the production If the firm acts in a perfectly competitive market function. of products and factors, prices of both productive factors and products are fixed parameters to the firm and maximization determines the optimal amount of the productive factors The production function shows the physical relation to use. between the final product and the factors of production: mathematically, Y = f(X), where Y is the final product and X the vector of the factors of production. The equation of the firm's earnings is: $G = P_v \cdot f(X) - P_x \cdot X$, where G =earnings, P_y is the price of the final product, and P_x is the vector of the costs of the factors of production. Maximizing this function with respect to X, we obtain

 $P_y \frac{\alpha_y}{\alpha_x} = P_x$, that is $P_y \cdot MP_x = P_x$, in other words, the marginal value product of the factor X (VMP_x) equals its price. This expression indicates the maximum price the producers will pay for a given amount of the factor X. The amount of the factor X a firm wants to buy is a function of the factor price and is the amount which equates P_x with $P_y \cdot MP_x$.

The demand function for a given factor, say labor, when all other factors are fixed is $X = g(VMP_x)$. This function is negative sloping, in general. The marginal value product curve has negative slope in the rational stage of production,

so that the more manpower used, the less productive the last man hired. This explains why unlimited quantities of labor or of any other factor, are not used in the production process.

If the firms have a monopoly in the market of their products, they pay the factors according to their marginal revenue curve (MR) also a function of the price of the product and as a result the demand function for labor is given by $X = G(MR \cdot MP_X)$ or X = G(MRP) where MRP is the marginal revenue product of the factor X which is equal to

 $P_y \cdot MP_x + \frac{dp_y}{dx} (Y - MP_x)$ where $\frac{dp_y}{dx}$ is the change in P_y resulting from using more of X to produce dy more of Y. P_y and Y are measured after dx more of X has been used and hence $\frac{dy}{dx} = MP_x$ has to be subtracted from Y.

To derive the demand curve for labor we assumed price of labor fixed, independent of the number of workers a firm hires. What will be the effect on the demand curve for labor if workers can unionize when there are a minimum number of workers in the firm, as the Colombian labor legislation has established? We will expect cost of labor to increase. Owners of firms when faced with unions consider the cost of a) conflicts, b) strikes, c) assuring job security to the union members, and d) frequent pressure for wage raises. Unskilled labor has, then, two prices or wages; one for unionized laborers and another lower rate for non-unionized laborers. An entrepreneur has to face these two prices for labor. Which of these prices he will have to

pay depends on the number of workers he hires. The real price of unionized labor is the nominal salary the worker will be asked for which will be above the minimum legal wage in the great majority of the cases, a difference increased even more when the unions press for extra-legal payments for vacations, Christmas and mid-year payments, etc. not to mention other real costs like the abhorence of unionization and organized union pressure implying processes of negotiation with high possibilities of open conflicts and strikes. Besides the unions offer job security to their members. This means that the entrepreneur will be forced to maintain a labor force some of whom, at times, will be paid above their marginal value products. The situation an owner is facing in the labor market is illustrated in Figure 2 where ${\rm W_m}$ is the minimum legal wage and W_u is the cost of labor which includes all the items we have just discussed. If the demand for labor X = f(MVP) shifts up or down due to changes in the marginal productivity of labor or changes in the price of the product but does not go above point A or below point B there will not be changes in the number of workers desired. This analysis brings about an important modification in the demand curve for labor derived at the beginning of this chapter. That modification will be discussed in the following section.



Figure 2. The prices of labor for unionized and non-unionized laborers and the marginal value product curve of labor.

Modifications in the Demand for Labor

The industrial demand curve for labor defined as X = f(MVP) is affected by a) other variable factors of production and labor-saving capital-oriented sub-production functions, and b) labor price differentials, of the kind discussed above. In what follows we will first discuss the effects of capital as a variable factor of production, the sub-production functions oriented toward capital which substitutes for unskilled labor and, second, labor price differentials.

The demand curve for labor of a given firm X = f(MVP), was derived from the production function Y = f(X/K,Z,...)where all factors but labor were held constant. We now treat capital (K) as a variable factor to determine the effect of changes in capital on the demand for labor. We must consider the relationship between labor and capital.

Two production factors are defined³ as substitutes when the relations: $\Delta MP_{v1} | \Delta X_2 < 0$ and $\Delta MP_{v2} | \Delta X_1 < 0$, that is, if the use of one of these factors is increased $(+\Delta X_2)$, the marginal product of the other factor will decrease $(-\Delta MP_{x1})$. Two factors are complementary when these same relations are positive, that is, if the use of one factor is decreased $(-\Delta X_2)$ the marginal product of the other factor is decreased $(-\Delta MP_{v1})$. If more capital is available, in the form of machinery and equipment which substitute for labor, the marginal productivity of labor will decline and the entrepreneur will use less of it at any given level of output. On the contrary, if more capital goods are available, and these are complementary with labor, the latter will have greater marginal productivity and the entrepreneur will demand more labor. Thus, when a country is creating and/or importing labor substituting capital goods the marginal productivity of labor decreases from MVP_1 to MVP_2 in Figure 3-I.⁴ If the original price of labor was P_1 the firm is in equilibrium using the quantity OA. When the price falls to P_2 the firm equates P_2 and MVP_2 to arrive at the amount OB of labor. The curve dd, joining equilibrium points describes

³We recognize the definitions of substitutes and complements inputs apply to Stage II, see Irving Morrissett, "Some Recent Uses of Elasticities of Substitution--A Survey," Econometrica, Vol. 21, No. 1, (1953).

⁴We assume that capital is substitute of labor for all quantities of labor used, i.e., the shift in the MVP curves is parallel.

the demand for labor when the capital substitute for labor is also variable. We see that this demand for labor is more inelastic and at the price P_2 less labor will be used, OB instead of OC. When the factors are complementary the MVP of labor increases when capital is increased. The resulting demand for labor is more elastic and at the price P_2 more labor will be used, as it is shown in Figure 3-II.



Figure 3. Demand for labor when capital is variable.

We now consider two kinds of capital, labor-saving **capital** (K_g) , neutral-traditional capital (K_n) and two kinds **of labor**, skilled labor (X_g) and unskilled labor (X_u) . In What follows we analyze the demand of labor of four hypo**thetical** groups of firms with different production conditions.

Group I: this group is composed of very small firms which use unskilled labor and neutral-traditional capital. The owners' economic resources are limited and thus an insignificant increase in size of these firms is expected. The firms utilize few workers and, therefore, do not contemplate the possibility of unions in the firms even if they can increase production. Their demand for unskilled labor is of the type of demand drawn in Figure 3-I or 3-II. The aggregate demand of labor of these firms is low and they employ a limited number of unskilled laborers.

Group II: medium size firms belong to this group. These firms use unskilled labor and neutral-traditional capital. The owners do not know of the existence of laborsaving capital and/or do not have the money to buy it. These firms have at least two expansion paths, one for non-unionized **labor** and another for unionized labor for a given price of **cap**ital (see Figure 4). If the firm wants to produce Y_{4} units it will need to increase the number of workers above the minimum number, N, necessary to form a union with wages equal to the minimum legal wage and so, he will go from **POint** A to A', but the laborers can form a union which likely will ask for higher salaries and increase the cost of Labor in other ways. To increase production using the same amount of labor at A and being in equilibrium will require the price of capital to fall but this is unlikely to happen at a time when more capital is being demanded. So, a point like B is not feasible. Point C is not relevant at this time since there are no reasons to expect wages to go up as less than the number of laborers to form a union will be employed. Also the price of capital is not expected to decrease when more of it is demanded. Thus, the maximum **volume** of production that will be considered by entrepreneurs who do not want to deal with large numbers of workers is Y_3 .

If a producer can and want to expand production, he will hire a number of laborers above N to be able to produce, say Y_6 . His relevant expansion path is bb.

Group III: medium size firms owned and managed by producers who know and are able to buy modern equipment belong to this group. We assume that these firms initially produce with unskilled laborers and neutral-traditional capital but are accumulating resources at their present level of production, and are interested in acquiring laborsaving capital. The change in technology depends on: a) the expectations about the market for their products, b) the acquisition price of the labor-saving capital and the salvage value of the neutral-traditional capital, and c) the expected changes in the cost of labor as a result of using less unskilled labor and hiring skilled labor.



Figure 4. Expansion paths of firms for non-unionized and unionized labor.

Consider the situation of a firm described in Figure Initially the firm operates with the production function 5. $Y = f(X_u, K_n | Z, ..., X_s = 0, K_s = 0)$, s described by isoquants numbered 1 in Figure 5, and the firm is producing Y units at point A. If the firm wants to produce Y₁ units it will have to move to B but more than N workers are needed and the firm will be confronted with expectations of rising wages and other non-monetary costs associated with unioniza-If these cost expectations are greater than the net tion. cost of labor-saving capital the firm will acquire laborsaving capital and shifts to the production function $Y = f(X_s, X_u, K_s | Z_1, \dots, K_n = 0)$ will produce Y_1 units of C where less than 25 laborers are hired. Average salaries for workers are higher than before because skilled workers have been hired. Also some unskilled laborers will see their MVP increase⁶ and demand higher salaries while other unskilled workers will see their MVPs decrease and lose their job. Finally, production and consequently the use of labor and installed capacity of the firm will be limited if the high profit point is at C where the number of workers is below N.

 ${}^{5}X_{n}$, X_{s} , K_{n} and K_{s} as defined on page 106.

⁶The labor saving capital is complementary for the first workers generally skilled to operate the capital, i.e., the MVP of labor curves before and after labor-saving is used cross each other.



Figure 5. Change in technology and expansion paths for a firm.

Group IV: big firms organized as stock companies, some of them with foreign capital, form this group. In the majority of the cases the companies were initiated with a large amount of machinery and their operation requires a large number of workers well above the number necessary for unionization. These companies demand substantial numbers of skilled and unskilled laborers; however, the skilled laborers are complementary with labor-saving capital, and together, the two replace unskilled labor in these firms.

We will show that production conditions of the four groups of firms as developed above explain factor proportion variations among the Valle's manufacturing industry. But first, we will examine the relation between the relative prices of labor and capital⁷ and the capital-labor use ratio.

⁷The price of capital can be defined according to its acquisition price or the salvage value or the shadow price (MVPs through the capital good life-time). The price of capital is the discounting rate equalling, say, the acquisition

After that we shall examine (1) the effect of a change in the composition of the industrial demand on manufacturing employment, (2) labor employment by size of firms in the Valle's manufacturing industry, (3) use of installed capacity, and (4) growth of the manufacturing sector.

Elasticities of Substitution

A price relation which favors labor over capital will determine higher rates of employment only if there exists the technical possibility of substituting labor for capital. This substitution possibility is measured by the elasticity of substitution S, which is defined as the percentage change in the ratio of the two factors with respect to the percentage change of the marginal rate of substitution (MRS) of the factors when output is constant.⁸ The elasticity of substitution is symmetric, that is the elasticity of substitution of labor for capital is equal to the elasticity of substitution of capital for labor.⁹

price plus repairs with the present value of its product share throughout the capital good lifetime. The commercial interest rate is generally used as the price of capital, which is the opportunity cost of the funds invested in the capital good.

⁸The marginal rate of substitution between two factors is defined as the relation between their marginal products MP_{x2}|MP_{x1}. This is the slope of an isoquant and shows how, as one resource is reduced in the process of being substituted by another, the quantities of the latter must be increased constantly in order to maintain the volume of production Constant.

Mathematicaly the elasticity of substitution is expressed as follows:

Elasticities of substitution for 20 industrial branches of Colombia were computed by <u>Planeación Nacional</u>¹⁰ and by Gaviria, Gómez and López¹¹ using different production relations. <u>Planeación Nacional</u> estimated the relationship between the logarithm of output per worker (dependent variable) and the logarithm of real wage as Arrow, Chenery, Minhas and

$$\frac{\frac{d \left[\frac{X1}{X2}\right] \left[\frac{X1}{X2}\right]}{d \left[\frac{\alpha y / \alpha x_{2}}{\alpha y / \alpha x_{1}}\right]}}{\frac{\alpha y / \alpha x_{2}}{\alpha y / \alpha x_{1}}} = S = \frac{d \left[\frac{X1}{X2}\right] \frac{\alpha y | \alpha x_{2}}{\alpha y | \alpha x_{1}}}{d \left[\frac{\alpha y | \alpha x_{2}}{\alpha y | \alpha x_{1}}\right] \frac{X_{1}}{X_{2}}}$$

Since the partial derivative of a function of production with respect to a factor is the marginal product of the factor (MP_x) we have:

S :	$\frac{d}{d} \left(\frac{X_1}{X_2} \right) \frac{MP_{x2}}{MP_{x1}}$ $\frac{d}{d} \left(\frac{MP_{x2}}{MP_{x1}} \right) \frac{X_1}{X_2}$	
	⁹ The elasticity of substitution can also be writ	ten as
	$\{X_1\} dX_1 $	-
d	$\frac{1}{\overline{x_2}} = \frac{d \log \overline{x_2} }{dx_2}$	
	$\frac{2}{dX_1}$ or as $\frac{2}{dX_1}$	
d	$\frac{dx_1}{dx}$ $\frac{dx_1}{x}$ $\frac{dx_1}{dx}$	
	$\left(\frac{\alpha n_2}{2} \right) = \left(\frac{\alpha n_2}{2} \right) $	v)
Syı	metry is proven by noting that d log $\left \frac{\lambda_1}{m}\right = -d \log \left \frac{\lambda_2}{m}\right $	$\frac{2}{2}$ and
- 5 -	(x_2) (x_3) (x_2)	x_1
d 1	$ang \left \frac{dn_1}{d} \right = -d \log \left \frac{dn_2}{d} \right $	-
-	dx_2 dx_1	
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³⁰Departamento Nacional de Planeación, "Breve Esquema **sobre** el Problema del Desempleo en Colombia," UPG-002, junio **30**, 1970.

11<u>Op</u>. <u>cit</u>., pp. 140-152.
Solow did.¹² The data used were time series data (1956 to 1968) published by DANE. High elasticities of substitution were found for all 20 industrial branches except tobacco. Gaviria, Gómez and López used the same data but followed Dhrymes¹³ who does not assume constant returns to scale nor prefectly competitive markets obtained very low elasticities of substitution.¹⁴ The contradictory results of these two estimates would be explained in what follows.

Arrow, et al., wanted to relate productivity (value added per worker to differences in the capital-labor ratio, but capital stock data were scarce. Given a general production function,¹⁵ the assumption that the price of labor is equal to its MVP, and that there is an increasing relationship between the wage rates and the capital-labor ratios,¹⁶ the Arrow, et al., model relates productivity to wage rates.¹⁷ Nelson, Schultz and Slighton showed that if there are other

¹²"Capital-Labor Substitution and Economic Efficiency," <u>Review of Economics and Statistics</u>, Vol. 43, No. 3, (1961).

¹³Phoebus J. Dhrymes, "Some Extensions and Tests for the CES Class of Production Functions," <u>Review of Economics</u> <u>and Statistics</u>, Vol. 47, No. 4, (1965).

¹⁴They estimated the function log L = a + S log (W/P) + c log Y where L = labor, W/P = real wage, and Y = output. ¹⁵Y = f(K,L) and Y/L = f(K/L,1). ¹⁶W/P = g(K/L), g' > 0 ¹⁷Y/L = f [g(K/L)], then Y/L = f [g⁻¹(w)] or Y/L = h(W). factors that vary across countries¹⁸ which affect value added per worker and MVPs of labor, the direct relationship between value added per worker and wages used by Arrow, et al., does not change a good fit for the equation is obtained.¹⁹ This is a case of specification errors in a model as relevant explanatory variables are omitted. If one variable is omitted and is positively correlated with the included variable the elasticity of substitution will be biased.²⁰ Positive correlation with wage rates (included variable) is likely to be the case if more skilled labor and other changes in the production process to achieve better efficiency²¹ when time series data are used. Thus, we will expect the elasticities of substitution estimated by <u>Planeación</u> <u>Nacional</u> to be biased upward.

Gaviria, Gómez and López estimated the equation $\log (X) = a + b \log (W/P) + \log Y.^{22}$ They appear to have a poor fit for the equations with no statistically significant (different from zero at 10 percent level) elasticities of substitution in 11 equations. All elasticities of substitution

²¹We will examine this further in the following pages.
²²X is number of laborers, W/P real wage, and Y total **value** added.

¹⁸ Arrow, et al., wanted to show that variations in the capital labor ratio across countries explained productivity differences among them.

^{19&}lt;u>Op</u>. <u>cit</u>., pp. 98-99.

²⁰See Jan Kmenta, <u>Elements of Econometrics</u>, New York: The Macmillan Co., 1971, pp. 391-5.

are substantially lower than the ones estimated by <u>Planeación</u> <u>Nacional</u>. They probably havemulticollinearity among independent variables. With a high degree of multicollinearity, estimates of the regression coefficients are highly imprecise.²³

Thus, there are serious statistical problems in the elasticities of substitution estimated by Planeación Nacional and Gaviria, Gómez and López of the Universidad de Antioquia. There are other problems in estimating elasticities of substitution for industrial branches. There are different kinds of labor like unskilled and skilled laborers: there are several types of capita labor-saving, labor-intensive and neutral;²⁴ machinery and equipment are near perfect complements for some workers and near perfect substitutes for others; shifts on production functions occur as a result of changes in technology; production increases or decreases for different firms, and there are differences in managerial abilities. When time series data are used additional difficulties in measuring the degree of substitution between factors of production are: output is not constant and changes in technology, kinds of capital, and labor training take place

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^{23&}lt;sub>Kmenta, op. cit., pp. 387-9.</sub>

²⁴These differences in the kinds of capital as well as technology are described by the four hypothetical groups of firms discussed above. Furthermore, dualism is characterized by technological and kinds of inputs differences.

over time. Wages bring market conditions into the estimates. This is a real limitation since we know there are definite imperfections in the labor market of Colombia.

In spite of all these difficulties we will compute elasticities of substitution for Valle's 17 industrial branches (see Table 5.5 for a list) using a different equa-Since we shall use time series data we will make the tion. efficiency paramter $\dot{\gamma}$ a function of time, like $\gamma = e^{\lambda t}$, and since γ affects in equal form labor and capita the parameter λ reflects neutral technology. The distribution parameter $\hat{\mathbf{y}}$ reflects non-neutral technology since it affects capital and labor in a different manner. When γ is a function of time the equation to be estimated is: $Log (Y/X_2) = A + S Log$ (W/P) + B t + U.²⁵ Also, we will estimate the same equations estimated by Planeación Nacional, which is the same as above excluding the time variable t (that is, the efficiency parameter does not change over time) to be able to compare the results of the two sets of equations and study the statistical problems discussed above. The data is for Valle during the

²⁵When $\gamma = e^{\lambda t}$, we have $W/P = (1 - \delta)(e^{\lambda t})^{-\rho}(Y/X_2)^{\rho+1}$, wage equal to its MVP, using the CES production function. Then, Log (W/P) = - Log (1 - δ) - $\rho\lambda t$ + (ρ + 1) Log (Y/X₂), and

Log $(Y/X_2) = -\frac{1}{\rho+1} \text{Log} (1 - \delta) + \frac{1}{\rho+1} = \text{Log} (W/P) + \frac{\lambda\rho}{\rho+1} t$ and therefore, $A = -\frac{1}{\rho+1} \text{Log} (1 - \delta)$, $S = \frac{1}{\rho+1}$ and $B = \frac{\rho\lambda}{\rho+1}$. The equation estimated by <u>Planeación Nacional</u> was Log $(Y/X_2) = A + S \text{Log} (W/P)$.

Industrial Branches	A	S	В	R ²	F	D.W. ²	Correlation Coefficient ³
Food	3 .744 (3.937)	.119 (.312)	.031 (.030)	. 80	20.00	1.48	.976
Beverages	8.956 (4.750)	285 (.432)	.072 (.030)	. 79	19.10	2.22	.958
Tobacco	6.650 (2.602)	047 (.248)	.0150 (.0124)	.17	1.05	1.34	.650
Textiles	074 (3.221)	.416 (.269)	015 (.011)	. 20	1.21	2.46	. 845
Clothing	6.819 (1.375)	229 (.118)	.012 (.004)	. 46	4.21	1.31	. 338
Wood	1.267 (3.458)	.295 (.358)	028 (.033)	.07	37	2.11	.947
Wooden Furniture	-2.858 (1.820)	.658 (.180)	.053 (.010)	.75	14.92	1.28	575
Paper	5.066 (4.065)	006 (.358)	.076 (.056)	. 83	24.00	1.68	. 981
Leather	-2.929 (6.187)	.698 (.699)	.008 (.071)	.73	13.39	1.66	985
Rubber	-5.121 (7.073)	.841 (.603)	.011 (.047)	. 88	38.02	1.97	.982
Che micals	-4.174 (4.257)	. 804 (. 354)	039 (.036)	. 84	26.30	.99	. 986
Non-metallic Minerals	6.643 (9.433)	183 (.845)	.020 (.062)	.03	.14	1.78	.977
Bas ic metals	2.945 (.493)	.159 (.064)	.057 (.037)	. 59	7.11	1.75	. 410
Metallic products	4.824 (1.268)	030 (.115)	.052 (.016)	.91	48.09	2.45	.953
Non-electric Machinery	1.554 (4.213)	.270 (.457)	.024 (.053)	. 55	6.06	.93	. 954
Electric Machinery	8.438 (1.805)	351 (.175)	.116 (.025)	.91	51.43	2.12	. 963
Transportation Materials	.391 (1.142)	.327 (.102)	.029 (.007)	.83	23.76	2.25	. 424

Table 5.5.Regression Coefficients of the CES Production Functions When the Efficiency
Parameters Change Over Timel for Valle's Industrial Branches.

Numbers in parenthesis are the standard errors of coefficients.

Log $(Y/X_2) = A + S \text{ Log } (W/P) + BT + \mu$; Y = value added, X_2 = number of workers, W/P = real wages, T = time variable, 1956 = 1, 1957 = 2, . . . , 1968 = 13.

² Durbin-Watson statistics, $d_L = 0.82$ and $d_u = 1.75$, 1 percent.

³Correlation coefficient between the independent variable, W/P and t.

period 1956 to 1968. Value added and wages used in the
equations are in 1958 prices.²⁶ The results are presented
in Table 5.5 and 5.6.

When the efficiency parameter (γ) is a function of time we noted high correlation coefficients between the two inde**pendent variables (see Table 5.5) with the exception of three** industrial branches, with correlation coefficients **below** 0.5. With greater efficiency from more trained **lab**orers, among other considerations, wages are expected to **increase.** When there are high degrees of multicollinearity, the regression coefficients are imprecise, as noted above for the case of Gaviria, Gómez and López estimates. The industrial branches for metallic products and transportation materials, which have low correlation coefficients between the two independent variables, have relatively low elasticities of substitution. The elasticity of substitution for clothing,²⁷ which have the lowest correlation coefficient, have a negative sign, contrary to what was expected. Negative elasticity of substitution implies that the substitution **Parameter** $(_0)$ of the CES production function is less than -1 and the isoquants will have the wrong curvature.

²⁶The index price used is the implicit index price in the national social accounts. This index as well as the number of laborers employed in each industrial branch, Value added and wages in current Colombian <u>pesos</u> are given in Appendix B.4.

²⁷The elasticities of substitution of metallic products, transportation materials and clothing are statistically different from zero at the 5 percent level.

Industrial Branches	A	S	R ²	F	D.W.
Food	0960 (.903)	.425 (.068)	. 80	38.99	1.41
Beverages	-1.867 (1.689)	.703 (.147)	. 67	22.78	1.96
Tobacco	4.660 (2.062)	.149 (.192)	.05	. 60	1.16
Textiles	3.723 (1.832)	.096 (.150)	. 04	. 41	2.35
Clothing	5.642 (1.632)	122 (.139)	.06	. 76	0.93
Wood	4.057 (1.159)	.004 (.113)	. 00	.00	1.65
Wooden Furniture	3.061 (2.757)	.097 (.279)	.01	.12	0.50
Paper	293 (.888)	.481 (.073)	. 80	42.98	1.74
Leather	-2.239 (.934)	.620 (.114)	. 73	29.41	1.64
Rubber	-6.790 (1.323)	.984 (.108)	. 88	83.10	2.08
Chemicals	. 387 (. 758)	.423 (.060)	. 82	50.56	1.03
Non-metallic Minerals	3.739 (2.010)	.078 (.172)	. 02	. 20	1.83
Basic Metals	3.010 (.522)	.200 (.062)	. 49	10.42	1.46
Metallic Products	.972 (.567)	.322 (.047)	.81	46.39	1.50
Non-electric Machinery	290 (1.316)	.472 (.132)	. 54	12.83	1.00
Electric Machinery	.471 (.905)	. 429 (.080)	. 72	28.58	. 67
Transportation Materials	-1.45 (1.655)	.56 (.145)	. 53	12.24	1.44

Table 5.6. Regression Coefficients of the CES Production Function When the Efficiency Parameter is Constant¹ for Valle's Industrial Branches.

Numbers in parentheses are the standard errors of coefficients.

²Durbin-Watson Statistics. $d_1 = 0.82$ and $d_u = 1.75$, 1 percent.

Autocorrelated disturbances were not found for any industrial branches when the Durbin-Watson test was applied. However, for some industrial branches this test is inconclusive.²⁸

A negative correlation coefficient between real wages and time was observed for wooden furniture and leather. This means that real wages have decreased in these two industrial branches. Probably small manufacturing and handcraft firms are numerous in these industries.

In the simple regression model, where real wages is the independent variable the elasticities of substitution differed widely (Table 5.6) from the ones estimated in the Previous case. Elasticities of substitution for tobacco, textiles, clothing, wood, wooden furniture and non-metallic minerals are not statistically different from zero at the 5 percent levels and poor fits were obtained, with R²s less than .07. The estimates for elasticities of substitution of all other industrial branches except leather and chemicals are greater than the corresponding estimated elasticities of substitution obtained in the previous case. However, we cannot conclude that the elasticities of substitution are Breater since with specification errors in the model and with positive correlation between the included and the missing variables, the estimates are biased upward, as

²⁸ The Durbin-Watson test is inconclusive when the estimated Durbin-Watson statistics falls between d_L and d_u.

explained before. Autocorrelated disturbances were found for electric machinery and wooden furniture. The Durbin-Watson test did not give conclusive results for some industrial branches. Our estimates using the first model (the efficiency parameter a function of time) are still similar to the ones obtained by Gaviria, Gomez and Lopez and our estimates with the second model are more similar. but lower, 29 than those obtained by Planeación Nacional. In conclusion, we cannot agree with Gaviria, Gomez and Lopez when they claim that, contrary to Planeación Nacional, there are low elasticities of substitution in Colombia's industry and, thus, policies oriented to modify relative **Prices are not effective**.³⁰ Important statistical problems were found in the models used which do not allow us to know the shape of isoquants. Research on industrial production functions should be carried out in the future.

Labor Input-Output Analysis

We use input-output analysis to determine possible effects of composition changes in the aggregate demand for

³⁰We will discuss price policies in Chapter VII.

²⁹Lower estimates for Valle than for Colombia could mean more fixed proportion in Valle's industry. However, the results are not totally comparable since <u>Planeación</u> <u>Nacional</u> used price indices of the corresponding manufacturing branch to compute real wages while we used implicit **Price** indices of the national social accounts to obtain real wages.

industrial products over the level of employment. Inputoutput tables are used to study interrelations among sectors of a given economy. If the aggregate demand increases or if its composition is changed, we can trace by means of input-output analysis changes in inputs used and possible **bot**tlenecks in the production process. An input-output table can be transformed to show labor input only and allow to determine the effect of increases or composition changes us in the aggregate demand over the level of employment. Inputoutput analysis assumes fixed proportions in the production **process**³¹ and for this reason is used for short term analysis. In what follows, we analyze the effect on employment of a change in the composition of the aggregate demand when more **consumption** goods and less durable intermediate and capital **Soods are wanted**. Populations with low income levels need **final** products produced with high proportions of labor and **domestically** produced materials the production of which employs much manpower, while the high income populations demand goods which contain little labor and a high proportion of imported materials.

To examine the effect of a greater demand for consumption goods and less intermediate and capital goods, an input-output table of the Colombian manufacturing sector will be utilized transformed to show the labor input of

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³¹ The factors are perfect complements, i.e., zero Substitution.

each of the industrial sectors. The coefficients of the principal diagonal of the matrix shows direct employment that which an industrial sector generates through the utilization of its own products. The sum of the employment indicated by one line of the matrix gives the employment in the respective industry generated by the industrial sector; and thus subtracting the element of the diagonal from this line yields indirect employment.

In order to estimate the composition of the modified demand for final products we need to know the income elasticity for groups or levels of income in each of the economic sectors. Unfortunately there is no available information which permits the estimation of income elasticities by industrial sectors. For this reason, the impact on employment of alternative structures of consumption constructed by increasing final consumption goods and decreasing consumption of durable, intermediate and capital goods is examined.

The national planning department constructed an inputoutput matrix in 1956. It was not used due to the untrustworthiness of its coefficients and the lack of qualified technical personnel. Ten years later, 1966, the department constructed a new table taking advantage of the efforts made by DANE to construct a scheme of industrial relations between the 20 manufacturing branches, to which 11 more branches were later added, covering the national economy:

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5 branches in the primary sector, 21 in the secondary sector, and 5 in the tertiary sector.

The figures were corrected by the accounting of inputs and by the cost of transportation and marketing margins which were included in the prices of the products, since it was not always possible to obtain producers prices, thus underestimating the coefficients which reflect the requirements of inputs in production and underestimating the services of transportation and commerce. The percentages the value of these services represent in the gross production of each branch of the economy were calculated to make this correction.

The Colombian input-output matrix corresponding to the manfuacturing sector was used except for petroleum derivatives. The part of the matrix used is considered applicable to Valle given Valle's high participation in the country's industrial production and its similarity with the industries of Antioquia and Bogotá, which together contribute nearly 90 percent of the national industrial production. As this is not true for the primary and tertiary sectors, they were excluded. The matrix 1-A where A is the matrix of input-output is presented in Table 5.7. Each column of this matrix shows the elements necessary to produce one unit from the respective economic branch for final demand. The inverse of the matrix 1-A is called "Leontief's matrix." Since the purpose is to analyze the level of employment, a

Table 5.7. Industrial Input-Output Matrix (1-A) of Colombia.

Industrial B	ranch				Inc	lustrial Bran	ch			
Name	Code	20	21	22	23	24	25	26	27	28
Food	20	912,999	- 58,780	39	232	025	- 1,914	200	- 25,587	- 009
Beverages	21	507	946,285	001	036	038	403	- 1,133	435	045
Tobacco	22	!	1	996,715	1		!		8	
Textiles	23	-15,243	036	001	791,689	- 400,470	752	- 34,095	- 2,409	169
Clothing	24	002		;	- 1,125	1,000,000	449	- 15,391	219	725
Wood	25	169	- 13,924	033	513	634	934,548	- 81,982	233	577
Wood Furniture	26	- 1,086	140	032	- 1,113	- 177	- 1,860	998,489	- 4,103	356
Paper	27	-17,814	- 2,089	- 14,470	- 3,102	- 7,852	934	- 1,036	727,591	-121,200
Printing	28	- 3,017	- 4,403	- 13,137	- 1,1°6	- 2,122	- 2,972	- 4,582	- 24,736	968,154
Leather (except shoes)	29	932		!	932	- 42,609	750	- 4,492	391	- 2,168
Rubber products	30	099	006	9	- 3,992	- 6,823	572	- 18,392	285	- 1,122
Chemicals	31	-12,094	- 16,850	- 12,733	- 46,904	- 4,028	-36,128	- 43,623	- 36,725	- 34,492
Non-metallic minerals	32	- 2,012	- 12,757	!	171	210	- 1,793	- 9,414	485	622
Basic metals	33	106	024		- 1,139	- 1,012	- 5,410	- 7,149	761	- 7,000
Metal Products	34	- 5,827	- 38,498	158	- 1,743	- 3,200	-11,512	- 41,801	- 1,165	- 3,824
Non-electric machinery	35	017	1	1	007	- 1,222	- 2,144	- 24,626	089	- 1,526
Electric machinery	36	042	027	1	125	462	- 1,067	- 1,961	130	718
Transportation Materials	37	172	143	031	004	254	769	- 8,184	021	070

Industrial B	ranch				Ir	dustrial Bru	ınch			
Name	Code	29	30	31	32	33	34	35	36	37
Food	20	- 3,033	495	- 11,196		058	024	116	199	- 1,508
Beverages	21	101	112	088	007	1	- 1,869	077	027	018
Tobacco	22	1			1	1	1	1	1	1
Textiles	23	232	- 39,552	- 5,726	- 2,430	1	- 3,873	- 1,543	835	- 1,310
Clothing	24	- 2,057	864	135	047		883	- 5,052	187	- 6,141
Nood	25	- 19,586	149	- 1,038	- 1,219	043	- 2,829	- 5,265	- 5,051	- 8,213
Wood Furniture	26	442	116	- 3,994	- 1,501	007	- 8,346	087	- 20,428	- 3,721
Paper	27	- 1,887	886	- 14,191	- 26,010	175	- 6,495	062	- 2,970	272
Printing	28	147	209	- 9,857	877	003	- 3,904	303	- 3,070	087
Leather (except shoes)	29	948,359	- 19,877	816	127	077	722	275	443	- 1,241
Rubber products	30	- 3,929	966,007	- 2,307	397	138	- 4,839	- 4,536	- 6,370	- 10,986
Chemicals	31	- 39,649	- 22,066	924, 335	- 12,901	- 3,859	- 18,627	- 12,876	- 29,991	- 18,137
Non-metallic minerals	32	- 26,329	- 1,748	- 21,092	932,951	- 6,821	- 5,381	- 5,514	- 16,532	- 3,689
Basic Metals	33	177	556	631	- 10,945	668,583	- 68,775	- 87,976	- 12,722	- 9,711
Metal products	34	- 6,180	- 7,450	17,061	- 5,988	840	933,934	- 29,446	- 38,339	- 17,756
Non-electric machinery	35	- 1,407	776	453	030	565	- 10,099	967,891	- 11,572	- 11,112
Machinery electric	36	- 1,384	121	629	- 4,643	- 17,060	- 10,674	- 23,634	948,943	- 4,808
Transportation Material	37	378	- 1,124	- 5,870	- 1,047	070	- 3,059	- 18,579	- 5,189	952,360
Source: Departan a Corto	mento Na(Plazo,"	cional de Pla Bogotá, Sept	neación, pul ember, 1971	olished in ; (mimeo).	Jaksch Hams	Jurgen, "Mo	lelos Macroec	conomicos pa	ara Projecio	nes

Table 5.7. Continued.

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factor of transformation (B) must be determined which converts Matrix A into coefficients of labor utilization.

The coefficients of the labor utilization were calculated multiplying each of the elements of the direct and indirect inputs by the fraction of labor used in the year 1966 over the value of the respective production measured in 1966 prices. These fractions for each industrial branch were examined and it was found that they had remained quite stable during the 1956 to 1969 period. These coefficients are presented in Table B.7 of Appendix B.

The result of multiplying the input-output matrix A of the year 1966 by the coefficients of the use of labor (the transformation factor B) is matrix C which is the matrix of coefficients of labor utilization in the different industrial branches. This matrix is presented in Table 5.8.

If matrix (1-A) is mutliplied by the value of the production of the different industrial branches, the result is the total demand of other sectors for industrial goods (1-A) X = d.

If income is redistributed, the composition of "d" will vary and we will have, for example, $d_0 = (1-A)^{-1}X_0$ and X_0 may be obtained by (1-A) d_0 .

Utilizing the transformation factor B we can resolve the above relations in terms of employment. Total industrial employment with the present aggregate demand will be: CX + Bd and industrial employment with the modified aggregate

Valle
of
Sector
Industrial
the
in
Employment
Workers'
of
Coefficients
Technical
Matrix of
Table 5.8.

Table 5.8. Matrix	of Tech	nical Coef	ificients o	f Workers	, Employme	ant in the	Industrial	Sector of	Valle	
Industrial Bra	nch					Industria	1 Branch C	odes		
Name	Code	20	21	22	23	24	25	26	27	28
Food	20	.957	.647	1	.003	;	.021	.002	.281	
Beverages	21	.006	.645	1	:	1	.005	.014	.005	100.
Tobacco	22	1	1	.049	:		1	1	:	1
Textiles	23	.317	.001	1	4.166	3.010	.015	. 682	.048	.003
Clothing	24	1	;	1	.058	1 1 1	.023	. 799	.011	.038
Wood	25	.010	.801	.002	.029	.036	3.763	4.714	.013	.033
Wood Furniture	26	.094	.012	.003	.096	.067	.161	.131	.356	.031
Paper	27	.146	.017	.120	.026	.065	.008	600.	2.026	1.007
Printing	28	.080	.116	.347	.032	.056	.078	.121	.653	.841
Leather (except shoes)	29	.015) 1 7	-	.027	1.219	.021	.128	.011	.062
Rubber products	30	100.	:	1	.050	.086	.007	.232	.004	.014
Chemicals	31	.133	.185	.140	.516	.044	.419	.480	.404	.379
Non-metallic minerals	32	.124	.543	i	.007	600.	.076	.401	.021	.026
Basic metals	33	.003	.001	1	.031	.028	.148	.196	.021	.192
Metal products	34	.189	1.025	.005	.057	.429	.374	1.359	.038	.124
Non-electric machinery	35	100.	1	;		.076	.133	1.529	.006	.095
Electric machinery	36	100.	1	8	. 002	900.	.015	.054	.002	.010
Transportation materials	37	600.	.008	.002		.014	.041	. 439	100.	.004

Industrial Br	anch					Industri	al Branch (Codes		
Name	Code	29	30	31	32	33	34	35	36	37
Food	20	033	. 005	.123	100.	.001	:	, 001	.002	.017
Beverages	21	.001	.001	1	1	1	.022	100.	:	
Tobacco	22	;	1	!	1	!	!	1	1	1
Textiles	23	.005	. 791	.115	.049	:	.117	.031	.017	.026
Clothing	24	.107	.045	.007	.002	1	.020	. 262	.010	.319
Wood	25	1.126	600.	.060	.070	.002	.163	.303	.290	472
Wood Furniture	26	.038	010	.346	.130	.001	. 724	.070	1.771	.323
Paper	27	.016	.007	.118	.216	.001	.054	100.	.025	.002
Printing	28	.004	.006	. 260	.023	1	.103	. 008	.081	.002
Leather (except shoes)	29	1.477	. 568	. 023	.004	.002	.021	.008	.013	.035
Rubber products	30	.050	. 428	.029	.005	.002	.061	.057	.080	.138
Chemicals	31	.436	.243	.832	.142	.042	. 205	.142	.330	.200
Non-metallic minerals	32	1.122	.074	. 899	2.856	.291	. 229	. 235	. 704	.157
Basic metals	33	.005	.015	.017	.300	9.081	1.884	2.411	.349	.266
Metal products	34	.201	. 242	.554	.195	.027	2.147	.957	1.246	.577
Non-electric machinery	35	.087	. 048	. 028	.002	.035	1.124	1.994	.719	.690
Electric machinery	36	610.	.002	600.	.064	. 234	.146	. 324	. 707	.066
Transportation Materials	37	.020	.060	.315	.056	.004	.164	966.	.278	2.554

Table 5.8. Continued.

demand will be: $c(1-A)^{-1}d_0 + Bd_0$. The difference $(CX_0 + Bd_0) - (CX - Bd)$ will show the change in the level of industrial employment.

It was assumed four different changes in the total aggregate demand. The first one consisted of a 20 percent increase in the demand for food and beverages and a 10 percent increase in the demand for textiles and clothes. In order to hold total effective demand constant, all the other industrial branches were reduced in proportion to their participation in the demand. (See d in Table 5.9.) The other three aggregate demands, d_1 , d_2 , and d_3 , resulted from a 10, 20 and 30 percent increase in the demand for food and beverages, respectively, a 5, 10, 15 percent increase in the demand for textiles and clothing, respectively, and no change in the demand for tobacco, wood and wooden furniture. All other industrial branches were reduced in proportion to their participation in the aggregate demand. The present (d) and modified demands (d_0, d_1, d_2, d_3) for industrial products are presented in Table 5.9.

The industrial employment level with the present aggregate demand is given in Table 5.10. Employment within the industrial sector was determined by the interindustrial relations differentiating direct and indirect employment and industrial employment caused by the demand for industrial products external to the industrial sector. The first type of employment, that caused by the demand for industrial products from the sector itself, was calculated by the

Present and Modified	
<pre>l Products:</pre>	
Industrial	
for	
Sectors	, 1969.
Other	, Valle
nd from	Demands
Dema	gate
Final	Aggre
Table 5.9.	

Industrial Branch	Present Demand		Modified	Demand ¹	
	Ð	٥	dı	d2	d3
Food	656,254	785,505	721,879	787,505	853,130
Beverages	120,854	145,025	132,939	145,025	157,110
Tobacco	56,488	49,901	56,488	56,488	56,488
Textiles	48,080	52,888	50,488	52, 888	55,292
Clothing	96,182	105,800	100,991	105,800	110,609
Wood	19,909	17,516	19,909	19,909	19,909
Wooden furniture	9,156	8,066	9,156	9,156	9,156
Paper	254,118	223,925	237,642	221,167	204,692
Printing	128,899	113,538	121,290	113,681	106,072
Leather (except shoes)	24,462	21,548	23,197	21,932	20,666
Rubber products	197,587	174,150	184,907	172,229	159,550
Chemicals	315,015	277,607	294,734	274,455	254,176
Non-metallic minerals	22,366	19,658	21,101	19,835	18,570
Basic metals	72,811	67,420	67,471	62,671	57,601
Metallic products	109,205	96,274	102,869	96,534	90,199
Non-electric machinery	20,900	18,398	19,635	18,369	17,104
Electric machinery	152,602	134,456	143,727	134,853	125,978
Transportation materials	56,462	49,775	52,657	48,853	45,048
Total	2,351,350	2,351,350	2,351,350	2,351,350	2,351,350

 $^{1}d_{0}$, d_{1} , d_{2} , and d_{3} as defined on the preceding page.

Data on present demand for industrial products came from unpublished data of DANE. Modified demand for industrial products was calculated by the author as explained in this chapter. Source:

Industrial Branch		Emp	oloyment I	n	
	Indust	rial Sector	(ABX)	Other	
	Direct	Indirect	Total	(BD)	Total
Food	964.4	1147.6	2112.0	9778.2	11890.2
Beverages	65.7	6.0	71.7	1148.1	1219.8
Торассо	2.0	0.0	2.0	598.8	600.7
Textiles	746.9	1834.2	2581.2	1211.6	3792.8
Clothing	0.0	138.7	138.7	4097.4	4236.1
Wood	93.7	202.4	296.1	991.5	1287.5
Wooden furniture	1.8	58.0	59.8	582.3	642.1
Paper	800.4	650.9	1451.3	1829.6	3281.0
Printing	112.7	264.0	376.7	2977.6	3354.2
Leather (except shoes)	39.7	58.3	97.9	511.3	609.2
Rubber Products	96.6	184.1	280.6	2667.4	2948.1
Chemicals	326.4	1741.5	2067.9	3370.7	5438.6
Non-metallic minerals	103.2	176.4	279.6	787.3	1066.9
Basic metals	560.8	362.2	923.0	902.9	1825.9
Metallic products	321.1	1170.2	1491.3	3549.2	5040.4
Non-electric machinery	43.6	100.0	143.5	992.7	1136.3
Electric machinery	100.8	135.8	236.6	1785.4	2022.1
Transportation Materials	105.6	99.6	205.2	1942.3	2147.5
Totals	4485.2	8329.9	12815.1	39724.2	52539.2

Table 5.10. Industrial Employment in Valle with Present Industrial Aggregate Demand, 1969.

expression ABX, and the second type is given by BD, as explained above.³² Tables 5.11, 5.12, 5.13 and 5.14 present the data on employment with the modified aggregate demands discriminated in the same form as Table 5.10.

A comparison of Tables 5.10 to 5.14 shows that employment diminishes slightly as a consequence of the change in the structure of the demand to reflect higher demand for consumption goods. This slight reduction is due to the demand for industrial products from the industrial sector itself. The demand of the other sectors for industrial products caused no variation whatever in employment. Similar results were observed when the demands for food, beverages, textiles and clothes were increased by higher rates. The conclusion is that higher demand for manufacturing consumption goods and an equal decrease in the demand for intermediate, durable and capital goods has no major impact on industrial employment.

We conclude that the Valle's manufacturing firms are using labor-saving capital extensively in all manufacturing branches and thus they produce large proportion of goods.³³

³²The total industrial employment with the present aggregate industrial demand in 1969 given for the labor input-output table shows a decrease in the number of laborers of 3,827 (See Tables 5.1 and 5.10). Changes in the industrial employment by branches can be seen by comparing Table 5.10 and Appendix B, Table B.2.

³³If small firms with other kinds of capital were producing substantial amounts of manufacturing consumption goods, of production more accessible to small firms, labor employment should be increased when there is a large demand for consumption goods.

Industrial Branch		Emp	oloyment I	n	
	Indust	trial Sector	C (ABX)	Other	
	Direct	Indirect	Total	(BD)	Total
Food	1147.8	1365.8	2513.6	11704.0	14217.6
Beverages	78.7	7.2	85.9	1377.7	1463.6
Tobacco	1.7	0.0	1.7	529.0	530.7
Textiles	808.8	1986.3	2795.1	1332.8	4127.9
Clothing	0.0	152.2	152.2	4507.1	4659.2
Wood	84.9	183.5	268.5	872.3	1140.8
Wooden furniture	1.6	52.3	53.9	513.0	566.9
Paper	718.0	584.0	1302.0	1612.3	2914.3
Printing	100.1	234.7	334.8	2622.7	2957.5
Leather except shoes	36.3	53.3	89.5	450.4	539.9
Rubber Products	85.3	162.5	247.8	2351.0	2598.8
Chemicals	292.4	1559.9	1852.3	2970.4	4822.7
Non-metallic minerals	93.9	160.5	254.4	692.0	946.3
Basic metals	516.5	333.7	850.2	836.0	1686.2
Metallic products	290.9	1060.1	1351.0	3128.9	4479.9
Non-electric machinery	38.6	88.4	127.0	873.9	1000.9
Electric machinery	88.9	119.8	208.7	1573.1	1781.9
Transportation Materials	93.3	88.0	181.3	1712.3	1893.5
Totals	4477.8	8192.1	12670.0	39658.8	52328.8

Table 5.11. Industrial Employment in Valle with Modified Industrial Aggregate Demand d_o, 1969.

Industrial Branch		Emŗ	loyment 1	În	
	Indust	rial Sector	(ABX)	Other	
	Direct	Indirect	Total	(BD)	Total
Food	1057.4	1258.3	2315.7	10756.0	13071.7
Beverages	72.2	6.6	78.8	1262.9	1341.7
Tobacco	2.0	0.0	2.0	598.8	600.7
Textiles	777.8	1910.1	2687.9	1272.3	3960.2
Clothing	0.0	145.4	145.4	4302.2	4447.7
Wood	93.6	202.3	295.9	991.5	1287.4
Wooden furniture	1.8	56.8	58.6	582.3	640.9
Paper	755.6	614.5	1370.2	1711.0	3081.2
Printing	106.5	249.4	355.9	2801.8	3157.7
Leather (except shoes)	38.2	56.1	94.2	484.8	579.0
Rubber products	90.5	172.4	262.9	2496.2	2759.1
Chemicals	308.0	1643.5	1951.5	3153.7	5105.2
Non-metallic minerals	98.7	168.6	267.3	742.8	1010.0
Basic metals	524.2	338.6	862.7	840.0	1702.7
Metallic products	306.3	1116.3	1422.5	3343.2	4765.8
Non-electric machinery	41.1	94.2	135.3	932.7	1067.9
Electric machinery	94.9	127.9	222.9	1681.6	1904.5
Transportation materials	98.6	93.1	191.7	1811.4	2003.1
Total	4467.3	8254.1	12721.4	39765.2	52486.6

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Table 5.12. Industrial Employment in Valle with Modified Industrial Aggregate Demand d₁, 1969.

Industrial Branch	Employment In				
	Industrial Sector (ABX)			Other	
	Direct	Indirect	Total	(BD)	Total
Food	1150.5	1369.0	2519.4	11733.8	14253.3
Beverages	78.7	7.0	85.9	1377.7	1463.6
Tobacco	2.0	0.0	2.0	598.8	600.7
Textiles	808.6	1985.8	2794.4	1332.8	4127.2
Clothing	0.0	152.2	152.2	4507.1	4659.2
Wood	93.6	202.2	295.8	991.5	1287.3
Wooden furniture	1.7	55.6	57.4	582.3	639.7
Paper	710.9	578.1	1289.0	1592.4	2881.4
Printing	100.2	234.9	335.1	2626.0	2961.2
Leather (except shoes)	36.7	53.9	90.5	458.4	548.9
Rubber products	84.4	160.8	245.2	2325.1	2570.3
Chemicals	289.7	1545.5	1835.2	2936.7	4771.8
Non-metallic minerals	94.1	160.8	255.0	698.2	953.2
Basic metals	487.5	314.9	802.5	777.1	1579.6
Metallic products	291.5	1062.3	1353.8	3137.4	4491.2
Non-electric machinery	38.6	88.4	127.0	872.5	999.5
Electric machinery	89.1	120.1	209.2	1577.8	1786.9
Transportation materials	91.7	86.5	178.1	1680.5	1858.7
Total	4449.4	8178.2	12627.6	39806.1	52433.7

Table 5.13.Industrial Employment in Valle with Modified Industrial
Aggregate Demand, d2, 1969.

Industrial Branch	Employment In					
	Industrial Sector (ABX)			Other		
	Direct Indirect		Total	(BD)	Total	
Food	1243.5	1479.7	2723.2	12711.6	15434.8	
Beverages	85.3	7.8	93.0	1492.5	1585.6	
Tobacco	2.0	0.0	2.0	598.8	600.7	
Textiles	839.5	2061.6	2901.1	1393.4	4294.4	
Clothing	0.0	158.9	158.9	4711.9	4870.8	
Wood	93.5	202.1	295.7	991.5	1287.1	
Wooden furniture	1.7	54.5	56.2	582.3	638.5	
Paper	666.1	541.8	1207.9	1473.8	2681.7	
Printing	94.0	220.3	314.4	2450.3	2764.6	
Leather (except shoes)	35.2	51.6	86.8	431.9	518.7	
Rubber products	78.3	149.2	227.4	2153.9	2381.4	
Chemicals	271.3	1447.5	1718.8	2719.7	4438.5	
Non-metallic minerals	89.6	153.1	242.6	653.7	896.3	
Basic metals	450.9	291.3	742.2	714.3	1456.5	
Metallic products	276.7	1008.4	1285.1	2931.5	4216.6	
Non-electric machinery	36.0	82.7	118.7	812.4	931.2	
Electric machinery	83.2	112.2	195.4	1473.9	1669.4	
Transportation materials	84.7	79.9	164.6	1549.7	1714.3	
Total	4431.5	8102.4	12533.9	39847.0	52381.0	

Table 5.14. Industrial Employment in Valle with Modified Industrial Aggregate Demand, d₃, 1969.

Now we study the labor employment by size of firms in the Valle's manufacturing sector.

Labor Employment and Size of Firms

Our hypothetical four groups of firms³⁴ stressed: (1) limited monetary funds for smaller firms, (2) higher labor costs as firm size increases, and (3) different kinds of technology between large and small firms.

Many large firms using modern technology are stock companies, some of them with foreign capital. They have access to credit at reasonable terms since they are able to fulfill bank requirements. As noted by Richard Cooper³⁵ large firms "tend to get strong effective protection for their products, hence charge very high prices, and their high value added per worker largely reflects monopoly rents." Real net rates of return on capital of 30 to 40 percent or more³⁶ provide these firms with substantial amounts of funds to reinvest. In Table 5.15 we see that large firms of Valle, those with 50 or more workers, have expanded from 1963 to 1966 and from 1966 to 1969^{37} at a rate of 5 percent and 1963

³⁷Data relating number of firms to size were only available for 1962, 1966 and 1969.

³⁴See pages 106-110.

³⁵See Nelson, Schultz and Slighton, <u>op</u>. <u>cit</u>., p. 122.
³⁶Ibid., p. 123.

to 1969 at a rate of 10 percent while medium size firms have increased in number at lower rates or tend to decrease.

Data on wage rates by firm size were not available for Valle. Nelson, Schultz, and Slighton published this kind of data for industrial branches of Colombia for the year 1958.³⁸ The data show a consistent tendency to increase as the firm size increases for all branches. Unfortunately the firm size groups are less disaggregated than the size groups we were able to use in Table 5.15. Furthermore, changes in wages only take into account monetary wages not including the non-monetary costs of unionized labor discussed above. In Colombia the minimum number of workers to form a union is 25. If the non-monetary costs of unionized labor is substantial and this combines with the impossibility of firms of about this size (15 to 30 workers) to lower other costs of production (i.e., using labor-saving capital), firms will try to keep the number of workers below 25 or go out of business. Data relating numbers of firms to size on Table 5.15 show that a decreasing number of firms only occurred for firms with 15 to 19 and 19 to 24 laborers between 1963 and 1966. In the other firm sizes, larger numbers of firms with 1 to 4, 5 to 9, and 10 to 14 were found and, as we already explained, the increase in the craftsmen and small firms are associated with migration to the urban areas; largest firms (more than 50 workers) have

³⁸Op. <u>cit</u>., Table 23, p. 119.

Table 5.15. Size of Valle's Craftsmen and Manufacturing Enterprises According to the Number of Employees, 1963, 1966 and 1969.

Number of	Number of Enterprises in Years				
workers	1963	1966	1969	Increase 1963-1966	Increase 1966-1969
	Number		Percent		
1 to 4	469	493	NA ¹	5.1	
5 to 9	534	594	NA	1.1	
10 to 14	221	296	NA	3.4	
15 to 19	73	58	NA	-2.1	
20 to 24	73	45	NA	-3.8	
25 to 49	132	142	NA	7.6	
50 to 74	56	49	58	1.3	18.4
75 to 99	26	39	40	50.0	2.6
100 to 199	55	55	49		-12.2
200 and over	48	51	57	6.3	11.8

¹Not available.

Source: Computed from unpublished data of DANE.

increased in about 10 percent from 1963 to 1969. During the period 1966 to 1969 a decrease of six firms with 100 to 199 employees while the firms with 200 or more employees increased in exactly the same number.

Furthermore, we note there is a decay curve relating number of firms to size and that there are fewer firms as number of employees increases. However, for firms with 15 to 24 workers the curve levels off for firms with 15 to 24 workers, as the 1963 curve shows. A sharp decrease in the number of firms with just over 25 workers was expected. Unfortunately information was not available for the group of companies with 25 to 29 workers.

Laursen and Taylor using a model for dual technology 39 (firms with more than 100 employees using modern technology and firms with less than nine laborers using traditional technology) showed that: (a) in the modern sector a 3.5 percent growth in labor employment requires equilibrium growth of 7.8 percent for product and capital, and a 5 percent growth in labor employment requires equilibrium growth of 10 percent for product and capital; (b) in the traditional sector a 3.5 percent growth in labor employment requires equilibrium growth of 1.9 percent for product and capital, and a one percent growth in labor employment requires equilibrium growth of 0.5 percent for product and capital. 40 Thus the marginal labor productivity and marginal capital-labor ratio are 0.5 for the traditional sector and 2 for the modern sector.

With respect to equilibrium rates of change on wages in the two sub-sectors Laursen and Taylor estimated that (a)

40<u>Op</u>. <u>cit</u>., pp. 76-77.

³⁹Karsten Laursen and Lester Taylor, "Desempleo, Productividad y Crecimiento en Colombia," <u>Revista de</u> <u>Planeación y Desarrollo</u>, Vol. 1, No. 2. Bogotá, Departamento Nacional de Planeación, Julio 1969. Laursen and Taylor used Cobb-Douglas production functions with technological change, $Y = ae^{\sigma t} (L^{\alpha}K^{1-\alpha})^{\lambda}$. The values of the parameters are: (a) for the modern sector, labor share $\alpha = 0.27$, economies of scale $\lambda = 1.10$ and technological changes $\sigma = 0.005$, and (b) for the traditional sector, $\alpha = 0.50$, $\lambda = 0.75$ and $\sigma = 0$.

in the modern sector a 3.5 percent growth in labor employment requires an increase on wages of 4.6 percent, and a 5 percent growth in labor employment requires an increase on wages of 5 percent; (b) in the traditional sector a 3.5 percent growth in labor employment requires a decrease on wages of 1.6 percent, and a one percent growth rate of labor employment requires a decrease of 0.5 percent in the traditional sector.⁴¹

PIMUR⁴² found that small and medium size firms of Valle producing consumption goods (clothes, shoes, domestic goods) have serious problems with the cost of unionized labor.

The large firms advantage situation, the large number of craftsmen and the decreasing number of medium size firms have established a high degree dualism in Valle's industry, a phenomenon consistent with the uneven income distribution in the urban areas including Cali, discussed in Chapter II. Small and medium sized firms frequently find labor cost relatively expensive, that is, the ratio between MVP and MFC of labor appears to be less than the ratio between MVP and MFC of capital.

41<u>Idem</u>.

⁴²Proyecto de Mercadeo Integrado Urbano-Rural del Valle, PIMUR, Technical Report No. 4, <u>The Production and</u> <u>Distribution of Selected Consumer Goods in the Cali Area</u>, 1969, pp. 42 and 98 of spanish version.

Use of Industrial Installed Capacity

The National Planning Department estimated the rate of utilization for the whole country through a sample of industries.⁴³ The Planning Office found that except for some lines of textile production, there was a low utilization of installed capacity. In this study, the rate of utilization of equipment was calculated on the basis of the maximum number of shifts worked in each enterprise. These rates are presented in Table 5.16. A low rate of utilization of equipment is the rule for all the industrial sectors listed, especially in the industrial branches of foods, and capital producing goods: metal products, non-electric machinery and transportation material. The rates of utilization of equipment are even lower if the maximum number of work shifts is considered.

Little excess capacity was found in the construction sector by <u>Planeación Nacional</u> and the Instituto de Crédito Territorial as reported by Urrutia.⁴⁴ Full use capacity was found in cement and glass industry.

⁴³Departamento Nacional de Planeación, DNP, "Comentarios Preliminares de Los Resultados de la Encuesta, Sobre La Utilización de la Capacidad Instalada, en la Industria Manufacturera Fabril de Colombia," Bogotá, DNP, UE14-009-DI, August 10, 1971.

⁴⁴Miguel Urrutia Montoya, "Problemas de Oferta de Factores de Producción en la Nueva Estrategia de Desarrollo" in CORP, <u>Controversia sobre el Plan de Desarrollo</u>. Bogotá: Editorial La Oveja Negra, 1972, pp. 102-106.

FOODSTUFFS	Percentage
Preparation and conservation of meats and fish	44
Milk products	60
Bottling and conservation of fruits and vegetables	59
Production and refining of sugar	67
Vegetable and animal oils and fats	67
Bread, cookies	79
Sweets, with and without chocolate	74
TEXTILES	
Cotton threads	100
Cotton weaves and manufactures	100
Pure wool cloth and articles	100
Cloth and articles of artificial and other fibers	88
Handwoven cloth, manufacture of pants and nylon stockings	75
Manufacture of underwear	70
Cloth and manufactures of silk	81
SHOES CLOTHING AND OTHER TEXTILE PRODUCTS	
Shoes except rubber shoes	63
Mens wool suits	100
Linen, silk, cotton suits	55
Manufacture of clothes, bluejeans, slacks, pijamas, housecoats, work clothes, men's children's clothes	61
Manufacture of shirts	79
Women's clothing	62
WOOD AND LUMBER INDUSTRY EXCEPT FURNITURE	
Sawmill, wood polishing, fabrication of strips and white molding	74
Fabrication of wooden furniture and accessories	88
FABRICATION OF PAPER AND PAPER PRODUCTS	
Wood pulp, paper and cardboard	62
Paper and cardboard articles	70
PRINTING PUBLISHING AND RELATED INDUSTRIES	
Typography, lithograph's, publishing and related fields	69
LEATHER INDUSTRY AND LEATHER PRODUCTS EXCEPT	
SHOFS AND CLOTHING	
Tanneries and Accounting	67
Fabrication of substances and chemical products	67
FARRICATION OF NON-METALLIC MINERAL PRODUCTS	
Clev products for construction	62
Class and class products	83
Coment	90
Coment and ashestos artifacts	71
FABRICATION OF METAL PRODUCTS EXCEPT MACHINERY AND	
EQUIPMENT FOR TRANSPORTATION	
Tinplate and other metal articles	38
Handmachinery and accessories for agricultural use	67
Razor blades and domestic knives	74
Fabrication of gas and petroleum stoves	70
Aluminum articles for domestic use	55
Clamps, wire hangers for clothes and hair, zippers, clips, screws, locks, etc.	52
Metallic furniture and equipment for office, home, schools	57

Table 5.16. Rates of Utilization of Colombian Industrial Equipment Based on the Maximum Number of Shifts Worked, by Industry, 1971. Table 5.16. Continued.

NON-ELEC	TRIC MACHINERY	Percentage
Agricult	ural machinery	49
Machiner machin indust	y and pumps, wood working machines, sewing es, spare parts and replacements for rial machinery	61
Machiner	y for the transportation industry	77
ELECTRIC	MACHINERY	
Transfor appara	mers, rheostats, current chargers, radioreceptive tus, electric cables	80
Electric	articles for the home, including refrigerators	30
Transpor	tation material	56
Source:	Departamento Nacional de Planeación, "Comentarios P	reliminares

de los Resultados de la Encuesta sobre Utilización de la Capacidad instalada en la Industria manufacturera fabril de Colombia," Bogotá: DNR, Documento UEIA-009-DI, August 10, 1971.

There are two studies of the utilization of installed capacity in Valle. The first study⁴⁵ carried out in 1969 examined firms in the following six industries: (1) textiles. (2) ready-made clothes, (3) electrical appliances, (4) shoes, (5) agricultural hand tools, and (6) domestic utensils. Substantial excess capacity was found in all industries with the exception of the textile industry. The textile industry was being operated at 85 to 100 percent of threeshift capacity, the ready-made clothing industry at about 40 percent of one-shift capacity, the electrical appliance industry at only 25 percent of one-shift capacity, the agricultural hand tools industry at 40 percent of one-shift capacity, and domestic utensils industry at 40 percent to 50 percent of one-shift capacity. Data on plant capacity for the shoes industry were not possible to secure. The second study⁴⁶ was carried out in 1973. The utilization of the installed capacity of the metal machinery industry was examined. It found that the lathes were utilized only 50 percent of the possible time. It was calculated that 76 percent of the enterprises only worked one shift, and that 80 percent of these worked 8 hours a day.

⁴⁵Harold Riley, et al., <u>Market Coordination in the</u> <u>Development of the Cauca Valley Region-Colombia</u>. Research Report No. 5, Latin American Studies Center, Michigan State University, pp. 295-297. See also PIMUR, Technical Report No. 4, <u>op</u>. <u>cit</u>.

⁴⁶Yesid Isaza, FEDEMETAL, seccional del Valle, "Estudio de la Capacidad Instalada de la Industria Metalmecánica en el Valle del Cauca," FEDEMETAL, abril 1973.

The reasons for underutilization of industrial equipment in all industrial branches but textiles indicated most frequently by the owners of these enterprises, in the study carried out by the National Planning Office, are the following: scarcity and irregular flux of primary materials, scarcity of bottles and packages, lack of capital, delays in the approving of licenses for importation of supplies, labor legislation which makes more than one shift too expensive, scarcity of techniques and qualified personnel, bottlenecks with some final products necessary for the construction of others, errors in the planning of the size of the plant, lack of internal demand, and difficulties for export.

Unutilized capital capacity in industrial installations is profitable in our Group III and Group IV firms. When the entrepreneurs have expectations of future increases in demand, the cost of installed capacity decreases through time. Under uncertain conditions of demand, the entrepreneur may decide to buy flexibility⁴⁷ at the opportunity cost of unutilized capacity. Economies of scale tend to favor unutilized capacity when there are expectations of increasing demand for the product. When the cost of labor increases with firm size, as shown above, and when the cost of labor is more expensive for night work the owner is led to install labor-saving equipment even though he does not plan to use it to full capacity since the fixed cost of equipment is

⁴⁷This concept was defined in Chapter III.

less than for unionized labor. It is well known that most labor-saving equipment is produced in developed countries where the wage rates are high and labor relatively scarce. The lack of an internal market is in part then, a consequence of importing labor-saving equipment with a great productive capacity, and the real cause of its low utilization is the relative high cost of labor (monetary and non-monetary) which led some owner to buy such equipment.

When more than one work shift is used, the monetary and non-monetary cost of labor is increased since the law requires extra payment for night work and daytime overtime and triple pay for Sundays and other holidays. With more than one shift some firms will need more than 24 workers and will have to deal with unionized labor and, hence, higher wages. The marginal value product of additional manpower is high since new laborers utilize idle capacity, but may be lower than the monetary and nonmonetary cost of unionized labor. The increased cost of labor for additional shifts does imply the employment of fewer workers than that which would be the case if the salaries and wages were maintained at the same level as those of the first shift. Thus, the decision is not whether or not to use additional shifts, but rather how many workers to employ on those shifts. Why not contract additional shifts of fewer workers? Again, the answer is the high cost of labor when the workers can form unions. It is also possible that new shifts require

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skilled labor which is not available⁴⁸ and/or the increase in production causes a decrease in the price of the product and with an inelastic demand for the product it does not pay to contract additional shifts.

Other Factors Affecting the Manufacturing Industry Growth Rates

Factors determining the rate of growth of manufacturing industry, especially the modern sector, have been analyzed extensively in different studies.⁴⁹ We have seen how the craftsmen industry increased substantially from 1963 to 1966, the slow growth rate of the small and medium size firms and the relatively high growth rate of the large modern sectors from 1963 to 1969. Other factors for industrial growth not considered above are summarized in what follows.

Low growth rates of the manufacturing industry during some periods of time have been associated with scarce foreign exchange earnings and unfavorable terms of trade for the country which seriously limited the purchase of capital equipment and intermediate goods.⁵⁰ This factor, the small

 $^{^{\ 48}}_{\ \ \text{This is not likely to be the case as explained in the following section.}$

⁴⁹ Nelson, Schultz, and Slighton, <u>op</u>. <u>cit</u>., Oficina Internacional del Trabajo, <u>op</u>. <u>cit</u>., Gaviria, Gómez and López, <u>op</u>. <u>cit</u>., and CORP, <u>op</u>. <u>cit</u>.

⁵⁰ ILO, estimated the following equation log IM_t = 3.51 + 1.036 log Z_t + 1.508 log λ_t , R² = 0.8 where IM_t = investment in machinery in year t, Z_t = stock of foreign exchange earnings in year t, λ = terms of trade in year t. (See Appendix A of this study.)

internal markets and the high cost of some supplier requirements appear as the three most important factors determining the growth rate of modern industry.

In conclusion, low labor absorption on the part of the Valle's industry results from labor-saving capital being used in the majority of the industrial branches, especially intermediate, durable and capital manufactured goods as well as some consumption goods. The number of craftsmen industry has increased as a result of the high number of migrants trying to make a living. Small and medium size manufacturing industries occupy a very low proportion of the labor force. Some of these industries with limited access to credit, cannot survive the pressure of higher wages, especially when labor is unionized, or hold the number of workers below 25 to avoid higher cost of labor or use of labor-saving technology. Large firms operate with a higher capital-labor ratio than small firms and pay higher wages. Industrial dualism is the rule in Valle with its associated uneven income distribution. Part of the industrial capital remains underutilized because of labor-saving capital installed has a capacity in excess of what the markets can absorb. Consumption goods and the construction sector have low excess capacity. Most of the unskilled urban labor force is employed in the service sector or is unemployed as shown in the following chapter.

CHAPTER VI

URBAN UNEMPLOYMENT RATES

Employment levels and equilibrium wage rates are determined by the intersection of the supply and demand functions for labor. In the case of unskilled labor,¹ the supply is determined by the minimum real wage and the number of persons from 15 to 64 willing to work. The demand for unskilled labor is low in the industrial sector and most of the urban labor is absorbed in the service sector. In Figure 6 the market for unskilled workers is illustred.



¹The union's effects are ignored here.

Segment AE is employed workers and segment EB unemployed workers, at the minimum wage level. The high rate of unemployment in Valle and Cali is explained in the first place by the abundant supply of labor; this abundance is caused by the high natural population growth rates of Cali and Valle, the low rates of transfer from the unskilled to the skilled category, and migration. Second, there is a low demand for industrial workers, as discussed in Chapter V. Other economic sectors of the urban areas of Valle, especially the service sector absorb substantial amounts of laborers (see Table 5.1) but not enough to absorb all those willing to work in the urban areas. The sectors employing the greatest number of persons in Cali are manufacturers, commerce and services. In 1969. 71.5 percent of all persons employed were working in these three sectors. In the same year, the construction industry employed only 6.1 percent.²

Unemployment Rates, 1963-1971

By open unemployment we understand the excess of the supply of labor at the prevailing wage in the labor market. Thus unemployment of unskilled labor is segment EB in Figure 6. Open unemployment is usually divided into structural and Keynesian unemployment. The second type is that which is

²Planeación Municipal de Cali, <u>Plan General de</u> <u>Desarrollo. Encuesta Urbana de Empleos e Ingresos del</u> <u>Area Urbana de Cali</u>. Cali, 1969.

originated by an insufficient aggregate demand and may be corrected by the proper use of fiscal and monetary policy. Structural unemployment is that which is created by the incapacity of the economic system to absorb the excess of labor given the characteristics of the labor market. The great mass of unemployment in Cali and Valle is unskilled labor, and the present productive structure is unable to utilize it. Thus unemployment in Cali and Valle is structural unemployment caused by factors discussed in the previous chapters.

Moreover, many persons considered "employed" are working as street vendors, shoeshine boys, occasional watchmen of cars parked in public streets, etc. This is partial employment, and less than the legal minimum wages are earned and thus, these persons should really be included in the group of unemployed at the legal wage which is greater than the equilibrium wage rate. Thus the figures on unemployment are underestimated. ILO³ estimated occupied persons but with incomes below 200 pesos monthly (one dollar is equal to 27 pesos) at 12 percent of the active urban labor force.

Unemployment has also been subdivided in open unemployment and disguised unemployment. Open unemployment applies to unemployed openly seeking for jobs and disguised unemployment to those persons without work and who would probably

³Oficina Internacional del Tarabajo, OIT, <u>op</u>. <u>cit</u>., p. 18.

seek it if unemployment were much lower.⁴ ILO estimated open unemployment at 14 percent of the Colombian active urban labor force and disguised unemployment at 7 percent of the Colombian active urban labor force in 1967.⁵ Thus, total unemployment, that is open plus disguised unemployment, is 21 percent of the Colombian active urban labor force. Riley, et al., found that in Cali 20 percent of the active labor force was unemployed in 1969.⁶

Unemployment can also be subdivided in frictional and nonfrictional. Frictional unemployment describes unemployed persons in the process of changing jobs.

Seasonal jobs exist in both urban and rural areas. In the city of Cali there are seasonal jobs such as those connected with Christmas and the Fair in the month of December. Those who are employed for these jobs often suffer open unemployment most of the year. Unemployment rates for Cali for different months of a year have not been measured. For Bogotá surveys on unemployment have been carried out every three months for several years. The data showed lower levels of unemployment in December.⁷

⁴<u>Idem</u>.

⁵Idem.

⁶Riley, et. al., <u>op</u>. <u>cit</u>., p. 16. See also, Proyecto de Mercadeo Integrado Urbano-Rural del Valle, PIMUR, Technical Report No. 16, <u>An Economic Analysis of Residential</u> <u>Construction in Cali</u>, 1969.

¹Universidad de Los Andes, CEDE, Encuesta Urbana de Empleo y Desempleo. Bogotá: Universidad de Los Andes, 1969. Another phenomenon faced by the labor force is underemployment, that is, those laborers working less than a given number of hours a week or less than a given number of months per year. ILO estimated open underemployment, persons working less than 32 hours per week and seeking to work longer, at 2 percent of the Colombian active urban labor force; and disguised underemployment, persons working less than 32 hours per week, who would probably seek longer hours if the opportunity were available, at 3 percent of the Colombian active urban labor force.⁸

In Table 6.1 we estimated the weighted average of months worked in Valle during the year 1964 by the economically active population based on data reported in the 1964 census. This average fluctuates between 8 and 8.5 months depending on the type of work, and the average is higher for men than for women.

Unemployment rates, the ratio between those unemployed openly seeking jobs and the urban labor force, have been estimated for twelve major cities of Colombia during the period 1963 to 1969.⁹ These unemployment rates have

⁸Oficina Internacional del Trabajo, OIT, <u>op</u>. <u>cit</u>., p. 18.

⁹<u>Ibid.</u>, Table 5, pp. 398-9. The unemployment rates were estimated with surveys carried out by different government and university personnel, like Centro de Estudios de Desarrollo Econômico, CEDE, <u>Empleo y Desempleo</u>, Bogotá: Universidad de los Andes, 1968; Centro de Investigaciones de Desrrollo Econômico, CIDE, <u>Encuesta de Empleos e</u> Ingresos, Cali: Universidad del Valle, 1965; Planeación

Time Worked	Tot Ac	al Econom tive Popu	ically Lation	Em	ployees in ry Industri	es	Emp] Ecc	loyees in (momic Sect)ther :ors
	Total	Men	Women	Total	Men	Women	Total	Men	Women
One month	16,352	11,416	4,933	2,344	2,221	123	14,008	9,195	4,810
Two months	8,356	5,479	2,877	1,721	1,562	159	6,635	3,917	2,718
Three months	11,262	7,897	3,365	2,390	2,229	161	8,872	5,668	3,204
Four months	14,622	11,334	3,288	5,202	5,014	211	9,420	6,320	3,077
Five months	10,010	7,535	2,475	2,855	3,009	146	7 ,1 55	4,526	2,329
Six months	50,516	40,695	9,821	17,281	16,665	616	33,235	24,030	9,205
Seven months	17,095	13,474	3,621	5,074	4,874	200	12,021	8,600	3,421
Eight months	16,794	13,610	3,184	6,211	5,922	289	10,583	7,688	2,895
Nine months	7,714	6,142	1,572	2,710	2,624	86	5,004	3,518	1,486
Ten months	20,869	17,225	3,644	10,020	9,609	411	10,876	7,616	3,233
Eleven months	21,742	18,935	2,807	12,142	11,751	391	9,600	7,184	2,416
Twelve months	334,212	268,839	65,373	107,615	103,528	4,087	226,597	165,311	61,286
Total	529,544	422,584	106,960	175,585	168,705	6,880	353,959	253,879	100,080
Weighted average of months worked	8.28	8.56	7.96	8.48	8.50	8.25	8.18	8.27	7.97

Economically Active Population of Valle According to Types of Activity, Sex, and Time Worked, 1964. Table 6.1.

Resumen de Valle del Compiled and computed from DANE, "XIII Censo Nacional de Población, 1964. Cauca." Bogotá: DANE, 1969. Source:

fluctuated from 6.7 percent (Bogotá, March, 1964) up to 18.4 percent (Barranquilla, October 1967). The unemployment rates of Cali, Medellín and Barranquilla show a tendency to increase while the unemployment rates of Bogotá increased from March 1963 to March 1968 and decreased thereafter.

The unemployment rates for Cali are given in Table 6.2.¹⁰ In 1965, Cali's unemployment rate was 13.2 percent, in 1968 it was 14.9 percent, in 1969 it was 18.3 percent, and went down to 12.4 percent in 1971. The rates calculated for the city of Cali reflect an increase in unemployment for the period from 1965 to 1969, and a sharp drop in 1971. This drop is explained by the fact that Cali was the host city for the Pan American Games in 1971 and therefore does not imply a change in the tendency toward increasing unemployment which is clear in the previous years.¹¹ We also observe that disguised unemployment, that is, the proportion of people unemployed and not looking for jobs,

Municipal de Cali; Plan General de Desarrollo. <u>Encuesta</u> <u>Urbana de Empleos e Ingresos del Area Urbana de Cali,</u> Cali, 1969.

¹⁰Includes an estimation of the unemployment rate of 1971, which was not available to ILO. DANE, <u>Encuesta de</u> <u>Hogares in Cali</u>. Bogota; DANE, 1973.

¹¹The tendency toward an increase in the rates of unemployment found in Cali result the same as those rates for Colombia, according to the Oficina Internacional del Trabajo, OIT, <u>op. cit.</u>, whose methodology is reporduced in Appendix B, and according to Departamento Nacional de Planeación. "El empleo en Colombia: Diagnóstico y Recomendaciones de Política," <u>Revista de Planeación y</u> Desarrollo, Bogotá, June, 1970.

Items		Yea	rs	
	1965	1968	1969	1971
		Perco	ent	
Economically Active Population	34.4	32.5	32.2	47.7
Population	65.6	67.5	67.8	52.3
	100.0	100.0	100.0	100.0
Employed Unemployed	86.8 13.2	85.1 14.9	81.7 18.3 ¹	87.6 12.4
	100.0	100.0	100.0	100.0
Open Unemployed Disguised Unemployment	72.0 28.0	62.4 37.6	58.7 41.3	68.3 31.7
	100.0	100.0	100.0	100.0

Table 6.2. Active and Non-Active, Employed and Unemployed Population of Cali in Different Years.

¹Riley, et al., estimated an unemployment rate of 20 percent in 1969, op. cit., p. 16.

Source: Universidad del Valle, CIDE, <u>Encuesta de Empleo e Ingresos</u>. Cali, Universidad del Valle, 1965. Universidad de Los Andes, CEDE, <u>Encuesta de Empleo e Ingresos</u>. Bogotá, Universidad de Los Andes, 1968. Planeación Municipal de Cali, <u>Plan</u> <u>General de Desarrollo, Encuesta Urbana de Empleos e Ingresos</u> <u>del Area Urbana de Cali</u>. Cali, 1969. DANE, "Encuesta de Hogares en Cali," Bogotá, DANE, 1971. increases when the unemployment rates increase. The interpretation of this direct relationship is that people get discouraged in searching for work and lose interest in entering the labor force but are expected to do so when unemployment rates decrease. Economic dependency increases in such a situation.

Comparing the unemployment situation in Cali with other cities in Colombia, we observe that Cali has the third highest unemployment rate, after Bogotá and Barranquilla. (See Table 6.3.)

The unemployed, classified by regional origin and sub-classes of unemployed (unemployed who were looking for work) are presented in Table 6.4. The highest rates of unemployment among Valle's non-native population were suffered by persons from Cauca, Tolima, and Nariño. A large proportion of the unemployed are natives of Cali, 49.4 percent. This phenomenon can be explained by (1) family support to the unemployed members,¹² (2) greater job selectivity,¹³ and (3) perhaps outmigration among Cali's

¹²Higher unemployment rates are found among young people. They are more likely to receive family support.

¹³Greater job selectivity is important in domestic service. Census data have shown over 70 percent of the domestic servants are born outside the city of Cali. The author interviewed 32 families during the 1973 population census and found all domestic servants were born in rural Valle or rural and small towns of other departments, mainly from Narino, Cauca, Huila and Bogotá.

City	Employed	Total Ur	employed	Economically
		Open Unemployment	Disguised Unemployment	Non-Active Population
		F	ercent	
Barranquilla	23.6	3.4	1.9	71.1
Bogotá ¹	28.7	3.3	2.1	65.8
Cali ²	27.7	3.0	1.8	67.5
Ibagúe ³	27.2	4.2	1.0	67.6
Manizales	26.1	4.1	1.4	68.4
Medellín	27.0	3.1	1.5	68.4
Popayán	31.2	2.1	1.7	65.0

Table 6.3.Percentage Classification of Population Employed and
Unemployed in the Major Cities of Colombia, 1964.

¹April 1967.

²May 1968.

³May 1967.

Source: Planeación Municipal de Cali, <u>Plan General de Desarrollo</u>. <u>Encuesta Urbana de Empleos e Ingresos del Area Urbana de</u> <u>Cali</u>. Cali, 1969.

Department of Origin	Open Unemployment	Disguised Unemployment	Total Unemployed
		Percent	
Cali (city)	26.2	23.3	49.4
Valle	8.1	9.3	17.4
Antioquia	2.3	1.2	3.5
Atlántico	0.6		0.6
Caldas	1.2	1.2	2.3
Cauca	5.8	1.2	7.0
Córdoba	0.6		0.6
Cundinamarca	1.7		1.7
Chocó	0.6		0.6
Huila	0.6		0.6
Nariño	2.3	1.7	4.1
Quindío	2.3	1.2	3.5
Risaralda	2.3	1.2	3.5
Santander del Sur	0.6		0.6
Tolima	3.5	1.2	4.6
Total	58.7	41.5	100.0
	•	-	•

Table 6.4. Distribution of the Unemployed of Cali According to Origins and Characteristics, 1969.

Source: Planeación Municipal de Cali. <u>Plan General de</u> <u>Desarrollo. Encuesta Urbana de Empleos e Ingresos</u> <u>del Area Urbana de Cali</u>. Cali, 1969. non-native persons who cannot find a job in relative long periods of time.

We examine now the reliability of the equations for estimating the labor force in Cali. One study of Cali's employment situation in 1969 found an unemployment rate of 18.3 percent and 47,192 unemployed.¹⁴ These figures imply a total labor force of 257,874. The estimated labor force for Cali in 1969, as computed in Chapter IV, is 267,775, which is about 10,000 more than <u>Planeación</u> <u>Municipal figures.¹⁵</u>

Cali's active labor force using the figures estimated by <u>Planeación Municipal</u> is 210,682 and the proportion of unemployed with respect to active labor force is 22.4 percent. Cali's active labor force using the total labor force estimated in Chapter IV and the total unemployed figures given by <u>Planeación Municipal</u> is 220,583 and the proportion of unemployed with respect to active labor force is 21.3 percent. This proportion is two percentage points above the estimated ILO's proportion for Colombian urban areas and one percentage point above the estimated PIMUR's proportion for Cali.¹⁶ If after the Pan American

¹⁴<u>Planeación Municipal</u> de Cali. "Plan General de Desarrollo del Area Metropolitana de Cali," Cali, 1974.

¹⁵Planeación Departamental estimated an unemployment rate of 14.9 percent and 185,176 employed this latter figure is too low according to the data by Planeación Municipal and our estimate of the labor force.

¹⁶The ILO and PIMUR estimates were given on page 153.

games the unemployment rate increased to its previous level, about 20 percent, and if the labor force was 346,224 in 1973, as estimated in Chapter IV, the total unemployed in Cali is 69,245.¹⁷

Unemployment rates have not been estimated for the total area of any department of Colombia. We can compute for Valle the ratio between total urban force (estimated in Chapter IV) minus the labor force employed in urban Valle and total urban labor force. The ratio is 3.5 percent for the census year of 1964 (see Table 6.5). This ratio tends to increase from 1964 to 1967 if the urban labor force of Valle is estimated with the equations with migration rates equal to those observed for the period 1951 to 1964. If the ratios are computed with the estimated labor force assuming no migration, the ratio shows a tendency to decrease, inconsistent with the upward trend in the Cali's unemployment rates estimated for the same period.

To estimate the unemployed in urban Valle in 1973 we assumed: (a) migration rates from 1964 to 1973 were equal to rates observed from 1951 to 1964, (b) the native population growth rate continues to be 3.4 percent, (c) the employed labor force will continue to grow at the same rate observed from 1960 to 1967, that is 3.3 percent for the

¹⁷This figure is 22,000 above the total unemployed found by <u>Planeación Municipal</u> in 1969.

Table 6.5.	Number	and	Rate	of	Unemployed	in	the 1	Urban	Area	Ч Ю	Valle	During	the	Period
	1964 tc	0 196	59.		1)		

Year	Total	Urban	Employed ³		Diffe	rences ³	
	Labor	rorcet		With Mig	gration	Without M	igration
	With Migration	Without Migration		Number	Rate ⁴	Number	Rate ⁴
1964	366,741	366,741	353,959	12,728	3.5	12,728	3.5
1965	385,641	379,211	375,116	10,525	2.7	4,095	1.1
1966	405,638	392,104	387,353	18,285	4.5	4,751	1.2
1967	426,800	405,436	402,950	23,850	5.6	2,486	0.6
1968	449,201	219,221	419,173	30,028	6.7	48	1 1 1
1969	472,921	433,473	436,047	36,874	7.8	1 1	1 1 1

¹Figures from Table 4.5 increased by 4 percent to account for the proportion of unemployed persons who are younger than 15 or older than 64.

²Figures from Table 5.1, except 1964 which is from Table 5.13.

³Difference between total urban labor force and employed labor force.

⁴Ratio between urban labor force minus economically active population and total urban labor force. Manufacturing sector and 4.1 percent for other sectors, and (d) people under 15 and above 64 will continue to be 4 percent of the labor force. Thus, the total labor force is 582,741 (see Table 4.5), the employed is 510,067 and unemployed 72,764. This figure is approximately 3,500 above the estimated unemployed figure for Cali. So, it appears that the large majority of the unemployed are located in Cali.

Additional Jobs Needed in Cali

To estimate the number of jobs that need to be created to prevent the unemployment rate from increasing during the period 1974 to 1980 in Cali, we establish three alternative assumptions: (1) migration rates from 1964 to 1980 equal to rates observed from 1951 to 1964, (2) migration rates from 1964 to 1973 were equal to rates observed from 1951 to 1964 and from 1974 to 1980 migration rates equal one-half the rates from 1951 to 1964, and (3) migration rates from 1964 to 1973 equal to rates observed from 1951 to 1964 and from 1974 to 1980 migration rates equal one-fourth the rates from 1951 to 1964.

The second and third hypothesis imply that high unemployment rates have lowered the expected urban earnings and fewer people will migrate to urban areas and/or proper policies on rural employment and development will be taken. Also, we assume (a) natural population growth rate will be 3.4 percent as in the past, and (b) people under 15 and above 64 will continue to be 4 percent of the labor force. The unemployed in 1980 will be under (a) assumption one, 547,702 (.20) = 109,540; (b) assumption two, 440,635 (.20) = 88,127; and (c) assumption three, 387,102 (.20) = 77,420. Thus, given that 69,245 were the unemployed in 1973, the additional number of jobs needed in Cali to prevent unemployment from increasing will be 40,295 under assumption one, 18,882 under assumption two, and 8,175 under assumption three.

To estimate the number of underemployed and persons occupied in low-paid jobs we assume the proportion of people working in jobs with incomes below 200 <u>pesos</u> per month estimated by ILO for urban Colombia can be applied to Cali. Thus, at the end of 1973 the number of underemployed and persons with low-paid jobs in Cali was (346,224 - 69,245) (.12) = 33,237. Similarly, the low-paid jobs in 1980 will be 52,579 under assumption one, 42,301 under assumption two, and 37,162 under assumption three.

To estimate additional number of jobs needed in Cali to give everyone of the projected labor force the opportunity to find a job from 1974 to 1980 are summarized in Table 6.6. The creation of such a number of jobs does not mean that unemployment and underemployment will disappear since there always exist frictional unemployment and overcommitment of people in both rural and urban areas.

Items	Assumption ¹	Assumption ²	Assumption ³
Accumulated number of open and disguised unemployed in 1973	000'69	69,000	69,000
Accumulated number of low paid jobs in 1973 (less than 200 <u>pesos</u>)	33,000	33,000	33,000
Additional jobs to prevent unemployment to grow	40,300	18,900	8,200
Additional jobs to prevent underemployment and low paid jobs to increase	19,300	000'6	3,900
Total	161,600	129,900	114,100
¹ Migration rates from 1964 to 1980 were s	ind will be equa	l to rates observ	ed from 1951

Estimated Number of Jobs Needed in Cali From 1974 to 1980. Table 6.6.

כ די ╏ AIIU V A C L DOCT 3 t T E đ fulgiation to 1964. ²Migration rates from 1964 to 1973 were equal to rates observed from 1951 to 1964 and from 1974 to 1980 migration rates equal one-half the rates from 1951 to 1964.

³Migration rates from 1964 to 1973 were equal to rates observed from 1951 to 1964 and from 1974 to 1980 migration rates equal one-fourth the rates from 1951 to 1964.

We will analyze in the following chapter policies to create urban and rural jobs and the effect of lowering urban unemployment rates on rural-urban migration.

CHAPTER VII

ALTERNATIVE POLICIES TO REDUCE RURAL-URBAN MIGRATION AND INCREASE PRODUCTIVE EMPLOYMENT

Rising urban unemployment rates, especially in Cali, and considerable rural-urban migration (from relatively small towns to cities) have characterized the Valle's economy during the 1960s. The growth of mechanized agriculture caused small farmers and rural laborers to migrate to the cities. Dualistic systems in both urban and rural areas are more acute in Colombia than in other coutries and within Colombia appears more striking in Valle than in other departments.¹ With policies oriented toward production growth the dualistic systems produce (1) high unemployment and underemployment rates, and (2) very uneven income distribution.

It has been noted that the growing rates of unemployment in Valle and Cali occur simultaneously with an economic growth rate considered by many to be satisfactory and, indeed, high enough to meet the goals of many development plans. Consequently, the pursuit and achievement of high growth rates of the gross product is not sufficient to assure the

¹See Chapter II and V.

absorption of labor, the most abundant production resource in the region. What is required is a policy to increase the demand for labor relative to other inputs. Jobs must be created faster than the rates of increase in the labor supply in order to decrease the present level of unemployment.

National policies and development plans now reflect an increasing commitment to the idea that the process of modernization should be carefully directed to create more jobs and more even distribution of income. It is our view that a more even distribution of income is important along with more production. Unfortunately, the two are not necessarily complements; in fact, the meaning of aggregate product itself is a function of the weights used to aggregate individual products into a total, those weights being functions of the distribution of income. This makes policy decisions and evaluation difficult. We must understand that policies that benefit the advanced sectors may hurt the traditional sectors.

With dualistic production conditions, policies should take into account the characteristics of the modern and the traditional subsectors. The Valle's policy makers seem to have recognized this with the creation of institutions specialized in assisting both the modern and the traditional sectors. Examples are CVC's extension services for medium and large farmers while ICA gives extension to small farmers. In manufacturing, SENA gives technical assistance to small enterprises (a relatively new program)

and Banco Popular and Corporación Financiera Popular (new credit agency) provide credit to small manufacturers. The problem seems to be that governmental officials do not recognize the great importance of helping small enterprises and hence do not provide enough resources and assistance to small enterprises through the institutions which exist. Helping small and medium-sized rural and urban enterprises could lead to more employment and less uneven distribution of income.

In Chapter IV we explained that, give a minimum wage, the increase of unskilled labor in a given place depends on the factors which determine, (a) the conversion rate from unskilled to skilled labor, (b) the growth rate of the native population between 15 and 64 years of age, (c) the rate of participation of those from 15 to 64 in the labor market, and (d) migration to and from the given place. The causes affecting each of these four factors discussed in Chapters II to IV, as well as the determination of the minimum wage, suggest policies which might be followed to combat unemployment. These policies are: (1) revision of labor code especially as it affects unskilled laborers and small and medium-sized enterprises, (2) reduction of growth of total labor force, (3) changing the composition of labor force and upgrading of skills, (4) slowing down the rate of migration to the large urban centers such as Cali with incentives to stay in farming and rural population centers,

(5) improving the information system with respect to job opportunities and wages (the existence of both urban unemployment and rural underemployment desite high migration rates to the urban areas of Valle suggest the need for improving the performance of the labor market of Valle with a better information system), and finally, (6) the creation of additional jobs in urban areas for large pools of unskilled laborers is very urgent in Valle. The industrial sector of Valle and of Cali absorbs a low proportion of labor relative to the service sector although an increase of 14,146 workers in the industrial sector was observed during the years 1960 to 1969.² The service sector is the principal source of employment in the urban areas of Valle but a high proportion of labor it absorbs is employed under conditions of uncertain employment, underemployment, and low productivity. The big industries absorb the majority of the skilled industrial manpower but new opportunities for employment offered by them each year are low compared with the increase in the unskilled urban labor force since these industries use labor-saving capital, as shown in Chapter V.

Revision of the Labor Code Especially as it Affects Unskilled Laborers and Small and Medium-Sized Enterprises

Raising the minimum legal urban wage has different effects on unskilled and skilled laborers and on unskilled

²See Chapter V.

workers employed by small, medium, and large enterprises. Skilled laborers have wages above the minimum wage because their MVPs are high. This kind of labor is complementary with capital which saves unskilled labor. Thus, minimum wages do not affect the level of employment of skilled laborers. High minimum wages can and do make unskilled laborers more expensive than labor-saving capital, that is the ratio between MVP and MFC of labor may be less than the correspondent ratio to labor-saving capital; therefore, raising minimum wages can diminish the employment of unskilled laborers while skilled laborers do not loose their jobs and a few unskilled laborers get higher wages.

In large enterprises, the effect of raising the real minimum wage is nil since these firms are paying wages for unskilled laborers above the legal minimum, as was shown in Chapter V. In small and medium enterprises it is more likely that increases in minimum wages will establish minimum wages above the equilibrium wage for unskilled laborers and thus the utilization of unskilled manpower will be less. However, labor legislation makes it difficult to discharge workers and fewer laborers are dismissed than otherwise would be. The firms then have to decrease other costs of production, obtain higher prices for their products or go out of business.

Urban wages for large and small enterprises are regulated by the same legislation. Large enterprises can pay much higher wages because they have higher productivity

than small firms, as discussed in Chapter V. Union actions to raise wages and other benefits in small and medium-sized firms with relatively low productivity increase the cost of production. If this action combines with low price for the products of these firms, limited credit and a relatively high cost of capital, the small and medium-sized firms find growth impossible. Under these conditions, lowering the cost of labor for small and medium firms would increase employment. Two possibilities of lowering cost of labor for Valle's small and medium firms are (1) revision of the law requiring extra payment for night work and daytime overtime, and triple pay for Sundays and holidays. and (2) labor legislation with respect to the minimum number of workers required to form a union. Extra payment for night work, daytime overtime, and triple pay for Sundays and holidays were some of the factors causing low use of installed capacity,³ reported in Chapter V. Firms with about 25 workers, the minimum legal number of workers to form a union, are confronted with expectations of rising

³Riley, et al., suggested the elimination or modification of the requirement for 35 percent extra payment for work at night as well as other regulations of the labor code. They argue "And the code, while seemingly helpful to those already employed may be a significant barrier to employment for those entering the labor force," op. cit., p. 323. Similar suggestions were made by ILO. ILO also suggested revision of regulations protecting against laborers dismissal. Oficina Internacional del Trabajo, OIT, op. cit., pp. 218-224. On the contrary, Gaviria, Gómez and López found that some entrepreneurs believed that such revision of dismissals will open the opportunity to substitute labor-saving capital for unskilled labor, op. cit., p. 160.

salaries and other non-monetary cost associated with unionization. Thus, the union actions seeking higher wages, perhaps wage levels comparable to those paid by large enterprises where the employed unskilled labor have higher MVPs, caused low growth for some small and medium firms, or some firms shifting toward labor-saving capital or firms going out of business.

Increasing the minimum number of laborers to form unions will increase employment in some firms. Those firms whose demand for labor intercepts the stepped supply of labor in the vertical segment, at A in Figure 7, when the minimum number of workers to form unions is 25 will intercept the supply at B if the minimum number of workers legally required to form unions is increased from 25 to X', or will intercept the supply at C if the minimum number of workers legally required to form unions is increased from 25 to X''.



Figure 7. Labor employment when the minimum number of workers legally required to form unions is increased.

Additionally, creation of special labor courts and legislation to deal with wages and labor conflicts in small and medium firms will lower the monetary and non-monetary cost of labor. Raising wages according to productivity in these firms under labor court supervision is an alternative.

Increases in urban wages and employment in urban areas tend to attract labor from the rural areas as was argued in Chapter III. Thus rural minimum wages have to be increased at least at the same rate that increases in urban wages as well as improvement in living conditions and job opportunities. When discussing rural-urban migration policy we will refer to the necessity of improving conditions for small and medium-sized farmers. If these farmers have better economic situations they will be able to pay higher wages to their rural laborers as well as receive better returns for their own labor.

Reduction in Growth of Total Labor Force

The growth rate of the native population between 15 and 64 years of age is already determined for the next 15 or 16 years, due to high birth rates in the recent past. Currently, 44.4 percent of the total population of Valle and 41.8 percent in Cali are under 15 years of age. Mortality rates will continue to decline. Birth control, the promotion of which is very slow in a population with low educational levels, is a long run program which can do little to significantly affect population growth in the near future.

Nelson, Schultz and Slighton argued in favor of population growth control⁴ although they recognize rapid increase in the labor force for the next decade or two. They said that rapid population growth (1) retards the growth of physical capital, (2) depresses average private rates of savings, (3) decreases the public sector's opportunities to save and invest its resources in tangible productive assets, and (4) causes a "smaller fraction of the population" to reach "the progressively higher rungs on the educational ladder, and improvements in health proceed less rapidly." We will refer to the potential effects of these factors on the demand for labor in the following section.

Population control programs must be implemented in both rural and urban areas. High rural birth rates will create population pressure and rural-urban migration will take place, as urban unemployment rates diminish due to decreases in urban birth rates.

Changing Composition of Labor Force and Upgrading Skills

The conversion rate of unskilled labor is low due to the lack of educational and training programs and the uneven

⁴<u>Op</u>. <u>cit</u>., pp. 263-275. They claimed that effective control of population growth can be obtained by distribution of birth control information and devices, and influencing family size goals. Family size goals, that is, the number of children families want are affected by factors like (1) availability of primary schooling for children and (2) obstacles to child labor and employment opportunities.

distribution of income. Estimates have recently been made of how much the Colombian government would have to spend in order to fulfill the constitutional mandate to offer free primary education to all Colombian children. To matriculate all the children who had no chance of entering primary schools in 1972 would have taken 36 percent of the national budget.⁵ excluding the investment in physical plants, equipment, etc. This percentage would increase each succeeding year. Twenty percent of the children now matriculated in primary schools are studying in private schools.⁶ The government seems unlikely to provide instruction for all Colombian children. Income redistribution could permit more families to take on the burden of part of the expenses demanded by their childrens' education. The government also could collect additional taxes in order to broaden public education. Educational reforms which provide more opportunities for the school age population would also diminish their participation in the labor market.⁷ Training and the unskilled

⁵Centro de Recursos para la Enseñanza, CREE, "Estrategias curriculares combinadas para un sistema educativo no formal." Cali, Universidad del Valle, 1972, p. 7.

⁶Mendoza y Olarte, <u>op</u>. <u>cit</u>., p. 35.

⁷In Chapter VI we saw that minors (under 15) and older people (over 64) constitute 4 percent of the labor force. The Universidad del Valle and some national organizations are studying possible reorganizations and new systems such as non-formal education which is defined as "a systematic educational structure, non-scholastic and consisting of training activities of a relatively short duration in which the responsible agencies search for concrete behavior changes in a great variety of groups." Centro de Recursos para La Enseñanza, CREE, <u>op</u>. <u>cit</u>.

laborers will change them and increase their productivity. As a different kind of labor, they will experience a new and higher demand for their labor.

A national institution which carries out an important task in the improvement of the labor force is the Servicio Nacional de Aprendizaje, SENA, financed by private industries which give a percentage of their budget to maintain the SENA. SENA encourages employers to give workers the time required for training, and some remuneration while they are studying. Although the number of students attending courses in the SENA is growing, they still constitute a small proportion of the total labor force. The incentives for unskilled labor to undertake training include in higher wages and lower rates of unemployment. Training the unskilled laborers will change them and increase the productivity of their labor while decreasing the supply of unskilled labor. Furthermore, more education and training for the people helps to achieve a more even income distribution.

Slow Down the Rate of Migration to the Large Urban Centers Such as Cali

A policy of rural-urban migration control is necessary when the urban areas find it impossible to absorb all the available labor and, hence, urban unemployment and low paid jobs tend to increase, as is the case of urban Valle, especially in Cali. High migration from rural small towns to cities where unemployment has been high clearly indicates very low earnings in rural areas compared with those in urban

areas even when urban earnings have been adjusted by the probability of finding jobs in a given period of time. Reduction of migration from the rural areas to the cities is very difficult given the excess of manpower in the countryside which, as mentioned before, is produced by high birth rates and, in part, by the concentration of rural property ownership and income in a few families. Under these conditions, the decision of those without property to move from the rural area to the city is rational despite the high rate of unemployment in the cities. Consequently, a reduction of rural-urban migration will only be achieved by improving the incomes of rural workers and small farmers, perhaps through policies of land redistribution, subsidized credit, training, infrastructure, and favorable prices to help small farmers more adequately exploit his property and raise his income. Price protection for agricultural goods generally produced by smaller farmers might receive more attention. In Valle, large farmers produce the export crops other than coffee. They benefit from higher prices in the international market (sugar, cotton, soy beans) and receive in addition a 15 percent export incentive payment from the government. Production from small producers goes through the local markets where lower prices are paid. Public credit could be provided to small farmers. Caja Agraria which was created with the objective of giving credit to these farmers has many difficult requirements and

many of its loans go to large farmers⁸ while other agricultural public institutions loan many of their funds to large enterprises.⁹ Providing funds, tools and technical advice to small farmers allows them to create different kinds of capital in rural places like fences, land improvement, livestock, etc., working individually or in organized groups at <u>Juntas de Acción Comunal</u>. Such self-generated capital raises productivity, helps the development of relatively backward areas and, hence reduces migration.

With respect to the redistribution of rural property, the Colombian Institute of Agrarian Reform, INCORA, has accomplished very little. INCORA estimated that there were 190,000 landless families, and 745,000 families living at bare subsistence levels in Colombia. A study made by COFISEL¹⁰ for the <u>Corporación Financiera del Valle</u>, where the INCORA data is cited, urges the stimulation of the "national purpose to carry out an agrarian reform which stresses prominently the distribution of land to poor farmers." However the immense difficulties faced by such a program are pointed out. The text reads:

⁸Albert Berry, "Special Problems of Policy Formation in a Dualistic Agriculture: Colombia," <u>op</u>. <u>cit</u>., Table 3A.

⁹Fondo Financiero Agrario awarded 90 percent of its funds to modern relatively large farmers in 1969. Gavira, Gómez and López, op. cit., p. 75.

¹⁰Paper for the <u>Vallecaucano</u> meeting. Cali, unpublished Preliminary Draft, 1973.

"In the first place, much of the land included in the largest properties is not apt for intensive agricultural use, which is required to give employment and income in small units. This is demonstrated by the experience of INCORA, which has anulled the land titles of more than 3,000,000 hectares and tried to give them to the small farmers from 1962 to 1971, with little effect on employment and the creation of small productive units. The second problem caused by the democratic means of distribution of land, is the cost of acquiring the land, and the difficulties encountered in the process of making the new owners at least as efficient as the owners of well-exploited large farms. On the one hand then, financial resources so large that they are outside the national possibilities must be obtained, or else legal norms must be adopted which permit the expropriation of the needed amount of land with very small payment to the previous owners, which easily causes panic among the investors and short-term lowering of production. All this, added to the enormous resources needed to assure foundation of capital, techniques, investments required by the existing exports, forms a true laberinth."

The concentration of land ownership in Valle observed during the period 1959 to 1970 has caused an increase in the concentration of rural income despite the fact that INCORA has several programs in Valle. A study on the effects of the agrarian reform in Valle shows greater concentration of rural property, and the construction of Lorenz curves for the years 1957 and 1970 show increased concentration of income in 1970.¹¹ More inputs and land resources to small farmers would produce a more even distribution of rural

¹¹CVC, "Reforma Agraria en el Valle," <u>op</u>. <u>cit</u>. See also Appendix B.5 and B.6.

income. In Valle there is a limited amount of flat fertile land that is inadequately cultivated and which does not require expensive investments in reclaiming it. Therefore, unemployment can not be significantly affected if land redistribution affects only land presently adequately cultivated.

There are possibilities of reclaiming and improving about 120,000 hectares of Valle's flat land presently subject to flooding by the Cauca River, or affected for high levels of underground water or poor drainage. The author estimated that reclaimation of this land in a CVC project called Proyecto de Regulación del Rio Cauca would generate about 30,000 additional jobs in the area once under agricultural exploitation.¹² The construction of the project will start at the beginning of 1975 and will take about ten years to complete. The importance of this project for labor absorption can more fully be understood if we recall that the urban-rural migration which occurred in 1951-64 was, in part, associated with the replacement of extensive cattle raising in the flat lands with sugar cane and cotton (see Chapter III). Replacing extensive cattle raising in land now affected by flooding will be replaced by

¹²CVC, <u>Proyecto de Regulación del Rio Cauca</u>. Cali: CVC informe 72-10, 1972. The number of new jobs was calculated on the basis of projection of land use of the area and the labor inputs of the different crops without changing land ownership.

cropping¹³ will permit some urban-rural migration to take place again and/or a decrease in the rural-urban migration in Valle.

The creation of 30,000 jobs by land reclaimation and the other agricultural measures suggested above could prevent or further diminish the decline in the rural force of Valle in the next ten years. The ILO's plan to lower unemployment rates of Colombia to 5 percent by 1985 needs a 1.8 percent increase in agricultural labor force, ¹⁴ a goal not applicable to the Valle's case, but important for other departments, those from which most of the Valle's non-native population come.

The policy adopted by the government, of promoting the development of the so-called intermediate cities by channeling resources and credit through favorable discount rates is a positive measure to control migration to Cali. Middle-sized cities serving rural communities can employ people in agricultural processing wholesale and retailing, transportation, traditional manufacturing and repair services, among others. The development of middle-sized cities and

¹³The expected crops for the area are soybeans, rice, sorghum, corn and sugar cane. The sugar industry of Valle which combines sugar cane cropping and sugar manufacturing in the rural areas generates a considerable number of jobs and illustrates the employment potential of this type of enterprise in rural areas.

¹⁴Oficina Internacional del Trabajo, OIT, <u>op</u>. <u>cit</u>., p. 418.
their neighboring departments should be stressed to further discourage migration by stimulating and facilitating the opening of new lines of production. Also, such policy would help attain a more balanced income distribution among the different regions of Colombia.

In conclusion, controlling growth of the unskilled labor force in the urban areas implies the creation of numerous education and training opportunities and of various employment possibilities in the rural area. These might be achieved by (1) changing the distribution of rural property in favor of the poor farmers, (2) assisting them with its exploitation and (3) the reclaimation of land. The lowering of the urban unemployment rate may also be accomplished by programs for rural development to reduce migratory flows from the rural to the urban areas. In the long run, birth control will decrease the growth of the labor force, but increased female participation in the urban labor market will increase the labor force over the next several years.

The ILO's recommended policies gave importance to the development of rural areas and focused on small farmers and labor intensive agricultural porducts as a means to increase rural employment as we suggest in this study. While the National Economic Development Plan concentrates on the creation of urban jobs, the proposed ILO's plan to lower unemployment rates of Colombia to 5 percent by 1985 contemplates a 1.8 percent increase in the agricultural

labor force, a goal not applicable to the Valle's case but important for other departments which are the source of most of the Valle's non-native population.

Creation of Jobs in Urban Areas for Large Pool of Unskilled Workers

Factors affecting the number of jobs in urban areas of Valle for unskilled laborers discussed in this study are: (1) relative price of labor and capital, (2) factor proportions used by size of enterprises, (3) the fuller use of installed capacity, and (4) amounts and kinds of labor absorbed by different products produced for internal and external markets. In what follows we analyze policies aimed at affecting these factors to increase the rate of trowth of unskilled jobs in urban Valle.

When discussing labor and price policy we must distinguish different kinds of labor (skilled and unskilled) and different kinds of capital (labor-neutral, labor-saving and labor-intensive). With high unemployment rates among unskilled laborers the use of labor-intensive capital and technological processes using factor proportions in favor of labor are called for. Thus, we have to refer to two aspects: (1) the kinds of capital that are and will be used in the country, and (2) given the kinds of capital being used the factor proportions or technological process that can be used.

In relation to the kinds of capital that are used in the country we showed in Chapter V that labor-saving capital is used in the majority of the industrial branches of Valle, especially in the production of intermediate, durable and capital goods. Labor-intensive capital is more common in the consumption goods (food, beverages, clothing) where more labor is employed and less excess capacity is observed but labor-saving capital is also used in the consumer goods.

Low cost for labor-intensive and labor-neutral capital could increase unskilled labor employment. If laborintensive and labor-neutral capital and unskilled labor are complements, a decrease in the price of these kinds of capital holding wages constant will be associated with an expansion of scale¹⁵ and in the demand for unskilled labor and relatively less expansion in the demand for skilled labor. Low cost of labor-intensive capital will also be associated with an expansion of scale but while the demand for skilled laborers will increase (labor-intensive capital and skilled labor are complements) many unskilled laborers will be displaced. This is of importance in choosing technology for future enterprises and reorganization of small and medium firms. Lowering the cost of labor-intensive capital relative to the cost of labor-neutral and laborsaving capital will increase absorption of unskilled laborers.

¹⁵A reduction of the price of capital shifts the marginal cost curve downward for all scale levels.

The structure of financial markets is important to consider, especially as it affects small producers. It is true that the rates of interest of the banks in Colombia have been maintained low artificially, and that imports of equipment have been subsidized, as the national government has controlled exchange in this market.¹⁶ The money market at banks is characterized by an excess of demand at existing interest rates. The marginal investor must resort to the nonbanking market where, of course, the interest rates are much higher. Some of the available money in the nonbanking market is supplied by bank borrowers, thus provoking a redistribution of income in their favor, since they borrow from the banks at a low interest rate and lend in the nonbanking market at a higher rate.

Subsidizing the import of capital goods causes similar effects if they are accompanied by rationing of foreign exchange. Those with access to import quotas are able to sell equipment, once imported, at much higher prices.¹⁷ However, import subsidies can be used so that the technology imported requires an important amount of labor and removing

¹⁶In some years there has been a fixed rate of exchange and in other years the government intervened in the market buying and selling foreign exchange to avoid price rises.

¹⁷An analysis of this situation may be found in a mimeo by Buillermo Calvo, "The Rate of Labor Absorption and the Cost of Capital," Bogotá, Universidad de los Andes, 1971.

import subsidies would encourage use of more labor-intensive technologies. Research on labor intensive technology could be promoted in the country and in joint programs with other less developed countries.

In relation to factor proportion future changes in the relative prices of labor and capital can be directed to change prices in favor of labor. Since the MVPs of unskilled labor is expected to be lower than the MVPs of labor-neutral and labor-saving capital the relative price of these kinds of capital and unskilled labor should be directed in favor of unskilled labor. Furthermore, the prices of the three kinds of capital (labor-intensive, labor-neutral. and labor-saving capital) should be directed in such a way that labor-intensive and labor-neutral capital becomes less expensive than the cost of labor-saving capital, that is, the ratio between the MVP and MFC of labor-intensive capital that actually is less than the correspondent ratios for labor-neutral and labor-saving capital should be reversed. These features will induce firm owners to change their technological processes or maintain labor-intensive ones and to use more unskilled laborers. With high elasticities of substitution between any two factors small changes in relative prices in favor of any one of the factors will determine a large substitution of the relatively expensive factor for the relative cheap one.¹⁸ Thus, when high

¹⁸Even with high elasticities of substitution some entrepreneurs may believe the production functions they

elasticities of substitution exist small changes in relative prices in favor of labor-intensive capital and unskilled laborers will increase unskilled employment levels. Unfortunately, elasticities of substitution computed for Colombian industries and the elasticities computed in this study for Valle did not distinguish between different kinds of labor and capital due to lack of data, and besides, have very serious statistical problems.

When hourly wages increases with firm size some owners are led to install labor-saving capital even though he does not plan to use it to full capacity since the fixed cost of equipment is less than the cost of unionized labor. Thus, changes in the relative prices of labor and kinds of capital, as discussed above, will tend toward more intense use of the installed capacity. Also some revision can be made in wages paid for night work, Sundays and holidays, but this proposal would have to be studied to see if this would have an important impact on use of installed capacity and employment levels.

Educational and trained policy, discussed above,

are using are characterized by fixed proportions. R. S. Eckaus has treated this aspect in his article "The Factor Proportion Problem in Underdeveloped Areas," <u>American</u> <u>Economic Review</u>, Vol. VI, September 1955. The entrepreneur may think the isoquants are right angles when there are substitution possibilities. They do not change the combination of factors when prices change. In a survey made in Colombia by Gaviria, Gómez and López it was found that the majority of owners see very little flexibility in factor proportions. <u>Op. cit.</u>, anexo.

should be complemented by measures aimed at increasing the urban demand for skilled laborers and highly trained people. One way to obtain this is by technical assistance, reorganization and growth of small and medium firms producing for the internal and external markets, as it is discussed in what follows.

Helping small and medium-sized firms industry is needed to stop the decreasing number of these size manufacturing firms which employ higher proportions of laborintensive capital and unskilled labor and to promote the development of those which stay in business but cannot grow and, hence to increase the number of urban jobs, especially for unskilled laborers.

Wages for large and small enterprises are regulated by the same legislation. Large enterprises can be paid much higher wages for unskilled labor because they have higher productivity than small firms, as shown in Chapter V. Union actions to raise wages for unskilled labor and other benefits in relatively low productive industries increase the cost of production. If this action combines with low prices for the products of these firms, limited credit and a relatively high cost of capital, the small firms find growth impossible and fewer jobs are available for unskilled laborers.

Riley, et. al., noted that in Valle "the most unsatisfied credit needs exist among the more labor-intensive small and medium-sized consumer goods producers (e.g.,

clothes, kitchen utensils, leather shoes, hand tools, and kerosene stoves) and among food processors of the same size. The lack of working capital is a frequent complaint."¹⁹

Credit, technical and financial assistance for such labor-intensive small and medium-sized industries could help combat high unemployment rates and could create jobs for the increasing urban unskilled labor force. ILO strongly urges the more rapid expansion of labor-intensive industries,²⁰ which as we showed in Chapter V are, mainly, the small and medium-sized firms. Riley, et al., noted that some small and medium-sized firms are poor credit risks and, thus, need supervised credit and technical assistance.²¹

Craftsmen and small manufacturing firms contributed a great deal to the Japanese development process. Urrutia and Villalba²² have pointed out that the importance of traditional sectors in Japan was due to effective relations between the powerful financing institutions, trade agencies and small producers. The financing institutions organized trade agencies to assist producers, to buy parts and intermediate goods from small producers and sell them to other

²⁰Oficina Internacional del Trabajo, OIT, <u>op</u>. <u>cit</u>., p. 123. ²¹<u>Op</u>. <u>cit</u>., p. 343.

²²Miguel Urrutia Montoya and Clara Elsa Villalba, "El Sector Artesanal en el Desarrollo Económico," <u>Revista</u> <u>de Planeación y Desarrollo</u>, Vol. 1, No. 3, Bogotá, 1969.

^{19&}lt;u>Op</u>. <u>cit</u>., p. 342.

small producers who will make a final product, to control quality, and to sell the final product to both the internal and the international market. Exports of goods produced by craftsmen and small manufacturing firms with traditional technology, low capital-labor ratio and no economies of scale were important in Japan's foreign trade. Thus, these Japanese experiences should be explored to see it's feasibility for Colombia, especially in relation to trade among Latin American market agreements: ALALC and Zona Andina.

Construction sector growth policies have received prime importance in recent Colombian Economic Development Plans. the central idea was the massive creation of construction jobs which will provide new incomes to laborers and, therefore, stimulate industrial growth and growth of other sectors as the internal market is broadened. The plan proposes a massive investment in the construction industry in those cities, capable of absorbing a large proportion of unskilled labor.²³ In order to channel savings toward the construction sector, units of constant

²³In a study on the construction sector of Cali in 1967, SENA found 80 percent of the sector labor force are immigrants to Valle and 61 percent of them came from other departments. SENA also found that in Medellin, one of the largest cities of Colombia, 61 percent of the labor in the construction sector had up to three years of elementary school and illiterates were 8 percent. See Eduardo Sarmiento Palacio, Departamento Nacional de Planeación, DNP, Aspectos <u>Cuantitativos del Plan de Desarrollo, Bogotá, Imprenta Canal Ramirex-Antares, 1974 and PIMUR, Technical Report No. 16, op. cit.</u>

buying power (Unidades de Poder Adquisitivo Constante, UPAC) which pay a guaranteed interest rate plus the rise in the cost of living were issued, in 1973. The UPAC has been successful in transferring large amounts of money to the construction sector.

The ILO's plan contemplates an increase in the construction sector growth rate of labor employment from 8.1 to 8.9 percent while the manufacturing sector growth rate of labor employment increases from 2.4 to 5.0 percent.²⁴ The increased growth rate of labor employment in the construction sector was apparently judged by <u>Planeación Nacional</u> too low to achieve desired employment goals and decided, contrary to ILO's proposal to give the construction sector the leading role among all economic sectors of Colombia in absorbing unskilled urban labor force.

The reasons to choose the construction sector as the leading sector for absorbing labor were (1) the underutilized production potential in the unemployed, underemployed and pcorly employed unskilled urban and rural labor,²⁵ (2) enormous potential demand for housing,²⁶ and (3) the construction industry needs relatively low capital per worker because

²⁴Oficina Internacional del Trabajo, OIT, <u>op</u>. <u>cit</u>., pp. 415-7.

²⁵Departamento Nacional de Planeación, <u>Guidelines for</u> <u>a New Strategy</u>. Bogotá: Italgraf, 1972, p. 13.

²⁶<u>Ibid</u>., p. 47.

labor-intensive capital has traditionally been used and little imported machinery or raw material is needed. With the growth in the construction sector it is expected that employment will grow at a faster rate in other sectors of the economy since there will be a larger internal market as a result of the construction sector expansion.²⁷

In a recent study²⁸ made by <u>Planeación Nacional</u>, where detailed quantitative analysis of the plan is made, it was estimated that the reduction of unemployment from ten to five percent in Colombia in ten years would require the creation of 70,000 new jobs annually in the construction sector.²⁹ They pointed out that the number of jobs the construction sector can create depends on the supply of inputs and the effective demand for houses. The national planning office has identified four critical inputs. They are cement, brick, glass and wood. The effective demand for houses depends on the funds available to buy the product. There is a lack of clarity in the plan about the source of savings³⁰ to sustain the demand for houses needed to accomplish

²⁸Eduardo Sarmiento P., DNP, <u>Aspecto Cuantitativos</u> <u>del Desarrollo, op. cit., pp. 16-18.</u>

²⁹<u>Ibid</u>., pp. 66-67.

³⁰<u>Idem</u>. The Corporaciones de Ahorro Y Vivienda, new credit agencies for the construction sector have had excess funds in 1973 and 1974. Governmental officials argue that this is a temporary phenomenon caused by lack of experience of the new credit agencies in handling loans.

²⁷The proposed growth of the construction sector will produce both a net increase in the aggregate demand and a change in its composition.

the goal of lowering unemployment to 5 percent in ten years but the national planning office is confident the construction sector can create 50,000 additional jobs annually to prevent increasing unemployment rates.³¹

It is very possible that the resources provided to the construction sector in the last two years have created many additional jobs in Valle but adequate data are not available to confirm this. In 1969 it was estimated that a total of 356,000 new houses were needed in Cali in order to eliminate slums and congestion and to provide for population growth during the period 1969 to 1989, that is an average of 17,000 new units be built each year.³² The direct employment effect was estimated to be 17,500 man-years annually in active construction and an additional 17,500 in production materials.³³

Barriers to expanded housing construction listed by Riley, et al.,³⁴ are (1) lack of effective demand, (2) lack of risk capital due to low interest rates on second mortages, (3) high cost of land and urbanization and (4) low labor productivity and inefficiency in construction tasks.³⁵

³¹<u>Idem</u>.

³²Harold Riley, et al., <u>op</u>. <u>cit</u>., p. 306. See also, PIMUR, Technical Report No. 16, <u>op</u>. <u>cit</u>.

³³<u>Op</u>. <u>cit</u>., p. 307.

³⁴Construction activities and employment declines in Valle during the period 1960 to 1980. Labor absorption decrease for 1964 to 1968. In 1964 there were 12,088 employees; 11,170 in 1965; 11,147 in 1966; 9,997 in 1967; and 8,132 in 1968. PIMUR, Technical Report No. 16, op. cit., p. 86.

The need for housing which, as we said before, was one of the reasons to choose the construction sector as the leading sector for absorbing labor is difficult to transform into effective demand due to (1) shortage of savings which need to increase 4 percent in order to decrease unemployment from 10 to 5 percent in Colombia during the first six years of the Development Plan, 36 (2) poverty 37 and uneven distribution of income which makes down payments for houses impossible for the majority of the population and (3) low investment returns which imply houses are seen as consumption goods rather than financial assets.³⁸ Even if these factors affecting the effective demand for houses can be overcome by means of new savings.³⁹ foreign loans, lower down payments. and more even income distribution, there are still the important questions of inputs bottlenecks and productivity. The actual expansion of the construction sector has raised the price of many inputs, especially iron, steel and cement. 40

³⁵Harold Riley, et. al., <u>op</u>. <u>cit</u>., p. 311-314.

³⁶Eduardo Sarmiento P., DNP, <u>Aspectos Cuantitativos del</u> <u>Plan de Desarrollo, op. cit., p. 71. To prevent unemployment</u> to increase savings must increase by two percentage points.

³⁷Harold Riley, et. al., <u>op</u>. <u>cit</u>., pp. 311-312.

³⁸Miguel Urrutia Montoya, "Problemas de Oferta de Factores de Producción en la Nueva Estrategia de Desarrollo," in CORP, <u>op. cit.</u>, pp. 114-115.

³⁹We recalled that Nelson, Schultz and Slighton pointed out that birth control results in higher private rates of saving.

⁴⁰Before the actual Development Plan the construction

Credit funds are being given to these industries to expand existing facilities or establish new ones.⁴¹

The number of skilled labor and the costs of training programs have been estimated by the national planning office⁴² and suggestions have been made for specific training programs.⁴³

Now, if we assume barriers for expanding the construction sectors are eliminated and that according to Riley, et al., estimate that 17,000 new units will be built each year, 35,000 new jobs will be created. This figure is above onethird of the accumulated number of unemployed and low paid jobs estimated for Cali in 1973. The new construction jobs and the multiplier effects could result in full employment before 1980. Full employment would raise expected urban earnings and influence the level of migration to Cali. Thus, housing needs and employment opportunities will be affected⁴⁴ but it appears that the growth of the construction sector has limitations arising from the lack of effective demand

⁴¹In Chapter V we pointed out that the construction sector does not have excess capacity.

⁴³Harold Riley, et al., <u>op</u>. <u>cit</u>., p. 313.

sector of Bogotá grew at a fast rate during the period 1966 to 1970 but did not grow during the period 1962 to 1965. However, the price index for construction sector rose at a faster rate than the general price index for consumer goods in Bogotá during the period 1950 to 1970. See Miguel Urrutia M., "Problemas de Oferta de Factores de Producción en la Nueva Estrategia de Desarrollo," <u>op. cit.</u>, pp. 105-8.

⁴²Eduardo Sarmiento P., DNP, <u>Aspectos Cuantitativos</u> <u>del Plan de Desarrollo, op. cit., pp. 88-120.</u>

⁴⁴Similar conclusion was reached by Riley, et al., <u>op</u>. <u>cit</u>., p. 311.

for houses and the rising cost of production which, in turn, decreases houses purchased.

Promotion of exports is another development strategy contemplated in the plan.⁴⁵ Nontraditional exports, that is exports other than coffee, bananas and oil,⁴⁶ have increased at rates superior to those planned. The availability of foreign exchange is an important factor in economic growth plans and for employment, due to the elimination of bottlenecks in the productive sector. It is clear that the most abundant factor of production possessed by Colombia is manpower, thus labor-intensive exportable lines of production should be shought.⁴⁷ Recently a short study was published⁴⁸ which analyzes the existing possibilities not only for minor exports, but also for labor intensive exports. They show, by the presentation of four new manufacturing firms established by the private sector, the possibilities for the generation of foreign exchange, absorption of labor and private profits

⁴⁵The actual Development Plan contemplates four strategies. We already mentioned the construction sector and exports. The other two are agricultural productivity and distribution of income. See: Departamento Nacional de Planeación, <u>Guidelines for a New Strategy</u>, <u>op</u>. <u>cit</u>.

⁴⁶Agricultural exports from Valle other than coffee are: cotton, sugar cane, soybeans and beans.

⁴⁷Gabriel Turbay M., Fedesarrollo, op. cit. In this essay the feasibility and difficulties encountered in developing this type of industry are amply analyzed.

⁴⁸Eduardo Wiesner y Daniel Vargas, Fundación para la Educacion Superior y el Desarrollo. Las exportaciones y el Empleo una Perspectiva para Colombia, Bogotá, Fedesarrollo, 1972.

of the entrepreneurs. The industries are: flowers grown on the central plain of Bogotá, three-dimensional books made in Popayán, women's coats sewn in the <u>zona franca</u> of Barranquilla, and a factory producing toys for dogs. The analysis of each case shows the rapidity with which they developed and the economic convenience both for the country and for those involved in this activity. Incentives to establish this kind of activity have been (1) higher effective exchange rates, ⁴⁹ (2) promotion and information of external market opportunities, ⁵⁰ and (3) creation of <u>zonas francas</u> where few restrictions on imports and exports exist.

Nelson, Schultz and Slighton argue that capital-labor ratio is positively related to the ratio between the real wages and the rate of exchange and negatively related to the interest rate.⁵¹ If the exchange rate increases with real wages and interest rate constant, the capital-labor ratio will fall and more labor will be employed to produce the same

⁵¹<u>Op</u>. <u>cit</u>., p. 186.

⁴⁹The exchange rate has risen annually 8.85 percent since 1967 when the CAT was created and the consumer price index in Cali has risen 10.6 percent annually. CAT stimulates exports as shown by John Sheahan and Sara Clark, "The Response of Colombian Exports to Variations in Effective Exchange Rates," (Mimeo). Colombian exports respond favorably to rises in the rate of effective exchange.

⁵⁰The government created an office to promote exports PROEXPO, and the private sector has several organizations like EXPASA.

amount of output. The same result will be observed if the interest rate increases. If these relations are valid we see that policies oriented toward increasing the price of imported goods and capital, lead to production methods which favor labor-intensive and domestic capital.

Improve the Performance of the Labor Market

The lack of information among prospective rural-urban migrants on urban wages and opportunities for employment (see Chapter III) suggest the need for creating information services for rural areas. The simultaneous existence of unemployment, underemployment and low paid jobs in both urban and rural areas indicates the need for measures aimed at eliminating or decreasing the difference between acquisition price and salvage value.⁵² These measures should be taken at the proper time, that is before factors like age and seniority that tend to increase the gap make it impossible to reduce the difference between acquisition price and salvage value. One possible measure could be to decrease transportation costs and the cost involved in living while unemployed, this latter cost being directly related to the time involved in finding a job and the creation of employment and settling in public agencies. Policies aimed at affecting urban employment which, if successful, will modify the expected salvage value of rural

⁵²These terms were defined in Chapter III.

laborers, that is the probability of finding an urban job in a given period of time multiplied by the salvage value of rural laborers will diminish the difference between the acquisition price and expected salvage value.

In conclusion the lack of effective demand for the output of the construction sector is a serious barrier to the expansion of this sector to achieve lower unemployment while absorbing the increasing unskilled urban labor force of Valle. Though the construction sector has important possibilities of absorbing unskilled labor force, it appears necessary to promote labor-intensive small and medium-sized firms mainly producing consumer goods for both the internal and external markets. The growth of these kinds of industries could be helped through the proper revision of wage regulations, credit and other marketing facilities, technical assistance, and relative prices in favor of labor-intensive capital and unskilled labor.

A more balanced development between the rural and urban areas should receive priority. This can be accomplished by providing funds and technical assistance to the traditional small farmers rural sub-sector and a relatively higher level of resources to the rural sector as a whole in order to maintain rural wages, productivity and levels of living relative to the urban sector. In this way it is expected that rural-urban migration would not accelerate when the urban unemployment rates decrease as a result of the new jobs

created by the construction and small and medium-sized manufacturing firms. Actions to help create employment and the development of rural and urban small and medium-sized enterprises will result in a more even income distribution. Training the labor force and the control of population growth will also result in a more even distribution of income and less unemployment and underemployment in both rural and urban areas.

Information services on urban wages and employment opportunities in the rural areas as well as assistance for moving from rual areas for those who should move ($P_s^e + \alpha_u >$ $P_a + \alpha_r$, see Chapter III), like lower transportation cost, shortening the period of the time of arrival to the first payday, and other services from employment and settling in public agencies are called for. The same applies to those who should move from the cities to other areas of the country.

CHAPTER VIII

SUMMARY AND CONCLUSIONS

The general objective of this study was to analyze rural-urban migration and its relation to unemployment in the urban areas of Valle, especially of Cali. The specific objectives were: (1) to formulate a decision model on rural-urban migration under conditions of urban unemployment and imperfect knowledge on the part of the prospective migrants, (2) to formulate a model for estimating the labor force of urban Valle and particularly of Cali, (3) to develop a theoretical framework that explains the limited labor absorption of Valle's manufacturing sector for unskilled labor, (4) to estimate the number of jobs needed (a) to prevent a further rise in unemployment or (b) to lower unemployment rates in urban Valle during the period 1974 to 1980, and (5) to identify and examine policy alternatives with respect to labor employment.

Analysis of the characteristics of the population (Chapter II) of Valle and Cali shows the high growth rate of the population, 3.5 percent per year in the department, and 6.4 percent in Cali. This enormous annual increase of the population of Cali has been due in part to the strong migratory current from both urban and rural areas.

Valle has a high percentage of its population concentrated in urban centers (<u>cabeceras municipales</u>), 70.4 percent; the urban population had a high growth rate of 6.3 percent, while the rural population decreased at an annual rate of 0.6 percent between the years 1951 and 1964. Estimates for 1973 indicate that nearly half the population of the department lives in Cali. The population of Valle and Cali is very young, with a high proportion of persons under age 15.

Valle receives a large number of persons born in other departments of Colombia. In 1964, 37.5 percent of the resident population was born in other departments. The growth rate of the non-native population between the census years was 2.6 percent annually. The migrant population coming from <u>municipal cabeceras</u> constituted 69.3 percent of the total migrant population and 77 percent of these migrants settled in urban zones or <u>cabeceras municipales</u>. The proportion of Cali's population born elsewhere is 57.3 percent. Urban-urban and rural-urban migration to Cali is distributed as follows: 77.6 percent for the former, and 19.9 percent for the latter. Nearly 77 percent of the population which migrates to Cali is of working age (15 to 64 years old).

Agricultural and industrial growth of Valle are 6.5 and 7.5 percent, respectively, equalling rates proposed for the country by some national development plans. When these growth rates are compared with the rates of absorption of manpower, 3.3 percent growth for the manufacturing labor

force while agricultural labor force declines, it is clear that production increases were due to utilization of capital and improved technology rather than the utilization of more manpower.

The tremendous increase in Valle's urban population is largely explained by immigration of people from other departments of Colombia and by rural-urban migration within Valle. The decrease in Valle's rural population is due to migration to the urban areas. The importance of rural-urban migration is easily overlooked because the definition of urban areas includes many rural places as urban.

Factors determining urban-urban (from small towns to large cities) and rural-urban migration are: (1) wages or MVPs below their <u>expected</u> net earnings after migration. Wages and MVPs are very low in Colombian small towns and rural areas due to underemployment and the small holdings that the majority of the farmers have. If the urban unemployment rate decreases, the <u>expected</u> salvage value of rural people will increase and more rural-urban migration will take place. There were high migration rates in the receiving areas like Cali; (2) differences in living conditions between the rural areas and small towns with respect to the more developed areas of Valle; and (3) high population growth rates in rural areas.

Prospective rural-urban migrants of Valle are poorly informed with respect to wages and employment levels in urban areas as shown by the survey conducted in the <u>municipio</u> of Palmira, <u>corregimientos</u> Rozo, Acequia and Latorre. Young people and females migrate more than older people and males in Valle as shown in Chapter II. Young people migrate more because they are not yet fixed in farming like older people. Females migrate more than males because women have fewer opportunities in rural areas where their MVPs are less than their expected salvage value in spite of the fact that their off farm wages are also quite low (Chapter III).

The unskilled labor force in Valle and Cali in a given time is principally determined by (a) the high growth rate 3.4 percent, of the native population; (b) the rate of participation in the labor market which is 86.3 percent for men of working age, and 25.5 percent for women of working age; (c) migration to the urban area of Valle especially to Cali; and (d) the low conversion rate from unskilled to skilled This rate has been low due to few available laborers. training institutions and high cost of programs in education and training, and the uneven distribution of income. The labor force in the year t was estimated by sex and place of origin through equations of the form $X_t = T(1 + r)^{t}X_{0}$, where X_{o} is the initial population, T the rate of participation in the labor market, and r the population's growth rate (Chapter IV).

Labor absorption in the urban sector of Valle and Cali is analyzed in Chapter V, where sources of employment

are divided into industrial and other sectors. Very limited amounts of labor are used by the industrial sector which accounts for less than 15 percent of the labor force in the urban sector. The low absorption rate for unskilled labor on the part of the industrial sector of Valle is explained by the growth of a modern industrial subsector, composed by large enterprises, which use labor-saving capital, extensively, and, therefore, have a high capitallabor ratio. The growing importance of large enterprises producing intermediate, durable, and capital goods uses labor-saving capital will further lower the absorption of unskilled labor in the modern industrial subsector. On the other hand, small and medium size enterprises find it difficult to expand due to (a) limited funds, (b) relative higher costs of labor with respect to its productivity than those for large firms, that is the ratio between MVP of labor and its marginal factor cost (MFC) is less for small than for large enterprises, and (c) lower profits due to higher cost of production and lower prices for its products. It was observed a 10 percent increase in the number of large firms, those hiring more than 50 laborers, during the period 1963 to 1969 while the number of firms with 15 to 24 laborers decreased from 1963 to 1966.^{\perp} Handcraft (firms with less than 10 workers) and very small

¹No data were available for other years.

manufacturing firms (10 to 14 workers) increased in number reflecting the pressure of people looking for something to do in order to make their living. These growth differences among industries of different sizes show a clear tendency toward greater dualism, that is a few large and numerous very small firms and a few medium size firms. Under these circumstances, there is a group of skilled and unskilled laborers working in the large enterprises with relative high salaries while a great number of people working in small firms or in the service sector with low salaries or unemployed. An uneven income distribution is associated with such a situation.

With respect to the cost of unionized labor we stated that once workers are unionized the expected monetary cost of labor increases substantially. Some medium-sized firm owners faced with 25 workers or more, and hence, unionization, consider the cost of dealing and managing a large number of workers, the time consumption and the burden of conflicts, losses caused by eventual strikes, and the cost of assuring job stability to union members. Thus, the low cost of capital which substitutes for unskilled labor relative to the total (monetary plus non-monetary) cost of unskilled labor increase the use of labor-saving capital and reduces use of unskilled laborers. The data showed, as we noted above, that there is a drop in the number of firms classified according to the number of workers hired once the limits of

15 to 19 and 20 to 24 workers are reached and, probably, a lower number of firms with 25 to 29 workers. There is a decay curve relating number of firms to size in a given year. However, for firms with 15 to 24 workers the curve levels off as the 1963 curve showed. A sharp decrease in the number of firms with just over 25 workers was expected. Unfortunately, information was not available for the group of companies with 25 to 29 workers.

It is frequently argued that industrial branches producing consumption goods for the domestic market use higher proportion of labor along with domestically produced materials the production of which employs much manpower. We examined the effect of a greater demand for consumption goods and less demand for durable, intermediate and capital goods holding constant the total aggregate demand for industrial products. Such a change in the composition of the aggregate demand would not increase employment. The consumption goods industrial branches seem to be dominated by large firms using high capital-labor ratio as well.

There is an excess of installed capacity in Valle's industry. Low utilization of installed capacity is profitable for Valle's relatively large firms. When entrepreneurs have expectations of future increase in demand the cost of installed capacity decreases through time. Also, under uncertain conditions of demand the entrepreneur may decide to buy flexibility. Economies of scale tend to favor

unutilized capacity when there are expectations of increasing demand for the product. When the cost of labor increases with firm size and when labor is more expensive for night work owners install labor-saving equipment even though it is not used to full capacity as the cost of equipment is less than for unionized labor. Low excess capacity was found in the construction sector and in some industries producing consumer goods.

Two studies on Colombian unemployment obtained contradictory estimates for elasticities of substitution between labor and capital in 20 Colombian manufacturing branches. We showed that grave statistical problems are affecting both sets of estimates, namely specification errors and multicollinearity which lead to upward biased and imprecise estimates of the elasticities. Further research on the nature of industrial production functions should be carried out to be able to evaluate input price policies (Chapter V).

Unemployment rates were seen to rise over time in Cali as shown in Chapter VI. In the year 1969, Cali had an unemployment rate of 18.3 percent. In 1971 this figure was lowered to 12.4 percent due to the exceptional amount of work generated by the Pan American games. Open underemployment and disguised unemployment are frequently found in Valle and Cali. High migration rates to urban Valle, especially to Cali, were responsible for the growing unemployment rates found up to 1969. It appears that the high rates of unemployment have slowed down migration to urban Valle, including Cali. The unemployed population in urban Valle and Cali were estimated at 72,800 and 69,000, respectively, at the end of 1973. Laborers with low paid jobs in Cali were estimated at 33,000 at the end of the same year.

If the natural population growth rate continues to be 3.4 percent as in the past, and migration rates from 1964 to 1973 are equal to the observed rates from 1951 to 1963. the additional total number of jobs for Cali during the period 1974 to 1980 depends on the rates of migration in the same period. If the migration rates from 1974 to 1980 will be equal to rates observed from 1951 to 1964 (Assumption 1) the additional total number of jobs for Cali to prevent increases in unemployment are estimated at 40,300. If the migration rates from 1974 to 1980 will be one-half the rates observed from 1951 to 1964 (Assumption 2) the additional total number of jobs for Cali to prevent unemployment increase are estimated at 18,900 for the period 1974 to If the migration rates from 1974 to 1980 are one-1980. quarter the rates observed from 1951 to 1964 (Assumption 3) the additional total number of jobs for Cali to prevent unemployment increase are estimated at 3,900. The number of jobs needed to prevent underemployment and low paid jobs from increasing are 19,300 under Assumption 1, 9,000 under Assumption 2, and 3,900 under Assumption 3. Thus, the additional number of jobs needed in Cali to give everyone of the projected labor force the opportunity to find a job from 1974 to 1980 are 161,600 under Assumption 1, 129,900 under Assumption 2, and 114,100 under Assumption 3 (Chapter VI).

Policies oriented toward production growth and productivity have produced (1) high unemployment and underemployment rates, and (2) very uneven income distribution.

Agricultural and manufacturing sectors of Colombia are characterized by a dualistic system, more acute in Colombia than in other countries and within Colombia more striking in Valle than in other Colombian departments. Under dualism policies oriented to increase agricultural and manufacturing production in the modern sectors can hurt the traditional sectors. For instance, a given measure can be very successful in increasing production and raising productivity in the modern sectors while small and medium size firms in the traditional sector are driven out of business and laborers out of employment. Growing rates of unemployment in Valle and Cali occurred simultaneously with agricultural and industrial production growth rates high enough to meet the goals of many development plans.

We discussed the following policies aimed at affecting the amounts and kinds of labor at the large urban centers of Valle: (1) revision of labor code especially as it affects skilled and unskilled laborers and enterprises of

different sizes, (2) reduction in growth of total labor force, (3) changing composition of labor force and upgrading of skills, and (4) slow down the rate of migration to the large urban centers such as Cali with incentives to stay in farming and rural population centers and (5) an improved information system with respect to job opportunities and wages. Also, the existence of both urban unemployment and rural underemployment despite high migration rates to the urban areas of Valle suggest the need for improving the performance of the labor market with a better information system. A sixth policy, the creation of additional jobs in urban areas for large pools of unskilled laborers is very urgent in Valle.

The control of the number of unskilled laborers in the urban zones of Valle, especially in Cali, will be obtained through the creation of numerous educational and training opportunities and of various employment possibilities in the rural area which might be achieved by changing the distribution of rural property in favor of the poor farmers, assisting them with their exploitation, and the reclaiming of land. The lowering of the urban unemployment rate may also be accomplished by programs for rural development to reduce migratory flows from the rural to the urban areas. In the long run birth control will decrease the growth of the labor force but increased female participation in the urban labor market will increase the labor force.

The ILO's policies gave importance to the development of rural areas and focused on small farmers and labor intensive agricultural products as a means for increasing the rural labor force as we suggest in this study. While the Economic Development Plan concentrates in the creation of urban jobs, the proposed ILO's plan to lower unemployment rates of Colombia to 5 percent by 1985 contemplates a 1.8 percent increase in agricultural labor force a goal not applicable to the Valle's case but important for departments from which most of the Valle's non-native population comes.

The creation of additional jobs in urban areas for these large pools of unskilled laborers is very urgent in Valle. Factors affecting the number of jobs for unskilled laborers discussed in this study and which are subject to public policy are: (1) relative price of different kinds of labor and capital, (2) factor proportions used by size of enterprises, (3) use of installed capacity, and (4) amounts and kinds of labor absorbed by different products producing for both the internal and external markets.

Although the current national policy is to stimulate urban construction, the lack of effective demand for houses appears to be a barrier to the expansion of the construction sector as a means to lower unskilled unemployment rates. The growth of labor-intensive small and medium-sized manufacturing industries producing mainly consumer goods for both the internal and external markets seems a necessary

complement to the construction sector stimulation. Small and medium-sized enterprises could be helped through the proper revision of wage regulations, credit and other marketing facilities, relative prices in favor of labor-intensive capital, and technical assistance.

Finally, the existence of urban unemployment and rural underemployment despite high migrations rates to the urban areas of Valle suggested the need for improving the performance of the labor market of Valle. To imporve such performance it was recommended the creation of public agencies to provide information services on urban wages and employment opportunities, to assist prospective migrants in finding jobs and settling in urban areas (Chapter VII).

Future Research

The study of migratory currents was made possible for Valle due to the efforts of the Universidad del Valle to process the 1964 population census data in more detail for the non-native population. In 1973 a new population census was carried out. The data processing system used for the census of 1964, and this recent information will allow us to determine more recent trends in migration to and within Valle. Furthermore, the 1974 population census will give us important demographic and economic data valuable to study employment characteristics.

Previous estimates of elasticities of substitution made by Planeación Nacional and Gaviria, Gómez and López did not distinguish between different kinds of labor and different kinds of capital and, besides, have serious statistical problems and the estimates are of little value, if any. Investigations are needed to improve estimates of these elasticities for use in making policy decisions on input prices. Furthermore, we have to study the capital market to see how it is affecting the price of different kinds of capital paid by enterprises of different sizes.

Possibilities of substituting imported inputs and new materials for domestically produced ones should be studied as well as the role that the prices of foreign exchange, wages and internal interest rates play in the above substitutability process.

We need to know the kind of goods being produced by small farmers and small manufacturing firms, the level and fluctuation of prices of these products and how they affect the incomes of these firms. Also, it appears that economies of scale are not commonplace in agriculture² but we do not know what is the case for manufacturing industry.

It will be important to determine the effect of the present National Development Plan on urban employment since 1972, as soon as data becomes available, since the plan gives the construction sector the leading role to create new jobs for the unemployed.

²Albert Berry, <u>Development of the Agricultural Sector</u> <u>in Colombia</u>, forthcoming.

Finally, performance evaluation of public institutions created to help small farmers and small manufacturing firms should be carried out in the future. The problem seems to be that governmental officials do not recognize the great importance of helping small enterprises and hence do not provide enough resources and assistance to small enterprises through the institutions which exist. APPENDICES
APPENDIX A

SOME CHARACTERISTICS OF THE POPULATION OF VALLE AND CALL Number of People of Valle and Rate of Growth According to Residence, Age and Sex, 1951 and 1964. Table A.1.

Age Groups			1951				1964		Annual Rate
alla vestaelice	Men	Women	Total	Proportion	Men	Women	Total	Proportion	OL GEOWLII
		Number-		-Percent		Number		-Percent	Percent
Total Less than	571, 795	535,132	1,106,927	100.0	856,250	876,803	1,733,053	100.0	3.5
15 years	224,706	216,786	441,492	100.0	387,325	382,881	770,206	100.0	4.4
15-64	332,413	301,916	634,329	100.0	446,733	468,299	915,032	100.0	2.9
65 and over	14,676	45,782	31,106	100.0	22,192	25,623	47,815	100.0	3.3
<u>Urban</u> Less than	262,519	288,039	550,558	49.7	579,974	639,863	1,219,837	70.4	6.3
15 years	103,150	104,274	297,424	47.0	261,286	264,387	525,673	68.3	7.4
15-64	152,199	173,049	325,248	51.3	303,616	355,361	658,977	72.0	5.6
65 and over	7,170	10,716	17,886	57.5	15,072	20,115	35,187	73.6	5.3
Rural	309,276	247,093	556, 369	50.3	276,276	236,940	513,216	29.6	-0.6
Less than 15 vears	121.556	112.512	234,068	53.0	126.039	118.494	244.533	31.8	0.3
15-64	180,214	128,867	309,081	48.7	143,117	112,938	256,055	28.0	-1.5
65 and over	7,506	5,714	13,220	42.5	7,120	5,508	12,628	26.4	-0.3

Source: DANE, Censo de Población de Colombia, 1951 and 1964.

Economic Active Population of Valle, 1951 and 1964. Table A.2.

Item		1951			1964	
	Total Population	E.A.P. ¹	Proportion	Total Population	E.A.P. ¹	Proportion
	dmuN	er	Percent			Percent
Men	571,795	336,941	58.9	856,250	422,584	49.4
Women	535,132	61,805	11.6	876,803	106,960	12.2
Total	1,106,927	398,746	36.0	1,733,053	529,544	30.6

^LEconomic Active Population

Source: DANE, Censo de Población de Colombia, 1951 and 1964.

Table A.3. Relation Between Migrant Population and Total Economic Active Population of Valle del Cauca, by Age and Economic Sectors, 1964.

Economic Sectors	Economic Active	Total Economic	Proportion
	Migrant Population	Active Population	
	Numb	er	-Percent
Primary Sector ¹	81,728	178,606	45.8
Less than 15 years	1,899	8,774	21.5
15 - 64	75,836	163,040	46.5
65 and over	4,003	6,792	58.9
Secondary Sector ²	67,133	130,804	51.3
Less than 15 years	539	1,458	37.0
15 - 64	65,531	127,217	51.5
65 and over	1,063	2,129	49.9
Terciary Sector	119,671	220,134	54.4
Less than 15 years	2,653	6,321	42.0
15 - 64	114,449	209,359	54.7
65 and over	2,569	4,454	57.7
<u>Total</u>	268,532	529,544	50.7
Less than 15 years	5,081	16,553	30.7
15 - 64	225,816	499,616	51.2
65 and over	7,635	13,375	57.1

¹Agriculture and extractive industries.

²Transformed goods and construction.

³Commerce, transportation, communication, public services, etc.

Source: DANE. XIII <u>Censo Nacional de Población Resumen del Valle del</u> Cauca. Bogotá: DANE, 1967.

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1964 Annual Rate	Nomen Total Proportion	Number Percent Percent)9 336,220 637,929 100.0 6.4	2 133,824 266,636 100.0 7.8	01 192,334 354,235 100.0 5.5	16 10,062 17,058 100.0 6.4	33 327,032 618,215 96.9 7.5	5 129,443 257,498 96.6 9.0	28 187,767 344,195 97.2 6.4	00 9,822 16,522 96.9 7.2	26 9,188 19,714 3.1 -6.2	57 4,381 9,138 3.4 - 4.8	73 4,567 10,040 2.8 -7.3	06 240 536 3.1 -4.5
	Men Wc	auN	01,709 336	32,812 133	61,901 192	6,996 10	91,183 327	28,055 129	56,428 187	6,700 9	10,526 9	4,757 4	5,473 4	296
	Proportion	Percent -	100.0	100.0	100.0	100.0	84.9	83.3 1	85.8 1	87.5	15.1	16.7	14.2	12.5
1	Total		284,186	100,464	176,073	7,649	241,357	83,648	151,013	6,696	42,829	16,816	25,060	953
195.	Women	-Number	145,776	50,121	91,015	4,640	126,506	41,881	80,429	4,196	19,270	8,240	10,586	777
	Men		138,410	50, 343	85,058	3,009	114,851	41,767	70,584	2,500	23,559	8,576	14,474	509
Age Groups	anna vesuence		Total Less then 15	years	15 - 64	65 and over	<u>Urban</u> Less than 15	years	15 - 64	65 and over	Rural	years than 1.	15 - 64	65 and over

Source: DANE, Censo de Población de Colombía, 1951 and 1964.

Economic Active Population of Cali, 1951 and 1964. Table A.5.

ltem		1C61			1964	
	Total Population	E.A.P. ¹	Proportion	Total Population	E.A.P. ¹	Proportion
)dmuN	er	Percent		СТ	Percent
Men	138,410	83,622	60.4	301,709	145,746	48.3
Women	145,776	28,658	19.7	336,220	59,691	17.8
Total	284,186	112,280	39.5	637,929	205,437	32.2

Economic Active Population.

DANE, Censo de Población de Colombia, 1951 and 1964. Source:

APPENDIX B

DATA ON VALLE'S INDUSTRIAL AND ACRICULTURAL SECTORS

Table B.1. Value Added of 17 Industrial Branches of Valle del Cauca, 1956 to 1968 (Thousand <u>Pesos</u>)	•
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Industrial Branch								Yea	81				
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968
Food	132,997	141,435	169, 569	200,131	234,619	312,686	386,105	521,018	632,033	721,500	890, 347	909,796	1,067,786
Beverages	32,301	48,092	44,943	58,132	79,957	91,391	101,237	129,655	153,133	224,563	186,122	181,607	248,259
Tobacco	31,189	37,416	38,252	40,381	42,426	43,131	55,464	72,266	676,77	85,895	81,707	89,266	126,103
Textiles	37,504	44,072	43,196	48,000	59, 774	70,346	67,126	111,718	119,371	108,836	118,177	116,967	147,921
Clothing	17,715	25, 362	26,277	31,603	39,078	41,043	49,011	64,217	63,126	74,425	82,505	76,104	79,687
Mood	2, 782	4,098	4,892	4,900	4,506	5,612	6,404	9,481	12,820	15,921	22,129	19,962	20,539
Wood furniture	1,681	3,615	3, 565	4,134	4,860	4,980	5, 386	5,769	6,127	6,588	8,427	9,677	11,011
Paper	16,285	21,082	25,091	41,088	49,353	66,914	100,466	171,496	186,193	169,799	256,680	246,583	364,447
Leather except shoes	3,085	3,980	3,939	4,856	6,811	7,545	7.896	9,760	12,999	15,639	28,356	28,613	22,437
Rubber products	17, 393	23,626	34, 387	45,194	56,859	62,424	85,483	120,303	116,747	126,714	162,024	147,732	219,691
Chemicals	44,262	82,976	109,104	139,251	141,427	161,976	196,083	256, 349	312,638	403, 814	487,737	554,558	665, 565
Nor-metallic winerals	19,462	20,558	17,628	25,768	29, 307	33, 528	45,006	59,816	62,479	70,970	96, 381	101, 313	89,679
Basic metals	116	653	862	643	8	9	171	170	340	14,963	15,463	44,444	56,392
Metallic products	9,320	15,556	18, 299	24,256	35,445	49,207	67,021	99,356	102,921	139,707	151,611	159,856	208,137
Non-electric machinery	972	2,282	2,869	4,712	5,252	7,295	9,839	11, 153	15,206	15,316	19,644	21,155	27,591
Electric machinery	6,269	9,892	13,452	18,050	26,888	40,119	41,987	54,123	84,258	84,281	131,026	140,865	175,906
Transportation materials	5, 399	9,178	11,596	17,290	22,508	22,905	29,060	35, 726	33,310	38,895	41,286	48,164	59,495
Source: DANE, Bole	itines Mens	males de E	istadística	t Nos. 89,	104, 113,	128 and no	mpublished	data coll	ected by D	ANE.			

Table B.2. Number of Workers Employed in 17 Industrial Branches of Valle del Cauca, 1956 to 1968.

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														ī
Industrial Branch								Years						,
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	
Food	7,321	7,871	8,100	8,833	9,943	9,734	9,972	10,499	10,803	11,274	11,509	11,613	11,512	
Beverages	1,231	1,361	1,344	1,227	1,316	1,425	1,479	1,498	1,494	1,458	1,356	1,242	1,260	
Tobacco	679	774	663	670	726	741	779	785	798	703	699	655	652	
Textiles	3,402	3,514	3, 382	3,696	3,624	3,747	4,173	4,258	4,204	3,747	3,672	3,552	3, 783	
Clothing	3,501	4,726	4,103	4,386	4,304	4,618	5,033	5,228	4,932	5,033	5,064	3,847	3,924	
Nood	471	757	811	733	824	804	774	891	952	1,273	1,232	1,235	1,335	-
Wooden furniture	672	843	681	704	647	655	544	522	540	582	625	561	584	
Paper	1,502	1,530	1, 385	1,570	1,706	2,435	2,765	2,872	2,788	2,950	3,172	3,084	3,183	<i>,</i>
Leather except shoes	470	513	562	478	503	552	539	524	508	577	611	549	541	
Rubber products	2,159	2,278	2,276	2,311	2,661	2,829	2,762	2,640	2,501	2,525	2,491	2,433	2,605	
Chemicals	2,958	3, 399	3,685	3,964	3,832	3,960	4,067	4,339	4,458	5,086	5,343	5,520	5,986	
Non-metallic minerals	1,830	2, 351	2,487	2,127	2,358	2,646	3,072	3,164	3, 323	3,508	3,259	3,015	3,085	
Basic metals	116	70	129	135	14	'n	14	14	42	344	468	613	585	
Metallic products	1,284	1,677	1,809	2,302	2,672	2,911	3, 796	4,156	4,111	3,948	4,139	4,050	4,363	
Non-electric machinery	317	391	495	548	528	574	590	616	749	778	848	880	1,016	
Electric machinery	598	757	886	944	1,147	1,643	1,689	1,673	1,832	1,736	1,844	1,826	1,902	
Transportation materials	1,291	1,784	1,879	2,177	2,147	2,164	2,428	2,258	2,234	2,364	2,136	1,915	2,114	

Source: DANE, Boletines Mensuales de Estadística, Nos. 89, 104, 113, 128 and nonpublished data collected by DANE.

Table B.3. Annual Wage of Laborers Employed in 17 Industrial Branches of Valle del Cauca, 1956 to 1968 (Thousand Pesos).

Industrial Branch								Ye	ITS					
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	
Food	26,195	27,940	37,839	48,002	61,251	66,729	90,797	118,379	152,085	177,751	218,657	248,430	237,395	
Beverages	5,004	6,192	6,881	8,175	8,961	11,130	14,259	19,295	25,808	26,391	31,969	32,743	34,636	
Tobacco	3,038	4,899	3,292	3,704	4,437	4,967	6,229	8,932	10,919	11,666	13,870	12,691	15,382	
Textiles	12,812	16,057	17,270	17,410	19,615	23,659	27,516	40,817	51,036	48,075	53,002	57,339	66,118	
Clothing	7,128	11, 324	10,214	12,450	14,006	16,095	19,282	28,679	27,554	30,205	33,029	27,767	30,117	
Wood	1,311	2,052	2,354	2,020	2,846	2,971	3,741	5,161	7,323	9,154	11,028	12,427	13, 393	
Wooden furniture	1,329	2,546	2,250	2,734	2,651	2,753	3,737	3,025	3,134	3,462	3,920	4,419	5,366	
Paper	5,266	8,003	9,293	10,818	13,499	21,809	31,503	44,887	52,213	60,566	78,156	93,578	104,610	
Leather except shoes	1,480	2,038	1,956	2,235	2,618	2,959	3, 733	4,495	4,636	5,539	6,750	7,253	8,061	
Rubber products	9,373	12,324	15,196	19,292	22,451	27,736	31,104	41,163	51,081	53,988	68,511	82,000	87,577	
Chemicals	12,911	19,078	22,911	29,624	34,431	38,245	45,310	60,736	76,722	104,858	120,476	152,629	173,081	
Non-metallic minerals	5,952	7,944	8, 796	8,868	11,124	13,130	16,763	24,372	28,029	32,963	40,031	43,613	46,639	
Basic metals	548	368	500	672	41	80	70	70	180	6,283	9,324	14,018	18,417	
Metallic products	4,627	6,716	8,193	10,983	15,791	20,609	31,304	43,980	48,215	53,454	63,059	71,546	79,161	
Non-electric machinery	715	992	1,801	2,025	2,102	2,513	3,234	3,574	5,784	6,447	7,877	9,635	12,193	
Electric machinery	2,265	3,088	4,116	5,320	6,912	11,239	14,552	18,417	24,229	25,056	31,398	37,288	39,423	
Transportation materials	4,437	6,446	8,133	10,241	12,241	14,676	18,772	20,426	20,795	12,090	25,309	26,549	32,817	
Source: DANE, Bole	stines l	Mensuales	de Esta	dística l	Nos. 89,	104, 11	3, 128 a	ind nonput	lished de	ita collec	ted by D	ANE.		

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Year	Manufacturing	Implicit GNP
	Price Index	Price Index
1956	76.5	75.3
1957	90.0	88.2
1958	100.0	100.0
1959	106.8	106.6
1960	119.6	115.7
1961	129.2	125.2
1962	143.4	133.5
1963	184.7	164.5
1964	198.9	191.4
1965	220.3	208.9
1966	245.4	240.1
1967	261.0	260.0
1968	275.5	284.4

Table B.4.	Manufacturing Sector Price Index and Implic	it
	GNP Price Index, 1956 to 1968.	

Source: Computed from data in Revista del Banco del la República, 1958-1970 and national social accounts.

Farm Size (Hectares	Number	of Farms	Area (Hectares)	
	Number	Percent	Number	Percent
Less than 1	10,692	21.0	5,091	0.4
l to less than 2	6,649	13.1	10,415	0.9
2 to less than 3	3,467	6.8	8,762	0.8
3 to less than 4	3,973	7.8	13,927	1.2
4 to less than 5	1,728	3.4	7,724	0.7
5 to less than 10	8,991	17.7	63,929	5.5
10 to less than 20	6,480	12.8	93,527	8.0
20 to less than 40	3,843	7.6	110,759	9.5
40 to less than 50	755	1.5	33,761	2.9
50 to less than 100	2,069	4.1	142,257	12.2
100 to less than 200	1,166	2.3	170,120	14.6
200 to less than 500	717	1.4	220,045	18.8
500 to less than 1000	215	0.4	143,672	12.3
1000 to less than 2500	67	0.1	92,089	7.8
2500 and over	11		51,869	4.4

Table B.5. Number and Area of Farms Classified by Size, 1959.

Source: Universidad del Valle: Censo Agropecuario del Valle del Cauca, 1959. Cali, 1963.

Farm Size (Hectares)	Number	of Farms	Area (Hectares)		
	Number	Percent	Number	Percent	
Less than 1	12,550	28.5	5,173.2	0.5	
l to less than 2	5,263	12.0	7,564.0	0.7	
2 to less than 3	2,709	6.2	6,613.2	0.6	
3 to less than 4	2,374	5.4	8,143.9	0.7	
4 to less than 5	1,370	3.1	5,981.7	0.5	
5 to less than 10	5,976	13.6	42,256.1	3.7	
10 to less than 20	5,060	11.5	72,255.5	6.4	
20 to less than 30	2,101	4.8	50,990.1	4.5	
30 to less than 40	1,470	3.3	50,302.6	4.4	
40 to less than 50	799	1.8	35,205.8	3.1	
50 to less than 100	2,080	4.7	141,133.6	12.5	
100 to less than 200	1,134	2.6	159,060.4	14.1	
200 to less than 500	783	1.8	235,995.8	20.9	
500 to less than 1000	205	0.5	129,918.6	11.5	
1000 to less than 2500	83	0.2	122,698.0	10.8	
2500 and over	13		58,292.6	5.1	
	1		1	1	

Table B.6. Number and Area of Farms Classified by Size, 1970.

Source: DANE, Censo Argopecuario 1970-1971.

APPENDIX C ILO'S MODEL FOR PROJECTION OF EMPLOYMENT IN COLOMBIA

Table B.7. Relation Between the Amount of Mampower Utilized by Each Industry of Valle and the Respective Value of Production in Constant 1958 Prices.

Industrial Branch									Years					
	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Food	0.0087	0.0117	0.0115	0.0131	0.0125	0.0114	0.0099	0.0108	0.0106	0.0109	0.0110	0.0107	0.0096	0.0149
Beverages	0.0199	0.0163	0.0184	0.0146	0.0131	0.0129	0.0124	0.0131	0.0123	0.0097	0.0120	0.0125	0.0104	0.0095
Tobacco	0.0216	0.0149	0.0137	0.0138	0.0141	0.0145	0.0135	0.0282	0.0160	0.0146	0.0149	0.0154	0.0116	0.0106
Textiles	0.0272	0.0283	0.0304	0.0222	0.0195	0.0181	0.0211	0.0169	0.0193	0.0317	0.0200	0.0225	0.0196	0.0252
Clothing	0.0608	0.0597	0.0574	0.0544	0.0492	0.0503	0.0463	0.0477	0.0522	0.0227	0.0519	0.0461	0.0436	0.0426
Wood	0.0895	0.0694	0.0703	0.0713	0.0811	0.0791	0.0675	0.0678	0.0777	0.0678	0.0575	0.0621	0.0576	0.0498
Wooden furniture	0.0893	0.1160	0.0975	0.0891	0.0756	0.0783	0.0678	0.0748	0.0753	0.0844	0.0867	0.0806	0.0847	0.0636
Paper	0.0196	0.0198	0.0168	0.0154	0.0138	0.0153	0.0126	0.0107	0.0105	0.0101	0.0083	0.0089	0.0072	0.0072
Printing	0.0508	0.0499	0.0477	0.0476	0.0408	0.0353	0.0418	0.0359	0.0331	0.0309	0.0264	0.0241	0.0246	0.0231
Leather except shoes	0.0337	0.0312	0.0367	0.0313	0.0323	0.0340	0.0324	0.0303	0.0291	0.0316	0.0286	0.0327	0.0288	2.0209
Rubber products	0.0363	0.0336	0.0280	0.0234	0.0221	0.0246	0.0198	0.0193	0.0178	0.0174	0.0126	0.0131	0.0127	0.0135
Chemicals	0.0553	0.0179	0.0170	0.0161	0.0159	0.0146	0.0135	0.0134	0.0127	0.0116	0.0110	0.0112	0.0111	0.0107
Non-metallic minerals	0.0453	0.0584	0.0695	0.0508	0.0516	0.0516	0.0495	0.0469	0.0273	0.0500	0.0426	0.0405	0.0467	0.0352
Basic metals	0.0330	0.0435	0.0702	0.0583		0.0638	0.0375	0.0475	0.0535	0.0234	0.0274	0.0146	0.0125	0.0124
Metallic products	0.0338	0.0412	0.0487	0.0556	0.0468	0.0397	0.0374	0.0391	0.0368	0.0335	0.0325	0.0340	0.0322	0.0325
Non-electric machinery	0.0616	0.9587	0.0838	0.0725	0.0641	0.0644	0.0523	0.0460	0.0511	0.0578	0.0621	0.0690	0.0640	0.0475
Electric machinery	0.0281	0.0282	0.0293	0.0238	0.0206	0.0218	0.0191	0.0222	0.0179	0.0172	0.0137	0.0130	0.0116	0.0117
Transportation materials	0.0730	0.0726	0.0752	0.0738	0.0614	0.0620	0.0583	0.0609	0.0627	0.0530	0.0536	0.0446	0.0356	0.0344

APPENDIX C

ILO'S MODEL FOR PROJECTION OF EMPLOYMENT IN COLOMBIA¹

 Here the model utilized for the projection of growth of employment on the basis of certain hypotheses is described. We adopted the following classification of employment, in four sectors:

Agricultural Sector (agriculture, cattle raising,

fishing, forestry).

Other Sectors:

Sector alfa, with great density of capital and highly skilled labor (mining, modern industry, public services, transportation).

Sector beta, with low density of capital, few skilled workers (construction, handcraft, commerce, restaurants, personal services).

Sector gamma, with density of professional specialization (banking, insurance, public administration, other services).

¹Translated to the English language from Oficina Internacional del Trabajo, <u>op</u>. <u>cit</u>., pp. 411-3.

2. The diverse characteristics of the nonagrarian sectors may be summarized approximately as follows:

Characteristics	Alfa	Beta	Gamma
Professional qualifications	Greater than mean	Less than mean	Greater than mean
Capital	High	Medium to Low	Low
Changes in labor productivity	Important	Scarce	Scarce
Changes in production	Important	Scarce	Medium
Probability of entrance of rural migrant in the sector	Low	High	Low

- 3. The projections are extrapolated from the tendencies. This is carried out through the use of a simple econometric model, whose basic idea is that the income of foreign capital, that is, exports and imports of capital, have in great part determined the evolution of the Colombian economy between 1950 and 1966¹:
 - The income produced by these two factors has determined the level of capital formation for transportation equipment and machinery by means of these imports. Thus this type of invest-investments (IMt) is a function of:
 - a) Monetary resources in foreign exchange (Zt), thatis exports (Xt = exports of coffee + exports of

¹Banco de la República: <u>Cuentas Nacionales 1950-1967</u>. Bogotá, 1969.

unrefined oil + "minor exports") plus (At) net income of foreign capital.

b) Exchange relations (that is, $\lambda_t^* = \text{export prices}$ divided by import prices): Log IMt = -3.51 + 1.036 Log Zt + 1.508 Log λ_t (.09) (.02)

Toward Full Employment

2. The formation of capital in construction form (IC) is almost independent of foreign exchange resources and may be estimated as follows:

Log IC =
$$0.280 + 0.921$$
 Log IC_{t-1}
(0.121)
 $R^2 = 0.892$

- 3. The total formation of fixed capital (I) is equal to IM + IC. Changing some of the estimates of the taking off of the formation of capital in the four sectors,¹ and leaving a margin for the incremental capital/product relation (CPR)² it is possible to obtain the Gross Internal Product (GIP) for sectors at the cost of the factors.
- 4. It is possible to estimate the employment level (number of man-years) for each sector with a basis on the changes of labor productivity by sectors (that is, GIP at the cost of the factors for man-year)

¹Estimate made for 1966 in collaboration with the DANE. 2 ICOR.

calculated for the 1951-1964 period.

- 5. Different hypotheses have been established about the projected values of the variables and exogenous parameter:
 - a) Exports and Net Income of Foreign Capital Rates of Annual Growth 1970-1985:

	Minimum Hyp.	Medium Hyp.	Maximum Hyp.
Coffee exports	1.5	2.0	3.0
Unrefined oil exports	1.5	2.0	2.5
Minor exports	6.0	8.0	9.0
Capital income	3.5	4.5	5.5

b) Terms of trade (1958 = 100). Due to the increase in the price of coffee in the last few years, it is probable that the terms of trade index will equal 100 in 1970. Consequently two hypotheses have been established:

	1970	1975	1985
Minimum Hypothesis	100	95	85
Maximum Hypothesis	100	100	100

c) Capital/product relation, CPR. Between 1950 and 1966 the general measure of the CPR has been 5, but since the data is not sufficient, we have based our estimate of the CP sectorial on

international experience, except for the industrial sector, where Colombian figures have been used. Two bases for calculation were used, depending on whether they gave high or low projections with respect to income and employment. The corresponding projections are given below.

Sectors	1970-	-1975	1975-1985		
	Minimum Hypothesis	Maximum Hypothesis	Minimum Hypothesis	Maximum Hypothesis	
Primary	6.0	5.5	5.5	5.0	
Alfa ¹	5.0	4.5	4.5	4.0	
Beta	2.5	2.0	2.3	1.8	
Gamma	1.5	1.0	1.4	0.9	

¹Account taken of the high CPR in transportation and public services. For example, in 1949-1959 the figures relative to Greece are 6.2 and 10, respectively.

d) The productivity of labor has been projected on the hypothesis that the tendencies will be maintained during the period, except in the case of agriculture, where we have hypothesized a greater increase than in the past; thus the following percentages of growth in labor productivity between 1970 and 1985 have been calculated: agricultural sector, 2.0 alfa, 3.5; beta, 1.4 and Gamma, 1.8. Among the different results of the projections for 1970-1985, we will only present two as possible, both based on the maximum hypothesis relative to the CPR (which gives the highest GIP level, and therefore, highest employment level). With respect to the hypothesis on exports, capital income and exchange relations, the first projection is based on the minimum hypothesis.

Employment Projections (In Thousands of Man-Years).

Sectors	1970	1970 Max Hypot		Minimum Hypothesis	
		1975	1985	1975	1985
Agricultural	2,550	2,720	3,290	2,680	3,100
Alfa	590	640	810	620	730
Beta	1,350	1,790	2,460	1,610	2,220
Gamma	560	690	940	620	800
Total	5,050	5,840	7,500	5,530	6,850
Active Work Forcel	6,480	7,740	10,790	7,740	10,790
Unemployment Rate ²	21.0	24.5	30.5	28.5	36.5

¹According to the Centro de Estudios sobre el Desarrollo Económico de la Universidad de los Andes.

²Subemployment included (converted into equivalence in unemployment.

These projections are made on the basis of the assumption that there is an unlimited supply of labor in Colombia; that there is no limiting factor as far as the labor situation is concerned, whether in terms of quantity or in terms of quality. It must be born in mind that this means that the professional qualifications necessary for reaching the corresponding production level will be found in Colombia or will be imported. However, the two possibilities show very high levels of open unemployment toward 1985 and probably toward 1975.

APPENDIX D

QUESTIONNAIRE ON MIGRATION FOR RURAL INHABITANTS, <u>MUNICIPIO</u> PALMIRA, <u>CORREGIMIENTOS</u> OF ROZO, ACEQUIA, AND LA TORRE

APPENDIX D

QUESTIONNAIRE ON MIGRATION FOR RURAL INHABITANTS,

MUNICIPIO PALMIRA, CORREGIMIENTOS OF ROZO,

ACEQUIA, AND LA TORRE

Tendency Toward Migration

162. Do you intend to spend many more years in the country?

No____Yes___164

163. Do you intend to remain in this same place?

No___Yes___166

164. Where would you like to go? Please give me the name of the place.

Department Municipio Vereda

- 165. What do you intend to do in that place?
- 166. Do you prefer to abandon the country or stay in the country?

Stay____Leave____

Why _____

167. Do you know what salaries are being paid in Cali or in another city?

No____170 Yes____

168. If you go to Cali or another city, how much do you think you could earn per week?

\$_____

169. Would that salary be less than, equal to, more than, or much more than you earn now?

Less Equal More Much more

170. Do you think that in Cali or other cities that there is no unemployment, little unemployment, or much unemployment?

None Little A lot

- 171. Have you ever visited Cali? NO 173 Yes
- 172. How long ago did you visit Cali?
- 173. If you were to go and live in Cali, who would help you to find a job? (note whether interviewee gives name of neighbor, member of family, employer, etc.)
- 174. Do you think you could find a job quickly in Cali or another city?

No___Yes__176

- 175. Why are you going to Cali or another city even when you know that finding a job will take some time?
- 176. How long can you live in Cali or in another city without working?

Months

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