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RELATIVE WAGES, SKILL SHORTAGES,  
AND CHANGES IN INCOME DISTRIBUTION  
IN COLOMBIA  
Robert L. Slighton

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RM-5651-RC/AID, *Relative Wages, Skill Shortages, and Changes in Income Distribution in Colombia*, R. L. Slighton, Rand Memorandum, November 1968, 75 pp.

PURPOSE: To analyze income distribution relative to economic growth in Colombia, and to suggest elements of the mechanism that controls income distribution which may be of relevance to other countries.

RELATED TO: Rand's multifaceted study of Colombian industrial growth. This study is intended as a companion piece to RM-5393-AID, *Urban Unemployment in Colombia*, January 1968. The manufacturing industry in Colombia and its effect on urban unemployment is discussed in RM-5412-AID, *A Study of Industrialization in Colombia: Part I, Analysis*, December 1967.

THE PRESENT SITUATION: The distribution of income in Colombia is at present very unequal: In the larger cities, 10 percent of the population receives about half the total personal income. This study examines the hypothesis that this inequality will increase if growth of the modern sector is retarded after the transition from agrarianism to the dual economy is begun. The available data for Colombia are quite consistent with this hypothesis.

INCOME CHANGES: Within the nonagricultural sector, the inequality in income distribution has been widening for 15 years. Wages in sectors characterized by changing technology (modern) have been growing rapidly relative to wages in the low-productivity (traditional) sectors where technology is largely static. The rate of growth of employment in the modern subsectors is less than in the traditional subsectors.

Between 1951 and 1964, the annual growth rate of real wages of the modern subsectors appears to have averaged between 4.0 and 4.5 percent, while the proportion of the nonagricultural labor force employed in the modern area of the economy declined about 5 percent. The wage rate for the traditional subsectors increased between 0 and 0.5 percent per year. Apparently, nearly 75 percent of the total current labor force (including agriculture) is employed in occupations that did not have income escalations of more than 0.5 percent per year during this period; yet the average annual increase in real output per worker was about 2.1 percent. A decline, since 1963, of real personal income in the modern subsectors further suggests a general decline in the non-agricultural economy; however, the traditional subsectors appear to have suffered even more severely. The greatest relative decline in real incomes since 1963 seems to have occurred in the managerial-professional class.

The widening wage differential between the modern and traditional subsectors is a result of (1) widening educational differences resulting from increased vocational and on-the-job training; (2) differences in the degree of competitiveness of labor and product markets.

INFERENCES FROM THE COLOMBIAN SITUATION: Relative to the question of whether the changes in income distribution in Colombia reflect economic processes common to most countries undergoing economic maturation, the Colombian experience appears to be *qualitatively typical*, but it is *quantitatively extreme* in two respects: The capacity to import is less than it was 10 to 15 years ago, and the population growth rate is very high. If population growth is controlled, if export (hence import) capabilities are developed, and if the quality of the labor force is upgraded so that the difficult passage from traditional-sector-dominated dualism to modern-sector-dominated dualism can be made, the pattern of income inequality will probably be reversed.

PREFACE

Estimating the achievements of U.S. foreign assistance programs involves the measurement of changes in the incomes of the inhabitants of the recipient countries no matter whether the aims of that program are understood in humanitarian terms or in the narrower terms of U.S. self-interest. Changes in average income may hide significant changes in the relative incomes of various groups within the society, and inferences drawn from data on average income may be greatly misleading. The objective of this Memorandum is to provide evidence of the distribution of the gains from economic growth in one of the countries where our development assistance has been quantitatively important and to suggest certain elements of the mechanism that controls income distribution that may be of some relevance to other countries.

This Memorandum is designed to be a companion piece to the author's earlier study, Urban Unemployment in Colombia, RM-5393-AID, January 1968. Both are part of a multifaceted study of Colombian industrial growth undertaken at The RAND Corporation under the sponsorship of the U.S. Agency for International Development, with supplementary funds provided by the Corporation. The objective of the overall study is the identification of promising development policy options for Colombia and development assistance policy options for the United States.

The research embodied in this study was carried out during the author's residence in Colombia in 1967. Among the many individuals who were of assistance in completing this work, he wishes particularly to thank Miguel Urrutia, now Secretary General of the Ministry of Finance, for providing access to unpublished data on income distribution; and Bowman Cutter, Howard Howe, and Charles Stover of Princeton University for their help in surveying the opinions of Colombian industrial and educational leaders as to the current characteristics of the labor market.

### SUMMARY

The distribution of income in Colombia is at present very unequal. In the larger cities ten percent of the population receive about half of total personal income. Within the nonagricultural sector at least, the degree of inequality in income distribution has been widening over the past fifteen years. This increased inequality has resulted from the combined effect of an increase in the unemployment rate and an increase in the wage differential between subsectors of the economy characterized by changing technology and subsectors where technology is static. The rate of growth of employment in the modern subsectors is less than in the traditional subsectors.

The annual rate of growth of real wages in the modern sectors of the nonagricultural economy during the period 1951-1964 appears to have averaged between 4.0 and 4.5 percent. The equivalent rate for the traditional sectors was probably between 0.0 and 0.5 percent. Over this period the proportion of the nonagricultural labor force employed in the modern area of the economy seems to have declined from about 45 percent to about 40 percent. If the agricultural labor force is included, nearly three-quarters of all workers are now employed in areas where the real wage probably did not increase at more than an 0.5 percent average annual rate over the period 1951-1964. Yet the trend in the increase of real output per worker at factor cost over that period seems to have been in the order of 2.1 percent per year.

Since 1963 the decline in the rate of growth of the modern subsectors has been sufficient to imply a fall in average personal income for the entire nonagricultural economy. As in the period 1951-1964 the employees of the traditional subsectors appear to have fared worse than workers in the modern areas. Within the modern components of the economy the wages of the unskilled and semi-skilled blue-collar and white-collar workers seem to have risen relative to the wages of skilled blue-collar and white-collar workers, but even for this most favored group real wages have been more or less stable in recent years. The real incomes of workers in the managerial-professional class seem to have suffered the greatest relative decline in the post-1963 period.

In terms of income deciles the greatest relative income shift since the early 1950s appears to have occurred between the lowest three deciles and the seventh, eighth, and ninth deciles of the non-agricultural population. The first three groups have suffered a declining share of total income and probably have suffered an absolute loss of real income. The latter three deciles have enjoyed a substantial increase in both relative income shares and absolute real income. The absolute level of income for members of these groups remains low, however. The mean of the seventh decile of the distribution of family incomes in Bogota in 1965 was only 27 dollars per week. The figure would have been even lower had the conversion been made at a more realistic exchange rate.

The widening wage differential between the modern and the traditional subsectors is partly the result of stronger differences in the level of effective education of workers and partly the result of differences in the competitive structure of labor and product markets. The difference in the levels of effective education of workers in the modern and traditional sectors derives from the increase in vocational training and from on-the-job training. Differences in market structure derive chiefly from differences in scale of production. Many firms in the modern sector produce under terms of full or partial monopoly, and most firms in this sector hire labor under terms determined by union bargaining. Partly because these firms typically earn high average rates of profit, they have found it convenient to accommodate to vigorous wage bargaining by unions or to gratify the paternalistic desire to do well by their workers. As a result, the wages of many unskilled and semi-skilled workers in the modern sector contain an important element of monopoly rent. The greater degree of competition in labor and product markets in the traditional sectors is also a factor in explaining why real wages in that area have been relatively sensitive to the very slow growth of aggregate real demand that has been characteristic of recent years.

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## I. INTRODUCTION

Given the vast accumulation of literature on the process of economic development, surprisingly little attention has been paid to the subject of income distribution. The main reason for the neglect of the subject is probably the stringent data requirements for empirical research.<sup>1</sup> Data limitations may also be a partial explanation of why there has not even been very much effort to construct a theory of changes in the size distribution of income, although the inability to test hypotheses has not been a particularly noticeable constraint on theorists heretofore. The present study is an attempt to offer and test a rudimentary hypothesis concerning changes in the wage component of income during the development process. This hypothesis is an elaboration of the theory of the dual economy.

There is growing consensus that economic development is a capital- and skill-limited diffusion process and that the transition to economic maturity is characterized by economic dualism.<sup>2</sup> In the basic formulations of the theory of the dual economy the division is drawn as between agriculture and industry. This simplification is convenient for model building, but, given our propensity to forget the initial reasons for such economy of expression, it can lead to a submersion of the essential notion of the theory. The critical distinction is between a sector where the technology is essentially static and a sector where technology evolves continuously through time. In the real world we find that each aggregative productive sector is "dual" in this sense. The distinction between "static" and "dynamic" technologies can easily be

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<sup>1</sup>For a good discussion of just what sorts of data are needed, see S. Kuznets, Economic Growth and Structure, New York, Norton, 1965, pp. 257-259.

<sup>2</sup>In particular, see A. Lewis, "Development with Unlimited Supplies of Labor," The Manchester School, May 1954; J. Fei and G. Ranis, Development of the Labor Surplus Economy, Homewood, Ill., Irwin, 1964; and D. Jorgenson, "The Development of a Dual Economy," Economic Journal, June 1961. Also see R. Nelson, A Study of Industrialization in Colombia, RM-5412-AID, The RAND Corporation, December 1967.

overdrawn, but there is increasing evidence that the distribution of the labor force according to the rate of change of technology (as measured, say, by the average productivity of labor) is essentially bimodal.<sup>1</sup>

What are the implications of this for wage distribution? In the basic formulations of the theory of the dual economy there has been little attention paid to the issue of intersectoral differences in wage rates. The "classical" model of Ranis and Fei postulates an "institutionally determined" real wage rate that is common to both sectors and that persists through time so long as redundant labor exists in agriculture.<sup>2</sup> The "neoclassical" theory of Jorgenson establishes the wage rate as an endogenous variable that increases through time, but the question of an intersectoral wage differential is avoided.<sup>3</sup> The theory of wage distribution that is implicit in both formulations is that the size distribution of wages is essentially independent of the growth process. To be more accurate, this is the assumption. The problem of a theory of wage distribution has been postponed. The "neoclassical" model has the merit of positing a rising real wage and appears to be more realistic with respect to the initial assumptions concerning the marginal productivity of labor in agriculture. The "classical" model has the virtue of stressing the disequilibrium character of the growth process and introducing a theory of wage determination that is more complex than the marginal productivity theory. In fact, it is so complex that it cannot be specified.

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<sup>1</sup>See R. Nelson, A Study of Industrialization in Colombia.

<sup>2</sup>J. Fei and G. Ranis, "Agrarianism, Dualism, and Economic Development," in I. Adelman and E. Thorbecke (eds.), The Theory and Design of Economic Development, Baltimore, Johns Hopkins University Press, 1966. In certain formulations of the Ranis-Fei model the urban wage differs from the rural wage by a small fixed differential. This does not change the basic implications of the model with respect to income distribution, however, since the urban real wage remains fixed and institutionally determined.

<sup>3</sup>D. Jorgenson, "The Development of a Dual Economy."

The little evidence that is available suggests that the size distribution of income is reasonably stable during the later stages of the transition to economic maturity.<sup>1</sup> Given the phenomena of the concentration of savings in the upper-income classes and the shift of resources from a low-wage agricultural sector to higher-wage industrial and service sectors, this calls for some explanation. Kuznets has hypothesized with respect to the latter phenomenon that the shift from agriculture was accompanied by a simultaneous increase in the relative shares of the lower-income groups in the urban sector. But these data, and this conjecture, relate to a later stage of development than is relevant to most of the less-than-fully mature economies today.<sup>2</sup> During the initial phase of industrialization when the urban population is mushrooming as the result of rural-urban migration, there is reason to doubt that the inequality of income distribution within the urban sector tends to narrow.

The conjecture offered here is that urban wage inequalities tend to be greater than rural wage inequalities during the initial development stage and that the inequality of urban wage distribution will widen if the development process is retarded after it has once been initiated. This conjecture is intimately related to the phenomenon of dualism. If the rate of growth of the high-productivity sectors is slowed because of constraints on capital, skills, or imports while the physical migration of the population from rural to urban areas develops rapidly,<sup>3</sup> the shift of workers out of agriculture is not a shift from

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<sup>1</sup>S. Kuznets, "Quantitative Aspects of the Economic Growth of Nations: VII. Distribution of Income by Size," Economic Development and Cultural Change, January 1963. Also see S. Kuznets, Economic Growth and Structure, pp. 260-262.

<sup>2</sup>Ibid., pp. 269-275.

<sup>3</sup>The rate of rural-urban migration is related to urban employment opportunities. Given the skill requirements of the modern sub-sectors, the employment opportunities most relevant to potential migrants are those in the traditional sub-sectors. Since the rates of growth of employment in the modern and traditional areas are not rigidly linked, and since urban unemployment rates have grown substantially over the past fifteen years, the link between migration and growth of the modern sectors need not be particularly close.

low- to high-productivity employment but a shift from one type of low-productivity employment to another (or to unemployment).<sup>1</sup> In addition, the wage differential between the low- and high-productivity urban sectors is likely to increase. If the effect of the constraints on capital or imports is to introduce a discontinuity in the marginal productivity function of labor in the modern sector, the wage rate in that sector is formally indeterminate. If the average productivity of labor is high and growing, and if there are important labor supply monopolies, there is good reason for the intersectoral wage differential to increase through time. This change, together with the increasing relative importance of low-productivity employment (or unemployment) outside agriculture, will result in a widening of the inequality of the distribution of wages in urban areas.

Whether the inequality of wage distribution outside agriculture increases in the initial development phase even if the modern sector can grow quickly enough to absorb most of the population shift is uncertain. Among other things, this will depend very much on the relative demands and supplies of workers of differing levels of educational attainment and the institutional elements of the wage determination process. My suspicion is that the momentum of population growth and migration is likely to prove too strong for the employment-generating capabilities of the modern sectors of many of the less developed economies, limited as they are in terms of access to physical and human capital and imports. If this prove true, in accenting the fact of persistent intersectoral disequilibrium the "classical" version of the dual economy theory captures more of the essence of the development process than does the "neoclassical" version. It would be well, however, to drop the identification of the labor surplus with the redundant element of the agricultural labor force. Each major productive sector has its area of static technology.

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<sup>1</sup>There is no implication, however, that society should be indifferent between increased employment in low-productivity agriculture and increased employment in low-productivity sub-sectors outside agriculture.

The particular element of this series of conjectures that can be tested with Colombian data is the prediction that the inequality of the distribution of income will increase if growth of the modern sector is retarded after the complex set of events marking the transition from agrarianism to the dual economy is once set in motion. Colombia offers one of the most striking examples of an economy that has been frustrated in achieving its development objectives by capital and import constraints after certain initial successes had been achieved. The available data are not what one would want. They never are. Consequently, I will use a variety of national income estimates, sectoral and occupational employment and wage data, and labor force sample survey wage and income data to examine the basic hypothesis. The concentration of attention on the distribution of income in the nonagricultural sectors of the economy rather than the economy as a whole is regrettable but unavoidable. The data on agricultural income are so scanty and unreliable that even the sign of the trend in per capita income over the past fifteen years is doubtful.

As a byproduct of this study of income distribution I will discuss the evidence as to the relative scarcity of labor skills of different types in Colombia. This latter discussion I hope will be of use in evaluating the relative productivities of various educational investments in Colombia. The discussion of income distribution has a direct bearing, of course, on the evaluation of all alternative development assistance strategies to Colombia.

## II. CHANGES IN INCOME PER WORKER BY SECTOR

Data on the size and distribution of the labor force in Colombia are available only for the census years of 1951 and 1964. These figures are thought to be fairly reliable. Although the occupational classification reflects an extreme reluctance to identify a worker as a "manual laborer" -- an idiosyncrasy that might present problems to someone attempting international comparisons of labor force structure -- the system of classification appears consistent between censuses. Data on total income by sector are available on a yearly basis, but their reliability is questionable. In general, it can be assumed that total sector estimates are based on data collected for the modern component of that sector, but the basis on which the total is estimated from the part is not made public. In at least one sector, manufacturing, the sector accounts simply ignore the activity of the traditional component -- craft manufacturing. According to the national accounts value added in manufacturing has recently run about 15 percent less than value added in manufacturing as estimated by the Departamento Administrativo de Estadística (DANE). Yet the DANE data cover only about 40 percent of the labor force engaged in manufacturing. Virtually all of the residual is craft manufacturing, and virtually all of craft manufacturing is in the residual. It is thus necessary to supplement the official figures with private estimates of the excluded output.<sup>1</sup>

For other sectors the desired corrections are less clear. I will assume that the estimating procedures for the sectors other than manufacturing did take some account of the activity of the craft component. My reasoning here is that since data on the modern components of these sectors (in particular, commerce and personal services) are not available in the relatively complete form that they are for modern manufacturing, the sector accounts estimates have had to be built up from

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<sup>1</sup>The figures used here are my own calculations.

scratch by the national accounts division of the Banco de la Republica (BOR). The BOR's manufacturing estimates, on the other hand, are largely based on the DANE sample figures. I would thus presume that with complete responsibility for reporting the BOR would not so totally ignore the census benchmarks in preparing sector estimates.<sup>1</sup> This is a weak assumption, but the information necessary to present even the most rudimentary check of the comprehensiveness of sector income estimates is not available except for manufacturing. The official estimates of the labor share of income generated by sector are probably subject to even greater errors than the figures for sector output, but I do not possess sufficient information to challenge them.

If the official estimates of labor income by sector are divided by the census estimates of the labor force, the pattern of income per worker given in Table 1 is obtained. Labor income is defined here as the sum of wages, salaries, and "prestaciones sociales" (fringe benefits) having accrued to paid employees. It does not include an estimate of imputed labor income to unpaid family workers, employers, or the self-employed. A shift in "labor share" in Table 1 may thus reflect a change in structure of the labor force by employment status rather than a change in the relative share of labor. My estimates of imputed labor income and the shares of labor and factors other than labor are summarized in Tables 2 and 3. "Non-labor income" is defined as total income less the sum of wages and salaries plus imputed labor income of employers and the self-employed. The figures for imputed labor income are based on three alternative assumptions as to the ratio between average labor income of the self-employed/employer group and wage earners. There is no direct evidence of this relationship, but there is some reason to doubt that the ratio is greater than one. The vast majority of this group (83 percent for the nonagricultural sector in

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<sup>1</sup>It may be asked why the opinion of the national accounts division of the BOR as to sector comprehensiveness is not taken into account. The answer is that the BOR claims to have presented estimates that do reflect all sector components. Only for manufacturing is it possible to refute this contention with published data.

Table 1

## AVERAGE LABOR INCOME PER SALARIED EMPLOYEE BY SECTOR, 1951 AND 1964

Sector	1951			1964			Ratio of Column (6) to Column (3)
	Wages and Social Benefits (millions of current pesos)	Total Employees (thousands)	Income per Employee (thousands) of current pesos)	Wages and Social Benefits (millions of current pesos)	Total Employees (thousands)	Income per Employee (thousands) of current pesos)	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mining	67.9	34.8	1.95	526.9	47.9	11.0	5.64
Modern manufacturing <sup>a</sup>	365.8	169.0	2.16	3283.9	272.5	12.1	5.60
Craft manufacturing <sup>a</sup>	118.0	89.4	1.32	642.0	159.0	4.04	3.06
Construction	161.0	106.0	1.52	1416.1	171.5	8.26	5.43
Public utilities	14.2	9.65	1.47	279.2	12.6	22.2	15.1
Commerce	185.7	57.9	3.21	1070.0	136.5	7.84	2.44
Finance	67.8	17.3	3.91	1000.7	53.2	18.8	4.81
Transportation	193.3	94.1	2.05	1390.8	128.3	10.8	5.27
Communication	22.4	7.01	3.20	234.6	15.1	15.5	4.84
Personal services	326.6	371.8	.878	1877.0	620.3	3.03	3.45
Government services	401.0	128.7	3.12	3025.7	201.0	15.1	4.84
Not otherwise classified	--	39.0	--	--	101.1	--	
<b>Total nonagricultural Sectors</b>	<b>1923.7</b>	<b>1124.7</b>	<b>1.71</b>	<b>14,747.1</b>	<b>1919.0</b>	<b>7.68</b>	<b>4.49</b>

Note:

<sup>a</sup>Estimates for craft manufacturing are my own. The employment figures are consistent with census estimates for all of manufacturing, but the labor income estimates are somewhat speculative.

Source:

Labor Income; Banco de la Republica, Cuentas Nacionales (mimeographed).  
Employment; Departamento Nacional de Estadística, unpublished data for 1951; and XIII Censo Nacional de Población, Resumen.

Table 2  
 IMPUTED LABOR INCOME BY SECTOR, 1951 AND 1964

Sector	1951				1964			
	Labor Force Other Than Paid Employees (thousands)	Total Imputed Labor Income of Workers Other Than Paid Employees (millions of current pesos)			Labor Force Other Than Paid Employees (thousands)	Total Imputed Labor Income of Workers Other Than Paid Employees (millions of current pesos)		
		(1)	(2a)	(2b)		(2c)	(3)	(4a)
Mining	26.4	41.2	51.5	61.7	33.3	293.0	366.3	439.6
Modern manufacturing	16.0	27.7	34.6	41.5	11.5	111.4	139.2	167.6
Craft manufacturing	186.5	197.0	246.2	295.4	213.0	688.4	860.5	1032.6
Construction	26.9	32.7	40.9	49.2	49.2	325.1	406.1	487.7
Public utilities	0.8	1.0	1.2	1.4	0.7	12.6	15.8	19.0
Commerce	127.7	327.9	409.9	491.9	245.8	1541.7	1927.1	2312.5
Finance	0.9	2.8	3.5	4.2	5.0	75.2	94.0	112.8
Transportation	28.3	46.4	58.0	69.6	47.8	413.0	516.2	619.4
Communication	0.7	1.8	2.2	2.7	0.6	7.4	9.3	11.2
Personal services	97.6	68.6	85.7	102.8	104.7	253.8	317.2	380.6
Government services	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Not otherwise classified	95.9	131.2	164.0	196.8	76.5	470.0	587.5	705.0
<b>Total nonagricultural Sectors</b>	<b>607.7</b>	<b>873.3</b>	<b>1097.7</b>	<b>1317.1</b>	<b>788.1</b>	<b>4191.6</b>	<b>5239.2</b>	<b>6287.4</b>

**Note:**

The alternative estimates (a), (b), and (c) are based on the assumptions that average imputed labor income for workers other than paid employees is equal to 80 percent, 100 percent, and 120 percent respectively of the average wage in the sector in which the worker is employed.

**Source:**

See Table 1.

Table 3

LABOR INCOME PAID, IMPUTED LABOR INCOME, AND NON-LABOR INCOME  
AS A PROPORTION OF VALUE ADDED, 1951 AND 1964

Sector	1951							1964						
	Paid Labor Income as Percent of Total Value Added			Imputed Labor Income as Per- cent of Total Value Added			Non-Labor Income As Percent of Total Value Added	Paid Labor Income as Percent of Total Value Added			Imputed Labor Income as Per- cent of Total Value Added		Non-Labor Income as Percent of Total Value Added	
	(1)	(2a)	(2b)	(2c)	(3a)	(3b)	(3c)	(4)	(5a)	(5b)	(5c)	(6a)	(6b)	(6c)
Mining	31.2	18.9	23.6	28.3	49.9	45.2	40.5	39.2	21.9	27.4	32.8	38.9	33.4	28.0
Modern manufacturing	28.3	2.2	2.7	3.3	69.5	69.0	68.4	38.7	1.3	1.6	1.9	60.0	59.7	59.4
Craft manufacturing	16.6	27.8	34.7	41.6	55.6	48.7	41.8	23.0	24.7	30.9	37.0	52.3	46.1	40.0
Construction	75.7	15.3	19.2	23.0	9.2	5.3	1.5	73.3	16.9	21.1	25.3	9.8	5.6	1.4
Utilities	26.5	1.9	2.2	2.6	7.16	71.3	70.9	49.3	2.2	2.7	3.3	48.5	48.0	47.4
Commerce	28.3	32.3	40.4	48.5	49.4	41.3	33.2	18.3	26.4	33.0	39.6	55.3	48.7	42.1
Finance	48.5	2.0	2.5	3.0	49.5	49.0	48.5	63.7	4.8	6.0	7.1	31.5	30.3	29.2
Transportation	36.2	8.6	10.8	13.0	55.2	53.0	50.8	46.8	13.9	17.4	20.9	39.3	35.8	32.3
Communication	53.7	4.6	5.5	6.5	41.7	40.8	39.8	55.8	1.8	2.2	2.7	42.4	42.0	41.5
Personal services	48.2	10.1	12.8	15.2	41.7	39.0	36.6	48.9	6.6	8.3	9.9	44.5	42.8	41.2
Government services	100.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Total nonagricultural Sectors	36.3	16.6	20.8	24.9	47.1	42.9	38.8	45.0	12.8	16.0	19.2	42.2	39.0	35.8

**Note:**

The alternative estimates (a), (b), and (c) are based on the assumptions that average imputed labor income per workers other than paid employees is equal to 80 percent, 100 percent, and 120 percent respectively of the average wage in the sector in which the worker is employed.

**Source:** See Table 1.

1964) are self-employed rather than employers of labor. In manufacturing, at least, value added per worker in the very small firms is less than the wages paid by larger firms. For many, self-employment represents more of an alternative to unemployment than an alternative to wage labor. Since measured unemployment increased substantially over the inter-censal period it is likely that the degree of disguised unemployment (measured in terms of declining income relatives) has been increasing. The dimensions of this possible shift are not known.

One need not assume changes in the income relatives of the employed and self-employed to show changes in the dispersion of income, however. The changes in income distribution implied by the differential growth rate of wages by sector are marked, and these figures hide a significant increase in intra-sector wage dispersion. Excepting the very small public utilities sector, the data of Table 1 group themselves into a high growth-rate subgroup where the ratio of average labor income in 1964 to that of 1951 is around 5.0 and a low growth-rate subgroup where this ratio is about 3.0. For reference it should be noted that the ratio of the cost of living of workers in 1964 to that in 1951 is about 3.0. The subgroup of sectors where the rate of growth of wages was relatively high includes modern manufacturing, government services, transportation, communication, finance, construction, and mining. The low growth-rate subgroup includes craft manufacturing, commerce, and personal services. In terms of numbers of employees the two subgroups are of equal size. In terms of the total labor force the low growth-rate subgroup is somewhat larger, covering 58 percent of the non-agricultural labor force.

The subgroup of sectors where wage rates have been increasing rapidly roughly spans the modern portions of the economy, and the low growth-rate subgroup covers most of the employment in traditional activities. Most of the labor force employed in personal service occupations are domestics. Only about 3 percent of this subgroup is classified as providing services to business. There are no data as to a breakdown between employment in petty commerce and in activities that might be described as modern, but slightly more than half of the labor

force in commerce is self-employed. For the sectors included in the high growth-rate subgroup this ratio is only 11 percent. The proportion of self-employment in craft manufacturing is about 44 percent.

The sectors where wage rates grew relatively rapidly in the intercensal period are not only the high wage sectors now but also tended to be the high wage sectors in 1951. Except for construction, none of the major sectors enjoying high rates of growth of wages in the period 1951-1964 began that period with an average wage of less than the average for the nonagricultural economy. Of the low-growth rate sectors only commerce showed an average wage in 1951 that was higher than the figures for the urban economy. Indeed, although the theoretical distinction between "traditional" and "modern" is based on the perception of an unchanging versus changing technology, one of the more useful operational distinctions between these areas is probably the wage rate. The very high wage rate for commerce given in 1951 is probably the result of bad data. It is true that wages are a less reliable guide to average money income attributable to labor in commerce than almost any other sector because of the very low (about 30 percent in 1951) proportion of wage and salary employees to the total labor force. Yet the official figures show that real income per paid employee in commerce fell some 20 percent between 1951 and 1964. This seems unlikely, particularly when it is noted that the wage per employee at the beginning of the period was nearly 90 percent higher than the average outside agriculture and was higher than every other sector but one. It seems more likely that the initial wage level was somewhat lower and the rate of growth of money wages closer to if not higher than the rate of increase of the cost of living.

If the figures of Table 1 are accepted, the conclusion is inescapable that the dispersion of wage income has increased. Taking the low and high growth-rate sectors as homogeneous, over half of the paid employees are occupied in sectors where the average real wage has been fairly stable, having increased only 6 percent over the thirteen year intercensal period. By real wage I mean the money wage deflated by the urban worker's cost-of-living index. Since the great majority of

self-employed workers are found in these low growth-rate sectors, the dispersion of total labor income, paid and imputed, may be even greater. If it is true that the ratio of imputed labor income of the self-employed to labor income of paid workers in the low growth-rate sectors has fallen, it is quite possible that average real labor income for the labor force in these sectors -- about 58 percent of the total labor force -- has actually fallen. Yet in spite of the stagnation of labor income of over half the labor force outside agriculture, the average real wage for the nonagricultural economy probably increased about 38 percent between 1951 and 1964. In terms of paid employees the high growth-rate half of the employed labor force enjoyed an average annual increase in the real wage of 4.5 percent. The low growth-rate half enjoyed an average annual growth rate of the real wage of only about .5 percent. In terms of total shares of wage income the sectors that employed the 48 percent of the wage-earners who earned 33 percent of all wage income in 1951 employed 50 percent of the wage-earners in 1964 who earned only 24 percent of all wage income. In terms of total labor income, paid and imputed, the low growth-rate "traditional" sectors employed 54 percent of the labor force in 1951 and received 45 percent of all labor income. By 1964 these sectors employed 58 percent of the labor force but received only 34 percent of labor income.<sup>1</sup>

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<sup>1</sup>These shifts in labor income distribution are probably slightly exaggerated because of the very high figure imputed for the self-employed in the commerce sector in 1951. If average wages (and hence average imputed labor income) in commerce are assumed to have been the same as in modern manufacturing in 1951, the low growth-rate sectors would have accounted for only 42 percent of all labor income, paid and imputed. Because of the relatively small number of paid employees in commerce the proportion of total wages paid that accrued to the low growth-rate subsector is changed only slightly.

### III. INTRA-SECTORAL CHANGES IN INCOME

The previous discussion of the implications of extreme inter-sectoral dualism in wage growth for the distribution of income in Colombia was based on the assumption of intra-sectoral homogeneity. Such an assumption is of course an extreme oversimplification. Although the distribution of wage income in Colombia apparently follows the bimodal pattern of a dual (traditional-modern) economy, the various income sectors are blends in variable proportions of the traditional and modern components. In certain sectors one or the other mode is clearly dominant. For example, the finance, communications, and public utilities sectors are almost purely modern in labor composition. The craft manufacturing and, to a lesser extent, the personal service sectors are very largely traditional in makeup. Other sectors, such as commerce, construction, transportation, and modern manufacturing, cannot be so easily classified. Because of the relative availability of data I will use the so-called modern manufacturing sector to provide evidence of the importance of intra-sectoral wage variation in such composite sectors. Tables 4 and 5 summarize this evidence. In virtually every two-digit industry there is a substantial difference between the average labor income of workers in small firms and the figures for either the larger firms or the industry-wide average. The closeness of the industry-wide average to the figures for the larger firms reflects both the large number of workers in the bigger firms and the increase through time in the proportion of workers in such firms. In 1958 over 47 percent of all workers in modern manufacturing were employed in firms of more than 100 workers. By 1964 this proportion had risen to 53 percent. During the same period the proportion of workers in firms of the less than 10 size category fell from almost 14 to about 12 percent of the labor force in modern manufacturing.

The increases in money incomes by industry and size of firm reported in Table 4 should be compared with the 94 percent increase in the national cost-of-living index for workers. The workers in the larger firms enjoyed

Table 4  
 INCREASE IN AVERAGE WAGES IN MANUFACTURING BY  
 INDUSTRY AND SIZE OF FIRM, 1958-1964  
 (percent)

Industry	Firms Employing Less Than 10 Workers	Firms Employing 100 Workers or More	All Firms
Food	72.8	199.8	180.4
Beverages	60.7	167.7	169.4
Tobacco	69.9	203.2	235.3
Textiles	141.7	173.2	169.1
Clothing	48.1	167.2	148.6
Wood	55.9	195.4	145.8
Furniture	57.7	178.0	116.9
Paper	115.2	196.4	200.6
Printing	63.8	159.1	149.0
Leather	129.8	138.2	140.7
Rubber	60.6	187.3	181.0
Chemicals	65.4	177.8	174.8
Oil and coal	101.1	150.4	142.7
Non-metallic minerals	64.6	184.5	180.8
Metals	66.0	85.0	100.1
Metal products	85.8	174.5	159.6
Non-electrical machinery	80.1	128.0	122.4
Electrical machinery	75.2	190.4	180.1
Transportation equipment	49.7	131.4	121.7
Miscellaneous industry	63.3	100.5	123.1
All manufacturing	74.7	165.7	163.2

Source: DANE, unpublished data.

Table 5  
CHANGES IN WAGES IN MANUFACTURING BY SIZE OF FIRM, 1958-1964

Number of Workers per Firm	Proportion of the Labor Force in Modern Manufacturing		Average Wage (current pesos)		Percentage Increase in Average Wage
	1951	1964	1951	1964	
0-9	13.8	12.2	\$2,430	\$4,246	74.7
10-19	11.1	9.8	2,984	6,344	112.6
20-49	15.9	13.0	3,704	9,137	146.7
50-99	11.8	11.7	4,253	11,335	166.5
100+	47.4	53.3	5,897	15,669	165.7
All firms	100.0	100.0	\$4,643	\$12,221	163.2

Source: DANE, unpublished data.

a 37 percent increase in average real income over the six-year period 1958-1964. The workers in the smaller firms saw their real incomes fall about 10 percent during the same period. As can be seen in Table 5, although average labor income per worker is an increasing function of size of firm, and workers in medium size firms earn substantially less than those in the largest size classes, the rate of growth of money wages for most workers in the intermediate size classes is not too different from that of the larger firms. For example, the average labor income of workers employed in firms of the 50-100 size class (about 12 percent of the labor force in manufacturing) was only 72 percent of that of the workers in the largest size group in 1964, but the rate of increase of average money wages in the two groups was almost identical -- 64.9 percent in the 50-100 group and 65.3 percent in the over 100 class.

The pattern that emerges, therefore, is a substantial inter-industry variation in wage rate changes that is largely invariant to size of firm if the very smallest size classes are omitted. By and large it appears that variations in rates of increase of wages within the modern sector of manufacturing are related to changes in labor productivity. The similarity of relative wage changes for workers in the 20-49, 50-99, and 100+ size groups reflects a near identity in changes of value added per worker within each of the above groups.<sup>1</sup> The much larger variation in wage rate changes by industry reflects the substantial differences in change in labor productivity between the various two-digit industries. It should be noted that in spite of the large inter-industry variation in wage rate changes there appears to have been no association of the rate of changes of wages and the initial wage level by industry if the smallest size classes are eliminated. The variation of average wages in large firms by industry in 1964 is proportionately the same as in 1958, the ratio of the mean to standard deviation of average wages being 2.53 in 1958 and 2.58 in 1964.

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<sup>1</sup>In terms of constant pesos these percentage changes are 23, 24, and 22 percent respectively. For the 1-9 and 10-19 size classes the changes in real value added per worker were -9 and 16 percent.

The picture that emerges from this analysis is that the modern manufacturing sector consists of two parts: a truly modern sector where wage changes are related to productivity changes and productivity changes have been so distributed as to leave the relative distribution of labor income largely unchanged; and a craft or semi-craft sector where wage increases are substantially smaller. For the portion of the manufacturing sector given in the official national accounts there has thus been some increase in wage dispersion, the largely unchanged distribution for the roughly 75 percent employed in the truly modern sector shifting upward relative to the distribution for the 25 percent or so employed in craft or semi-craft firms.

How the other accounting sectors of mixed type are divided between modern and traditional components is uncertain. Whether the unchanged dispersion of wages within the modern sector that is characteristic of manufacturing is also characteristic of other sectors is also uncertain. The construction and transportation sectors both have strong traditional subsectors that are probably proportionately more important than the traditional subsector within manufacturing as given by the official accounts. It would appear that there is much less homogeneity with respect to wage change within the so-called "high-wage" subeconomy identified in the previous section than in the low-wage group. If true, the relative size of the low-wage sector has been underestimated.<sup>1</sup> Although the extreme dualism of the assumption that the modern and traditional subeconomies are homogeneous with respect to rate of change of money wages is undoubtedly an oversimplification, the similarity of the wage experience of medium and large firms in manufacturing suggests the essential validity of the duality hypothesis. Where consideration is given of the heterogeneity of the various accounting sectors with respect to their modern and traditional components, it would appear that the pattern of wage change over the 1951-1964 period

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<sup>1</sup>If 25 percent of the employment in the so-called modern manufacturing, transportation, and construction sectors and 90 percent of the employment unspecified as to sector are assumed to be employed in the traditional mode while 25 percent of the commerce and 7 percent of the personal services sectors are assumed employed in the modern mode, the traditional/modern (low-wage/high-wage) breakdown shifts from 58:42 to 63:37.

was something like the following: an annual rate of increase of real wages (paid plus imputed) of 0-0.5 percent for the approximately 50 percent of the nonagricultural labor force employed in the traditional subeconomy; an annual rate of increase of real wages of about 5 percent for the 35 percent of the labor force employed in the high-wage modern subeconomy; and a 2-3 percent annual increase for the 15 percent or so employed in the intermediate-wage group. Although the data on income derived from agriculture are unreliable it is generally thought that real incomes of agricultural labor have been roughly stable in the period since the Korean War. If so, the real income per capita for nearly three-quarters of the Colombian labor force was either stagnant or increasing at a very low (no more than 0.5 percent per year) rate during the inter-censal period. Yet the average annual increase in real output per worker during that period appears to have been about 2.1 percent.

#### IV. SAMPLE SURVEY EVIDENCE OF WAGE DIFFERENCES BETWEEN SECTORS

An additional source of evidence of the distribution of income is the income data collected in conjunction with the unemployment surveys in Bogota and Cali.<sup>1</sup> These data both provide a check on the distribution of income by sector given by the national accounts for 1964 and, in the case of Bogota, give some indication of changes in income distribution in the past few years. Table 6 shows the relationship between the estimates of average income per worker by sector of the sample surveys and the national accounts. Table 7 shows the changes in average income by sector for workers other than managers and professionals in Bogota for the period December 1963 through June 1966. Figures for all workers are given for a shorter period.

The income figures collected as part of the unemployment surveys are designed to reflect income from whatever source. Whether the reporting of entrepreneurial and property income is conducted in as representative a fashion as labor income is open to doubt.<sup>2</sup> In any

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<sup>1</sup>The income data collected in conjunction with these unemployment surveys have been tabulated according to the incomes of both members of the labor force and household units. Unless otherwise specified the data here refer to the distribution of incomes of individuals. The data include both labor and non-labor income, but it appears likely that there has been some disclosure bias leading to an understatement of property income relative to labor income.

<sup>2</sup>Estimates of incomes of professionals and managers prior to March of 1965 were excluded because of differences in sampling procedure. The samples prior to March 1965 include a significantly higher proportion of managers and professionals than the later samples. Since the later samples were stratified according to information from the 1964 census, I am assuming that this higher proportion reflects a sampling bias and that the estimates of average income by sector and for the sample as a whole are biased upward. If the sample data are accepted as reported, the average income per worker in Bogota declined 8 percent between 1964 and 1965. For workers other than managers and professionals, however, average money incomes increased nearly 11 percent. Managerial-professional income declined about 14 percent, although the sampling variability of this estimate is quite large. The large decline in average income for all workers results chiefly from a fall in the average proportion of manager-professionals in the total sample from 16.3 to 14.3 percent. Because of the very large differential between manager-professional incomes and all other incomes, this change in sampling proportion results

Table 6  
 AVERAGE INCOME PER WORKER BY SECTOR: SAMPLE SURVEY DATA  
 AND NATIONAL ACCOUNTS DATA

Sector	National Accounts Census Figures		Sample Survey Data			
	Value Added per Worker per Year (current pesos) 1964	Average Yearly Wage (current pesos) 1964	Average Yearly Income (current pesos)		Average Yearly Income for Workers Other than Manager- Professionals (current pesos)	
			Bogota <sup>a</sup> 1964	Calib 1965	Bogota <sup>a</sup> 1964	Calib 1965
Manufacturing	\$17,200	\$ 9,100	\$12,500	\$12,500	\$ 7,900	\$ 7,500
Construction	8,700	8,300	9,900	9,400	7,100	6,800
Commerce	16,800	10,900	16,100	12,600	10,100	8,000
Transportation	17,700	11,300	15,100	11,000	12,200	10,000
Services	5,300	3,000	12,000	9,200	2,800	3,700
Government	15,000	15,000	18,200	19,900	12,300	8,800
<b>Total</b>	<b>\$12,000</b>	<b>\$ 7,300</b>	<b>\$13,500</b>	<b>\$12,500</b>	<b>7,400</b>	<b>\$ 8,000</b>

Notes:

<sup>a</sup>The Bogota data for average yearly incomes by sector for 1964 were obtained by applying 1965 occupational-sector weights to 1964 wage rates. This procedure is used to avoid the bias introduced by the over-representation of manager-professionals in the samples of September 1964 and earlier. The actual figures for 1964 give an estimated annual income per worker of \$14,600.

<sup>b</sup>The figures for Cali were obtained from a sample conducted in March 1965. The relevant figures from the March sample in Bogota are an average income for all workers of \$11,900 and for workers other than manager-professionals of \$7,500. The standard errors of estimate of the mean for these distributions are in the range \$700-900 and about \$240 respectively.

Sources:

Columns 1 and 2; See Table 1.

Columns 3 and 5; Centro de Estudios sobre Desarrollo Económico, Universidad de los Andes, unpublished data.

Columns 4 and 6; Centro de Investigaciones Economicas, Universidad del Valle, Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali, Cali, May 1965.

Table 7  
WEEKLY INCOME IN CURRENT PESOS, AVERAGE BY SECTOR IN BOGOTA, 1963-1966

Sector	Survey Date									
	June 1966	March 1966	Dec. 1965	Sept. 1965	June 1965	March 1965	Sept. 1964	June 1964	March 1964	Dec. 1963
<b>A. Workers Other Than Managers and Professionals</b>										
Manufacturing	183	183	155	184	173	147	150	154	151	135
Construction	155	150	150	143	151	142	143	131	147	112
Commerce	193	210	182	202	192	204	200	188	193	216
Transportation	229	266	251	287	229	219	210	260	216	196
Services	67	67	69	63	54	65	57	48	55	50
Government	283	280	209	265	219	210	228	246	201	186
Total	<u>173</u>	<u>166</u>	<u>155</u>	<u>164</u>	<u>149</u>	<u>143</u>	<u>143</u>	<u>140</u>	<u>138</u>	<u>132</u>
<b>B. All Workers</b>										
Manufacturing	266	312	222	241	229	205				
Construction	233	283	305	210	165	149				
Commerce	314	367	262	341	365	300				
Transportation	317	347	274	307	229	270				
Services	212	240	237	228	189	183				
Government	400	373	332	341	348	362				
Total	<u>287</u>	<u>318</u>	<u>253</u>	<u>266</u>	<u>262</u>	<u>229</u>				

**Note:** The standard error of estimate of mean income for workers other than managers and professionals is 4.7 for the March 1966 sample and 4.6 for the June 1966 sample. The standard error of estimate of the mean income of all workers is 19.1 for the March 1966 sample and 12.9 for the June 1966 sample.

**Source:** Centro de Estudios sobre Desarrollo Económico, Universidad de los Andes, unpublished data.

event, the sample survey data reflect personal income only rather than value added at factor prices, the national accounting total used in Table 6. The distribution of income by sector shown in the sample survey figures allocates property income according to the sector of employment of the recipient rather than the sector of origin. It is partly for this reason that the sample surveys show such a high value for income of service workers, since this sector includes self-employed professionals.

By and large the survey and accounts data are encouragingly consistent. In particular, the survey figures on average yearly income for workers other than managers and professionals are consistent with the accounts estimates of average yearly wages. This consistency lies not so much in the near identity of the Bogota and national averages -- an identity that is purely accidental -- as in the sectoral wage pattern. There is good reason to suspect that wages in Bogota are higher than in the nonagricultural economy generally, and the data of Table 6 are consistent with that hypothesis. If account were taken of managerial-professional wages in Bogota, the sample survey averages would be significantly higher than the average wage given by the national income accounts. This cannot be done here because the income figures for managers and professionals in the city surveys include both labor and property income in important amounts.

Differences in the treatment of the unemployed in computing sector income averages also have to be considered in comparing the survey data on worker income and national accounts figures on wages. The denominator in the accounts figures is the total labor force attached to the sector in question. The survey figures are based on actual employment estimates. If the average income figures for workers given by the surveys are deflated by some 10-13 percent to adjust for this difference -- and inflated to take account of the labor component of managerial-professional

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in a large drop in average incomes for the entire sample. If the average occupational weights of the 1965 sample are applied to the occupational income data for the 1964 samples, the decline in average income per worker is only about 2 percent.

incomes -- the estimated average wage for all members of the labor force given in the sample surveys for Bogota would be about 30-40 percent higher than the national average wage for the nonagricultural economy. With what is known about differences in wages between regions in Colombia, and given the difference in the structure of the labor force between Bogota and the rest of the economy, this appears about right. Given the paucity of basic data in Colombia, this rough consistency between the sample survey and national accounts figures should be interpreted as a cautious vote of confidence for the national accounts rather than a confirmation of the representativeness of the urban samples.<sup>1</sup>

The income estimates of the Bogota sample surveys are particularly interesting in that they are our only evidence as to the trend of personal income and changes in its distribution in the last few years. The accounts data apply to the 1951-1964 inter-censal period as a whole, a period in which the growth of income per worker appears to have been substantially higher than for the years since 1961. The figures presented in Table 7 summarize changes in average weekly income in current pesos by sector for the period December 1963 through June 1966, a period spanning an expansionary period (the economic recovery of 1964), a recession (in 1965), and the first stages of recovery from recession. For all employed workers other than managers and professionals the trend of the average weekly wage over this period converts to an annual rate of increase of 10.3 percent.<sup>2</sup> There is considerable variation between sectors in this trend, however. Government and service workers enjoyed a 12.4 and 13.5 percent annual wage increment, respectively. The trends in manufacturing, transportation, and construction were somewhat lower -- 10.8 percent, 8.0 percent, and 8.3 percent. At the

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<sup>1</sup>For a discussion of the sampling techniques used in the Bogota and Cali surveys see Robert L. Slighton, Urban Unemployment in Colombia, RM-5393-AID, The RAND Corporation, January 1968.

<sup>2</sup>The trend here is the "r" in the estimating equation  $\log W_t = \log W_0 + [\log(1+r)] t$ .

bottom is commerce, where the trend is actually a negative 1.2 percent. As stated above, differences in sampling procedure prevent construction of an equivalent set of estimates of the trend in average wages for all workers. The trend in managerial-professional incomes over this period is substantially less than for any other occupational grouping, however. If managerial-professional incomes are introduced with constant (1965-1966) weights the trend in average money income is reduced to 8.8 percent per year.

It is interesting to compare these estimates of changes in wage rates by sector with those given by the national accounts for the intercensal period. The negative rate of change of incomes in commerce for the Bogota samples lends credence to the very low rate of change of money wages in commerce given by the national accounts for the 1951-1964 period. There is only one striking difference, the relatively high rate of increase for incomes of personal service workers in Bogota. A further check can be made by comparing the estimated increase in average wages in modern manufacturing for 1964 and 1965 as given by DANE with the sample survey estimates for Bogota. The national figures show an increase of almost 28 percent in the average wage in manufacturing between 1963 and 1965. The figure for the Bogota sample is roughly 20 percent. Since the Bogota figures include workers in both modern and craft manufacturing and the DANE sample covers modern manufacturing exclusively, the data appear to be remarkably consistent.

These rates of change of wages or incomes are stated in terms of current prices. When account is taken of changes in the cost of living the trend in income becomes negative. The cost-of-living index for workers in Bogota increased by 33.4 percent between December 1963 and June 1966. In terms of annual rates of change this reduces to 12.2 percent. The average real income for workers other than managers or professionals in Bogota thus fell about 4 percent over the two-and-a-half years covered by the samples. Given the adjustments in the weights of managerial-professional income proposed above, the decline in the average real income for the entire sample was over 7 percent. Only for the service and government sectors do the sample data show an increase

in real wages over the period covered, and in each case the increase is trivial.

These indications of a decline in real income per worker in Bogota in recent years are roughly consistent with the data of the national accounts. Between 1963 and 1965 the increase in labor income in constant pesos for the nonagricultural economy estimated for the national accounts was about 30 percent. If the values in current pesos are deflated by the national cost-of-living index for workers this increase is reduced to about 3 percent. Since the labor force probably increased by at least 8 percent during those two years, the implied reduction in real wages per worker is roughly 5 percent.<sup>1</sup> This is about the same as the decline in average income in Bogota for the same period. The national accounts estimates for changes in value added per worker are somewhat different. If the craft subsector of manufacturing is ignored, value added in current pesos increased over 33 percent between 1963 and 1965 as compared with the estimated increase of labor income of 30 percent. The implicit price deflator for output is also somewhat smaller than the national worker's cost-of-living index. These effects together combine to imply no change in real value added per worker for this two-year period. If the official figures were supplemented with estimates of output in craft manufacturing, real value added per worker would have shown a small decline. Lack of data on the relationship between personal income outside agriculture and value added at factor prices, plus uncertainty as to the extent to which the Bogota sample surveys actually capture property income, prevents any meaningful comparison of the survey and accounts estimates of changes in total income per capita.

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<sup>1</sup>This estimate of the change in the labor force is proposed by Paul Schultz.

## V. OCCUPATIONAL DIFFERENCES IN WAGE RATES

There are two sources of data on occupational differences in income. The first is the urban sample surveys in Cali and Bogota. The second is the wage surveys conducted by various business organizations. The latter data present a considerably more detailed picture of the occupational wage structure than do the figures obtainable from the urban unemployment surveys but they suffer from two major defects: because the samples are small there is considerable sampling variability; the figures apply only to the largest and most modern firms. The occupational income data derived from the unemployment surveys in Bogota are presented in Table 8. Certain of the wage data given by business wage surveys are summarized in Tables 9, 10, and 11. Tables 9 and 10 are based on the occupational wage surveys conducted in the four major cities of Colombia by the Carvajal Corporation in March 1967. Table 11 shows the change in wage levels by occupation in Bogota over the period 1964-1967. These data are based on the wage surveys conducted by Industrial Relations Consultants (IRC), a Colombian management consultant firm.

Comparison of Tables 8 and 9 shows clearly the importance of the wage differential between large and small firms. The wage rate for unskilled labor in the Carvajal survey is about twice that for manual laborers as given by the sample of all Bogota workers. The same differential for semi-skilled machine operators appears to be about 5:3. Since the category "office workers" spans several of the occupational titles of the wage survey, one can be less precise in describing the differential for that group, but the ratio of wages in large firms to wages for the entire Bogota economy appears to be about 4:3.<sup>1</sup>

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<sup>1</sup>Because of the extreme dispersion in wages of professionals -- the category "professional" or "manager" in the unemployment surveys includes both the engineers and the skilled clerical workers of the Carvajal survey -- and uncertainty as to weighting, one can only guess at the wage rate consistent with the data of Table 9 that is comparable to the average of the income rates given for managers and professionals in Table 8. It is interesting to note, however, that whatever wage rate from Table 9 is chosen as representative for the manager-professional

Table 8

AVERAGE WEEKLY INCOME IN CURRENT PESOS BY OCCUPATION IN BOGOTA, 1963-1966 <sup>a</sup>

Occupation	Survey Date									
	June 1966	March 1966	Dec. 1965	Sept. 1965	June 1965	March 1965	Sept. 1964	June 1964	March 1964	Dec. 1963
Professionals	676	905	700	786	847	715	858	849	953	756
Managers	1139	1297	845	921	848	849	932	1073	1157	1060
Office workers	238	214	194	227	236	235	197	200	206	188
Sales workers	240	218	168	215	232	193	191	180	180	208
Transport workers	203	233	217	224	205	210	236	188	178	173
Artisans-operators	182	174	153	166	159	149	153	144	139	135
Manual workers	100	99	93	85	96	88	106	91	83	74
Service workers	68	63	83	70	54	61	49	51	61	48

Note:

<sup>a</sup>These data are based on a somewhat different occupational classification from that used in the coding of the original data. Individuals classified as government workers or service workers who received more than 1000 pesos per week or who had received more than 12 years of education were reclassified as professionals. Individuals in other classifications who had the same income or educational characteristics were reclassified as managers. Individuals classified as professionals who had received less than six years of education were reclassified as service workers. The primary school certificate implies five years of education; the secondary school certificate implies eleven years.

Source:

See Table 7.

Table 9  
AVERAGE WEEKLY WAGE RATES FOR LARGE FIRMS  
BY CITY AND OCCUPATION, MARCH 1967  
(pesos)

Occupation	Bogota	Barranquilla	Medellin	Call
Unskilled laborers	\$201	\$183	\$173	\$229
Semi-skilled machine operators	300	211	246	292
Skilled mechanics	434	251	332	360
Foremen	450	365	311	484
Semi-skilled clerical workers	260	.98	210	263
Secretaries	365	257	254	308
Skilled clerical workers	362	307	323	369
Engineers	863	616	694	884

Source:

Unpublished data collected by Carvajal & Cia., Cali.

Table 10  
RELATIVE WAGE RATES BY CITY AND  
OCCUPATION, MARCH 1967<sup>a</sup>

Occupation	Bogota	Barranquilla	Medellin	Cali
A. Relative wage rates by occupation				
Unskilled laborers	100	100	100	100
Semi-skilled machine operators	150	115	142	130
Skilled mechanics	216	138	192	161
Foremen	224	199	180	216
Semi-skilled clerical workers	129	108	121	117
Secretaries	182	140	147	138
Skilled clerical workers	180	167	187	164
Engineers	430	337	401	394
B. Relative wage rates by city				
Unskilled laborers	100	91	86	111
Semi-skilled machine operators	100	70	82	97
Skilled mechanics	100	58	77	83
Foremen	100	81	69	108
Semi-skilled clerical workers	100	77	81	102
Secretaries	100	70	70	84
Skilled clerical workers	100	85	89	102
Engineers	100	71	80	102

Note:

<sup>a</sup>The wage rates shown here are starting rates.

Source:

See Table 9.

Table 11  
CHANGES IN WAGE RATES BY  
OCCUPATION: BOGOTA, JULY 1964 - MAY 1967<sup>a</sup>

Occupation	Percentage Increase in Hiring Salaries
Unskilled labor	38
Semi-skilled machine operators	36
Skilled mechanics	29
Messengers	23
Semi-skilled office workers	24
Secretaries	22
Skilled clerical workers	22
Professional accountants	25
Engineers	26

Note:

<sup>a</sup>The increase in the working class cost-of-living index in Bogota over this period was 37 percent. The cost-of-living index for the middle class increased 39 percent.

Source:

Unpublished data collected by Industrial Relations Consultants, Bogota.

The differentials between wage rates by occupation shown in Table 10 are surprisingly low. The ratio of the salaries of engineers to the wages of unskilled labor is roughly 4:1, higher than the 2.8:1 ratio reported for the United States in the 1960 census but considerably below that found in many of the less developed countries. It should be stressed in this connection that the wage rate quoted for engineers is the rate paid persons newly hired and without experience. The firms sampled will only hire graduates from the most prestigious of local universities, however. Both for white-collar and blue-collar occupations the differential between skilled and semi-skilled workers appears to be in the order of 4:3, somewhat larger than the same differential in the United States. These differentials vary widely between cities. The relatively high premium paid to skilled blue-collar workers in Bogota as compared with Medellin and Cali is probably a supply phenomenon. Both Antioquia and Valle departments are well known in Colombia for the strength of their industrial (vocational) schools. The relatively high wage for secretaries in Bogota probably reflects both the strength of the demand by government agencies and the relatively high wages paid by government for clerical and semi-professional workers. The high wage rate paid to unskilled labor in Cali almost certainly reflects the collective bargaining strategies of a local labor union movement that has been known for its political radicalism.

Reflecting as they do the experience of only the largest and most modern manufacturing firms, these data probably understate the actual occupational differentials if by "actual" is meant the average for all firms. It was suggested earlier that the difference between wage rates of large firms and the city-wide average for unskilled labor appeared to be about 2:1. For semi-skilled blue-collar workers the same ratio appears to be roughly 5:3. I have no data to permit the same comparison for professional wages, but it is clear that virtually all high-level

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group, it will be less than the average of the figures shown in Table 8. Since large firms pay a wage premium at all occupational levels, the average wage for all professionals or managers would be an even smaller proportion of the average of the income levels of Table 8. This difference underscores the importance of non-wage income to the managerial-professional group.

professionals will be employed by firms whose pay scale is in keeping with the wage survey summarized in Table 10. The differential between engineering and manual laboring wages as seen by the average worker is thus more likely to be 7:1 than the 4:1 of Table 9. The actual differential between skilled blue-collar and unskilled labor wages is similarly more likely to be 11:5 than the roughly 9:5 ratio implied by the wage surveys. It should be stressed that unskilled and semi-skilled workers employed by large firms in Colombia possess (and are aware of) valuable property rights in those jobs. Such employment is carefully rationed among the friends and relatives of current job-holders and the property rights defended through the bargaining policies of the labor unions. For such reasons the income data from the Bogota unemployment survey given in Table 8 are the more reliable indicators of actual occupational wage differentials for workers other than managers or professionals.

Data on changes in the occupational structure of wages through time are extremely scarce. The wage surveys conducted in Bogota by Industrial Relations Consultants give a fragmentary picture of changes in wage rates by occupation in the period 1964-1967, but the data are subject to extreme sampling variability. The occupations given in Table 11 have been selected from a much longer list. The basis for selection was the representativeness of the wage experience of the occupation in question to the average experience of three larger occupational groupings -- operators, clerical workers, and supervisors. The occupations whose wage experience was substantially above or below the group mean were excluded. The occupational wage structure of Table 8 is given by the income data of the Bogota unemployment survey. The problem of sampling variability is less acute with this set of data, but the occupational structure is less clearly differentiated on a skill basis and the figures for managerial-professional income include both wage and non-wage elements.

Both sets of numbers are in agreement as to the sign of the trend in real wages in Bogota over the last few years. Of the eight occupational groups in the unemployment survey only the service workers enjoyed an annual rate of increase in money wages in excess of the 12.2 percent

average annual increase in the cost of living over the period covered. The least-squares estimates of the average annual change in money income levels for the various occupational categories in Table 8 are as follows: professionals, -5.3 percent; managers, -0.3 percent; office workers, 6.2 percent; sales workers, 6.3 percent; transport workers, 8.4 percent; artisan-operators, 10.7 percent; manual workers, 7.2 percent; and service workers, 15.6 percent. The data of the IRC wage survey show that of the employees of large corporations the only groups enjoying a money wage increase as large as the increase in the cost of living were the unskilled laborers and the semi-skilled machine operators. Taken as a whole, each of the three occupational groups -- operators (blue-collar), clerical, and managerial -- appears to have suffered a decline in the real wage since mid-1964. When converted to an annual basis the IRC wage survey suggests an average rate of wage increase for all workers of about 9 percent over the period July 1964-May 1967. The unemployment survey data for workers other than professional and managers of Table 8 give an average annual rate of increase of slightly over 10 percent for the period December 1963-June 1966. According to DANE the increase in the wage rate in manufacturing in the first half of 1964 (converted to an annual rate) was substantially higher than the rate of increase from June 1966 to June 1967. Given the sampling variability this consistency is more than we have a right to expect.

The two sets of data also appear consistent with respect to the pattern of change in relative wages. The IRC data suggest that the wages of blue-collar workers have risen somewhat relative to office workers and supervisors. The income data of the unemployment surveys give the same finding, the rate of increase of incomes of artisan-operators and manual laborers being somewhat higher than that of office workers and sales people. If there is any inconsistency in the findings of the two samples it lies in the wage/income trends for managers and professionals. The IRC data suggest that supervisory workers enjoyed about the same rate of increase of wages as clerical workers. The unemployment survey shows virtually no change in the money incomes of the supervisory group. The simplest explanation of this difference lies in the oft-repeated fact that the unemployment surveys gathered data

on income from whatever source. The decline since 1964 in the relative incomes of managers and professionals thus probably reflects a fairly strong negative change in entrepreneurial income and income from property combined with a moderate increase in professional-managerial wages. Whether the decline primarily represents entrepreneurial or property income is impossible to say.

To my knowledge there are no systematically collected data that can give evidence as to the possible change in the structure of wages or income by skill level or occupation for the years prior to 1964. The only information that exists on this subject consists of certain propositions that appear to be more or less commonly held by persons knowledgeable in the personnel field. The most significant of these propositions is the assertion that wages of professionals have been declining relative to the general wage level. The period identified as "for some time" appears to have begun about ten years ago. A word of amendment is needed here, however. If real, this decline does not seem to have applied with equal force to all professional categories. As near as can be determined, the wages of the very highly trained (graduates from the more prestigious universities) have more or less kept pace with the rest of the labor force. If the professional class have been relative losers the biggest losers appear to have been those who are marginally professional -- the junior accountants, laboratory technicians, and, most important, the senior clerical personnel.

A second widely held proposition is that the wages of skilled workers have been declining relative to those of unskilled workers. In large part this decline appears to be related to the practice of adding fixed peso increments to the basic wage structure when wage contracts are renegotiated between unions and management. Although some firms change their wage structure equiproportionately, the former practice appears more common. Where the annual average increase in money wages is 10 percent this strategy of wage bargaining can erode wage differentials (viewed in terms of proportions) quite rapidly.

Taken together, both propositions imply a narrowing of wage dispersion and an increasing equality of distribution of labor income.

There are two words of caution needed here, however. First, there is no real evidence of either proposition for the years prior to 1964. Second, even if true these tendencies would probably apply only to the modern sector of the economy. Although there may well have been some tendency over the last ten years for labor income to be distributed more equally within the firm, this fact will have been swamped by the much stronger tendency for the wage differential between the modern and traditional sector to widen.

## VI. THE SIZE DISTRIBUTION OF INCOME

The implication of the preceding sections is that the distribution of labor income is now less equal than in the mid-1950s. To move from this statement to a statement concerning the distribution of all income requires some knowledge of changes in the distribution of entrepreneurial and property income, and this knowledge is hard to come by. Labor income in terms of wages and salaries actually paid has greatly increased as a proportion of total output at factor prices since 1951, but this is largely the result of an increase in the proportion of wage and salary employees in the labor force. If the relative incomes of the self-employed did not change relative to those of employees, the sum of labor and entrepreneurial (imputed labor) incomes for the non-agricultural sectors only increased from about 57 percent to 61 percent. This is probably a slight overstatement, since I think it quite likely that the incomes of the self-employed declined somewhat relative to those workers who are wage-earners. Such a decline would be the result of changes within sectors, since the above figures already take account of the fact that self-employed workers are more heavily concentrated in the traditional sectors where incomes have been slow to grow. In terms of personal income, however, the growth of the share of paid and imputed labor income has been somewhat more significant. If it is assumed that paid and imputed labor income per worker are the same for each nonagricultural sector the labor share of total personal income increased from 67.2 percent in 1951 to 72.6 percent in 1964.

If one could have much confidence in the above assumptions as to changes in imputed labor income, it would appear reasonably clear that the share of property income (including that part of entrepreneurial income in excess of its opportunity cost as employed labor) in total personal income has fallen and (less certainly) that the income share of the top few income percentiles had fallen with it. Unfortunately, we can have no such confidence. Also unfortunately there are no data that permit even a moderately conclusive examination of the hypothesis. The data on the distribution of total income for Bogota in 1963-1966

are suspect as to their inclusiveness with respect to property income, and the only data on income distribution for a prior date almost certainly are non-representative with respect to the proportion of labor (imputed and paid) and property income in the sample.

Other than the distributions given by the Bogota and Cali unemployment samples, the only evidence as to the size distribution of income in Colombia is a distribution of family income of urban salaries and non-salaried employees for 1953 compiled as a byproduct of the preparation of cost-of-living indexes. This distribution is summarized in Table 12. I can determine nothing as to the sampling procedure employed in the preparation of this distribution. Given its purpose I can only guess that little attention was paid to the problem of securing a sample that was representative with respect to the extreme upper tail of the distribution of income. This suspicion is reinforced by the finding that the average family income of workers in the top decile of this distribution is about 43 percent of that reported for the top decile of the Bogota sample of September 1965 when both figures are quoted in terms of 1964 prices. If both samples were collected on a representative basis the implied average annual increase in the average real family income of the highest income decile would be well over 7 percent. Given the probability that non-labor income outside agriculture has been growing at a somewhat lesser rate than the roughly 4.7 percent attributable to real personal income, it seems highly doubtful that the 1953 figures can be considered comparable to the 1965 figures. As a standard of comparison it should be noted that the average real wage in the high growth-rate sectors grew at a 4.6 percent annual rate in the period 1951-1964.

The 1965 figures for Bogota are summarized in Tables 13, 14, and 15. Table 13 is comparable in concept, if not in representativeness, to Table 12 in that the variable being considered is the family income of each of the workers sampled. Since there are roughly twice as many workers as family units (the sampling unit being the household) there is considerable double counting involved in the preparation of this index. Tables 14 and 15 are more straightforward. Table 14 shows the

Table 12  
THE SIZE DISTRIBUTION OF FAMILY INCOME OF  
URBAN WORKERS, 1953

<u>Decile</u>	<u>Percentage of Total</u>	<u>Cumulative Percentage</u>
1 (Low income)	3.0	3.0
2	4.2	7.2
3	5.4	12.6
4	6.0	18.6
5	7.5	26.1
6	8.3	34.4
7	9.7	44.1
8	12.2	56.3
9	15.9	72.2
10 (High income)	27.8	100.0

Source:

Economía y Estadística, No. 85, 1958, quoted  
in M. Taylor et al., Fiscal Survey of Colombia,  
Baltimore, The Johns Hopkins University Press,  
1965, p. 223.

Table 13

THE SIZE DISTRIBUTION OF FAMILY INCOME  
OF BOGOTA WORKERS, 1965

Decile	<u>Employed Workers Only</u>		<u>All Members of the Labor Force</u>	
	Percentage of Total	Cumulative Percentage	Percentage of Total	Cumulative Percentage
1	1.6	1.6	1.2	1.2
2	2.5	4.1	2.4	3.6
3	3.4	7.5	3.3	6.9
4	4.3	11.8	4.3	11.2
5	5.7	17.5	5.7	16.9
6	6.8	24.3	6.6	23.5
7	9.5	33.8	9.3	32.8
8	11.1	44.9	11.1	43.9
9	15.7	60.6	16.2	60.1
10	39.4	100.0	39.9	100.0

Source:

CEDE, unpublished data.

Table 14

THE SIZE DISTRIBUTION OF INDIVIDUAL INCOME  
OF BOGOTA WORKERS, 1965

Decile	Employed Workers Only		All Members of the Labor Force	
	Percentage of Total	Cumulative Percentage	Percentage of Total	Cumulative Percentage
1	0.8	0.8	0.0	0.0
2	1.7	2.5	0.9	0.9
3	3.0	5.5	2.0	2.9
4	4.6	10.1	3.9	6.8
5	4.7	14.8	5.3	12.1
6	6.5	21.3	6.3	18.4
7	8.0	29.3	8.2	26.6
8	11.0	40.3	10.9	37.5
9	16.3	56.6	16.5	54.0
10	43.4	100.0	46.0	100.0

Source:

CEDE, unpublished data.

Table 15  
THE SIZE DISTRIBUTION OF FAMILY INCOME  
OF BOGOTA FAMILIES, 1965

<u>Decile</u>	<u>Percentage of Total</u>	<u>Cumulative Percentage</u>
1	1.1	1.1
2	2.8	3.9
3	3.3	7.2
4	4.0	11.2
5	5.1	16.3
6	6.7	23.0
7	8.3	31.3
8	12.2	43.5
9	12.6	59.7
10	40.3	100.0

Source:

CEDE, unpublished data.

distribution of the individual incomes of the workers sampled; Table 15 shows the distribution of family incomes of the family units covered in the sample. Table 16 summarizes the distribution of individual incomes in Cali.

Two facts stand out from examination of these tables. First, there is severe inequality in the distribution of income. Second, the degree of inequality is much the same for the distribution of income by family and by individual. Since it is doubtful that the basic data adequately reflect the distribution of property income, I think it very probable that the income share of the highest income decile is actually higher than as reported in Tables 13-15. The data for Cali given in Table 16 show an even greater concentration than do the Bogota figures, but this difference may simply reflect a bias in sampling. I have no evidence of such a bias, but the magnitude of the difference between the shares of individual incomes of the upper income deciles of Bogota and Cali is well within the possible range of error that is attributable to inadequate stratification.<sup>1</sup>

Yet even if the data are accepted as presented (without revision for underreporting of property income) the distribution of income in the urban Colombian economy appears quite unequal. Comparative data

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<sup>1</sup>The upper decile's share of individual income averaged about 51 percent for the four samples taken in Bogota between December 1963 and September 1964. After the population was stratified according to the results of the 1964 census this figure fell to an average of 43 percent. There is, of course, considerable sampling error in the estimates of the share of the upper decile. There is also somewhat of an upward bias in this estimate in that the income totals are based on the assumption that average earnings within each income cell were equal to the midpoint of the income range for that cell rather than the midpoint of the logarithms of the income range. The average income for individuals in the final open-ended income cell was arbitrarily fixed at \$7000. There were no members in this cell for the September 1965 sample. For the six samples taken after the restratification of the population according to the 1964 census the shares of the upper decile in individual incomes of employed workers were 42.4, 44.7, 43.3, 42.4, 49.8, and 41.3 percent. For the four samples preceding stratification the shares of the upper decile were 50.5, 52.8, 50.8, and 48.6 percent.

Table 16  
THE SIZE DISTRIBUTION OF INDIVIDUAL INCOME  
OF CALI WORKERS, 1965<sup>a</sup>

Decile	Percentage of Total	Cumulative Percentage
1	0.9	0.9
2	1.3	2.2
3	2.3	4.5
4	3.0	7.5
5	4.6	12.1
6	5.2	17.3
7	6.7	24.0
8	8.5	32.5
9	12.7	45.2
10	54.8	100.0

Note:

<sup>a</sup>The sample consists of employed workers only.

Source:

Centro de Investigaciones Economicas, Universidad del Valle,  
Empleo y Desempleo de la Mano de Obra en la Ciudad de Cali.

on the distribution of income for urban or nonagricultural areas are hard to come by, but what little information that does exist suggests that the distribution of income in Colombia is particularly skewed.<sup>1</sup> For example, in 1953 the upper decile of nonagricultural Puerto Rican income units (families) received some 33.3 percent of total (non-agricultural) personal income. The comparable figure for Bogota in 1965 was 40.3 percent. By comparison, the income share of the top decile of nonfarm families in the United States over the period 1950-1953 was 28.6 percent. Of the countries reporting income distributions for the nonagricultural sector, the nation with the distribution most closely resembling that for Bogota is Ceylon. In 1953 the share of the upper decile of individual income recipients in Ceylon was 43.2 percent, almost exactly the same as the 43.4 percent shown in Table 14 for the distribution of income of employed workers in Bogota. This similarity extends to the comparison of the income shares of the upper 5 percent of individual income recipients. In Ceylon the share reported for this group is 32.8 percent. The relevant figure for Bogota is 30.4 percent. Where the unit of observation is the family rather than the individual, the share of the upper 5 percent in the Bogota sample of September 1965 is 26.8 percent. The comparable figure for Puerto Rico in 1953 was 23.3 percent.

It is also important to note that the degree of skewness of the distributions of individual and family incomes is similar. By and large the pattern of more than one income recipient per family holds for families where the head of household earns a relatively large income as well as for low-income families. The great similarity between the distributions of family income by individual worker (Table 13) and family income by family (Table 15) suggests that the 1953 data summarized in Table 12 could be used as a surrogate for the distribution of family income by family unit for intertemporal comparisons if it were representative with respect to its coverage of non-labor income.

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<sup>1</sup>The figures given below for Ceylon, Puerto Rico, and the United States are those reported by Simon Kuznets, "Quantitative Aspects of the Economic Growth of Nations: VII. Distribution of Income by Size," Table 14, pp. 50-51.

I have suggested above that it is not, however, and any discussion of changes in income concentration through time must somehow cope with this problem. It should be stressed that the large difference between the income shares of the upper deciles in Tables 12 and 13 does not by itself show that the distribution of income in Colombia has become more concentrated as a result of the events of the past 15 years.

One way of using the data of Tables 12 and 13 to examine the question of change in income distribution through time is to compare the changes in real income levels for each income decile.<sup>1</sup>

In most respects the data of Table 17 conform astonishingly well to the conclusions of Section III of this Memorandum. If the upper decile is ignored the distribution roughly separates itself into three groups: the first, second, and third (lowest) deciles show declining real income; the fourth, fifth, and sixth deciles show an average increase of about 1-1/2 percent per year in real income; and the seventh, eighth, and ninth deciles show an average yearly increase in real income of nearly 4 percent. The very low average family income for the lowest decile in 1965 reflects the high incidence of unemployment. The 1953 figures are apparently based on a sample of employed workers. The 1965 figures are based on a labor force sample. This asymmetry is probably not an important source of bias since the level of urban unemployment was very low in 1953. Although the mean real income for the lowest half of both the 1953 and 1965 distributions is virtually identical -- \$181 in 1953 and \$182 in 1965 -- it may be argued that the proportion of the labor force enjoying no increase in average real wages is less than the 50 percent figure suggested earlier. In considering this argument two points must be kept in mind. First, the 1965 data are for Bogota alone. The 1953 data come from the seven largest cities of Colombia. Since wages in Bogota are higher than the urban average,

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<sup>1</sup>The figures for 1953 were obtained by inflating the reported decile means by the change in the urban cost-of-living index between 1953 and 1965 and converting from a monthly to a weekly basis. I have assumed that the appropriate way to make the latter conversion is to divide by four. I have assumed this on the grounds that this is likely to be the practice of most interviewees.

Table 17  
 AVERAGE REAL FAMILY INCOME BY DECILES, 1953 AND 1965<sup>a</sup>  
 (1964 prices)

Decile	Mean Weekly Family Income of Urban Workers, 1953	Mean Weekly Family Income of Bogota Workers, 1965	Rates of Column (3) to Column (2)
(1)	(2)	(3)	(4)
1	\$ 105	\$ 62	.59
2	146	130	.89
3	186	179	.96
4	209	234	1.12
5	260	306	1.18
6	288	356	1.24
7	334	500	1.50
8	424	600	1.42
9	549	873	1.59
10	962	2150	2.23

Note:

<sup>a</sup>The distributions being compared are the distributions for family income per worker given in Tables 12 and 13. They are not distributions of family income by family unit. Since this distribution involves double counting, the figure for average family income per worker will be larger than the actual mean family income. For the Bogota sample the ratio of mean family income per worker to mean family income per family is 1.23.

there is a slight upward bias in the estimates of changes in income by deciles. Second, the proportion of workers employed in the modern or semi-modern sectors of the economy is far higher in Bogota than in the nonagricultural economy as a whole. The finding that one-third of workers in Bogota were earning real incomes that were the same as the income levels of 1953 is perfectly compatible with the supposition that half of all nonagricultural workers had had the same experience.

The problem of the non-compatibility of the figures for the top deciles of the 1953 and 1965 distribution remains. In the absence of better information on the distribution of non-labor income and differences in changes in labor income by occupation over time, any statement as to what has happened to the income share of the top 5 or 10 percent of nonagricultural income units must remain little more than a guess. If the estimates of labor income share given in the national accounts are reasonably accurate, my guess is that the share of these upper-income groups has either remained unchanged or has declined slightly. Property income as a proportion of total personal income outside agriculture has probably declined. It is very likely that a large part of this change reflects lowered rates of return to investment in the traditional sectors -- and hence lowered incomes to individuals in the middle of the distribution of income rather than its upper tail. Nevertheless, I suspect that the increase in the ratio of labor income to value added that is observable for modern manufacturing is also characteristic for the modern economy as a whole. The experience of individuals in the upper income decile with respect to relative wages is even more problematical. Wages of the very highly trained appear to have kept up with average wages in the modern sector and increased with respect to wages for the entire nonagricultural economy. Wages for the semi-professional have probably grown at a lesser rate. The guess here is that the upper income decile's share of labor income has increased slightly. The labor income share of the top 5 percent of income units has probably increased by a somewhat greater proportion.

If by "increased inequality" in the distribution of income is meant an increase in the share of the upper 5 or 10 percent of all income units, there is little evidence that the recent growth experience of Colombia has resulted in increased inequality in the distribution of income. If the relevant ordinal unit is the top 25 or 50 percent of income units, the distribution of income in urban Colombia has clearly become less equal. The groups that have gained relatively the most are the skilled and semi-skilled workers in the modern portion of the urban economy who make up the seventh, eighth, and ninth income deciles. The annual average rate of growth of real incomes for these groups over the last fifteen years has been substantial -- perhaps as high as 4.5 percent -- but their absolute level of income remains low. The mean of the seventh decile of the distribution of family incomes in Bogota in 1965 was only 368 pesos per week (about 27 dollars). The mean of the seventh decile of the distribution of individual incomes was 193 pesos (14 dollars) per week.

## VII. THE RELATIVE SCARCITY OF LABOR SKILLS

The above discussion has stressed the importance of changes in the distribution of labor skills over the labor force and the monopolistic structure of labor and products markets in contributing to the recent pattern of income distribution. The question remains as to whether certain of the changes in the relative wage pattern have resulted from differences in the time rates of shift of supply and demand for different skill classes of labor. Further, are these occupational wage drifts providing us signals that should be used in restructuring the pattern of inputs into education?

The fact that data on wage rates by occupation have been collected systematically only since 1963 limits this sort of analysis severely. The period for which we possess usable wage data is a period in which the rate of growth of output -- and the derived rate of growth of demand for labor -- was sharply reduced relative to the experience of the preceding decade. The average real rate of growth of nonagricultural output between 1962 and 1966 has been estimated as about 5.1 percent. Between 1958 and 1962 nonagricultural output grew at an annual average rate of about 6.4 percent. For the longer period 1951-1962 the average growth rate of the nonagricultural sector was a more modest 5.6 percent. The falling off in the rate of increase of demand for labor was probably even greater. In modern manufacturing, the only sector for which annual employment data are available, employment increased nearly 18 percent between 1958 and 1962. Between 1962 and 1966 employment in manufacturing increased only 3.1 percent. At the same time the supply of workers with industrial or technical training has been mounting rapidly. The number of graduates of the SENA vocational programs over the 1962-1966 period was two-and-one-half times the number graduated between 1958 and 1962. The number of university trained people also increased rapidly, the expansion of the supply of engineers being particularly noteworthy.

The period for which we possess wage data thus appears to be differentiated from the decade of the 1950s with respect to the relative growth rates of supply and demand for most broad skill-classes of labor. The increased rate of domestic inflation since 1962 is another important differentiating factor since differences in the institutional structure of the labor markets applicable to the various skill groups have resulted in differences in the extent to which particular wage rates have been tied to changes in the cost of living. A further complication arises from the fact that the incidence of self-employment is particularly high for certain occupational groups. A circumstance of excess supply that might manifest itself in terms of increased unemployment (with unchanged real wage) of one group could result in reduced real wages (with unchanged measured unemployment) for another. Even abstracting from these difficulties it is not clear that the picture of relative wage changes given in Section IV is sufficiently clear to warrant any firm conclusions as to relative skill shortages. The occupational stratification of the data for the Bogota samples is not clear-cut with respect to skill levels, and the data from private industrial wage surveys apply only to the most modern segment of the economy. I suspect that the latter data are unrepresentative in a number of respects. The very large firms possess information about only the wage structure of the most modern sector of the economy, not the entire market. In general they attempt to maintain their wage position within this sub-market and, in the absence of supply deficiencies, try to retain much the same relative wage structure through time. In such a market environment changes in wage structure are likely to result primarily from union bargaining objectives that are largely unrelated to relative scarcity phenomena. Unorganized white-collar workers will likely find their wages augmented by about the same proportion as the average increase secured by the organized semi-skilled or skilled workers ("to keep the wage structure from getting out of line"), and the relative differentials between large-firm wages and average wages for the total market for various skill levels or occupations are likely to change at different rates. In particular, I suspect that in recent

years the industrial wage survey data give an upwardly biased estimate of the rate of increase of wages of the unskilled blue-collar and semi-skilled white-collar groups.

Relative wage data are thus not only limited to a very short -- and somewhat unusual -- period of time but their significance as to relative supply scarcities is ambiguous. For these reasons I have felt it necessary to seek information as to gluts and shortages of labor skills in the form of the opinions and experiences of individuals who were actively involved in labor market institutions -- personnel managers, university deans and vocational school administrators, and labor union officials.<sup>1</sup> The impressionistic character and questionable representativeness of this kind of information limit its usefulness, but in the case of Colombia it is really the only kind of information we possess about excess labor supplies and demands prior to 1963. Such information also provides the setting that is necessary for a better understanding of the data for the later period.

The most important -- and the most widely held -- of these opinions is that there are virtually no labor skills that are currently in excess demand in the urban labor markets in Colombia. The only skill class in short supply in all markets is that of high-level management. Except for managerial personnel, skill shortages in Colombia appear to be highly localized (for example, an alleged shortage of mechanics in Cartagena) or highly specific as to skill (for example, maintenance mechanics for a species of machine unique to one firm in Colombia). To be sure there are various reasons for doubting that personnel

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<sup>1</sup>These "opinions and experiences" were obtained through interviews in the four major cities of Colombia: Bogota, Medellin, Barranquilla, and Cali. The sample of organizations visited included thirty-six manufacturing firms, nine universities, twenty-one government and quasi-public agencies, and four financial institutions. Although the sample makes no claim to be statistically representative of the entire labor market, considerable care was taken to secure a sample that reflected a wide variation of experience with respect to nationality of management, the kind of technology employed, size of work force, and degree of organization of the labor force. There were no small semi-craft firms in the sample, although the representatives of one organization that was interviewed, the Caja Agraria, claimed to be able to describe the characteristics of that part of the labor market that applies to such firms.

conditions are quite as favorable to the firms as the above statement implies. There is much grumbling about the quality of labor -- skilled blue-collar, supervisory, and high-level technical manpower. There is also a strong tendency to economize on highly skilled manpower by utilizing it in common with others (obtaining engineering skills from equipment suppliers, parent firms, or correspondent firms) or employing substitutes (utilizing individuals with small educational attainments but substantial experience in marketing positions). Nevertheless the evidence is overwhelming that, given the current rate of growth of aggregate demand and current managerial opinion as to the optimal skill mix of the work force, the supply of labor at current wages of every skill class but high-level management is more than sufficient to meet current demand. By skill class I mean a conglomeration of occupations whose skill requirements are sufficiently similar to imply that a member of that skill class can be trained to perform the functions of another member of that class within an acceptably short time.

This state of generalized excess supply of skilled labor is a relatively new phenomenon in Colombia. When large-scale foreign investment in Colombia resumed after World War II, the investing firms often felt it necessary to import virtually all skilled manpower -- even down to the level of bulldozer operator. Since then the domestic supply of labor of intermediate and high-level skills has increased dramatically. Enrollment in public vocational schools increased from 19,400 in 1951 to 38,900 in 1957 and 71,100 in 1963.<sup>1</sup> The national apprenticeship program (SENA), which began in 1958, now graduates over 40,000 students per year.<sup>2</sup> University enrollments increased almost fourfold since 1951 while the proportion of this enrollment that was attached to the technical faculties other than medicine (engineering, natural sciences, and agriculture) almost doubled, reaching some 45

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<sup>1</sup>Dieter K. Zschock, Manpower Perspective of Colombia, Industrial Relations Section, Department of Economics, Princeton University, 1967, p. 97.

<sup>2</sup>SENA, Division of Human Resources, mimeo., 1967.

percent in 1964.<sup>1</sup> In spite of this great increase in supply of skilled personnel, the demand for skilled workers and university trained technical personnel remained difficult to satisfy through the 1950s and early 1960s. The best evidence for this is the high rates of labor turnover for these skill groups. The wage relatives for these groups probably increased, but the evidence for this is very weak, particularly so in the case of skilled blue-collar workers.

This state of affairs seems to have changed rather abruptly in 1963. The sharp curtailment of industrial investment coincident with the monetary and foreign exchange crisis of that year brought with it a sharp cutback in the rate of hiring of professionals and skilled workers. At the same time the supply of skilled manpower continued to increase as university and SENA enrollments expanded. Since then the supply of technical manpower (with the possible exception of industrial engineers) appears to have been as large as or larger than the demand for it. The excess graduates have resolved their employment problem in most cases by taking jobs for which they are nominally over-qualified or jobs in the public sector that are not competitive with respect to salary.<sup>2</sup> The latter phenomenon underscores the dangers of using wage surveys that embody only the experience of large firms as evidence of relative skill scarcities. The larger firms in general hire only from the most prestigious faculties. The demand for engineering graduates from schools such as the Universidad de los Andes or the Universidad Industrial de Santander is currently quite brisk, and the real wages paid such graduates appear to have grown at a rate that is similar to the average of all industrial workers in recent years. The fortunes of the technical graduates of lesser qualification do not appear to have been so favorable. The phenomenon of a greatly increased intra-occupational spread in wages appears in its most exaggerated form for law school graduates.

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<sup>1</sup>Zschock, p. 103.

<sup>2</sup>Although the unemployment rate for college graduates is undoubtedly higher now than in the 1950s, the absolute rate remains fairly low. See Slighton, Urban Unemployment in Colombia, p. 32.

Because of the limited physical mobility of skilled blue-collar workers, the relative scarcity of workers of this class differs somewhat from city to city. Cali and Medellin seem somewhat better served than Bogota or Barranquilla in this respect because of a firmer tradition of public vocational education. The current sufficiency -- and in some cases glut -- of trained mechanics and electricians in the largest urban areas appears to be largely the result of the dramatic increase in the number of graduates of the SENA programs. There is no question but that SENA has had an enormous impact on the market for middle-level skills. In certain markets it has created a supply of skilled workers where none existed before and remains the sole source of supply. Yet, although the SENA program is essential to continued industrial expansion in Colombia, there is a strong need for a continuing re-evaluation of its program with respect to the distribution of course offerings and quality of finished product. The crisis phase of the development of a supply of skilled blue-collar workers is over. The need now is to secure a better fit between the patterns of enrollment and demand (for example, fewer automobile mechanics) and to upgrade course quality.

Opinions of SENA within industry differ widely. Many employers are simply grateful that its training facilities exist. Others complain about the quality of SENA graduates, although most are in agreement that SENA-trained workers are more capable than the older generation of journeymen who have not gone through any sort of formal training program. The commonly expressed preference for workers with public industrial school backgrounds appears to be less the result of dissatisfaction with the technical competence of the SENA graduate than the feeling that such workers were relatively deficient with respect to the level of their "general" education. Given this current quality of graduate -- and given the current level of aggregate demand -- it would appear that there is something of a surplus supply of certain of the skill types that SENA trains. The evidence for this is not totally impressionistic. SENA itself gathered information on the employment experience of its graduates in a sample survey carried out in the summer of 1965. These results have never been released, but the unemployment

ratio among the graduates who were sampled was allegedly quite high. It was certainly so in the one sub-sample for which I have been able to obtain information. Although SENA does not compete with a well-established public vocational education system in Barranquilla, the proportion of SENA graduates who were unemployed in that city in 1965 was 28 percent.

The relative extent of excess supply apparently differs widely by skill area within the various urban labor markets. Part of this relates to the fact that almost all educational institutions have limited information as to relative employment opportunities and are less sensitive than they could be in adjusting curricula to match changing market needs. It should be pointed out, however, that the persistence of labor gluts in a particular field is not by itself evidence of bad planning by the supplying institutions. The distribution of supply by skill area is a joint function of institutional policy and student demand, and student choice of profession often does not appear closely attuned to relative market conditions. SENA officials complain that their students pay no attention to warnings that employment opportunities in a given field are likely to be very limited or to suggestions that relative wages are particularly attractive in another area. The student census carried out in 1966 by the Planning Office of the National University in Bogota is somewhat ambiguous with respect to the indications it gives concerning the motivation for career selection, but it gives scant comfort to those who expect relative market conditions (employment availability and income expectations) to play an important role in the selection process.<sup>1</sup>

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<sup>1</sup>According to the unpublished results of this survey nearly 80 percent of the nearly 3000 students who were sampled declared that they had chosen their career field because of "natural inclination." In so doing they rejected salary expectations, working conditions, and advice of friends or other professionals as alternative explanations. The students in six faculties (engineering, medicine, economics, psychology, statistics, and physics) were sampled. Only the engineers felt that their field would provide better salaries than alternative professions. In the other faculties nearly half of the students who were questioned felt that their salary expectations were worse than in other fields.

Although opinion is nearly unanimous that there is currently an excess of supply of virtually all skill groups, it is also virtually unanimous in suggesting that individuals with particularly good qualifications (in whatever occupational group) find no difficulty in obtaining employment. More significantly, most observers seem to feel that salary differentials paid to such workers has been increasing. This points up a particularly important aspect of the current labor market. Many, if not most, of the users of labor are taking advantage of current labor market conditions to upgrade the quality of their labor force. This fact is important to an understanding of why it is that the phenomenon of excess supply is critical to an explanation of recent changes in the average real wage but does not appear as relevant in explaining changes in wage structure. Differences in relative scarcity of the various skill classes have not been resolved through changes in relative wages but by changes in the absolute skill requirements for employment within any given occupational class. This change has taken many forms. An obvious reaction to excess supply is to hire only from the best sources. Graduates with supplementary foreign training will be hired before graduates whose experience is strictly local. Graduates from the prestigious universities will supplant the graduates of the second-rate institutions. Graduates of an industrial secondary school will be preferred to those who have only completed the shorter SENA apprenticeship program. Less obviously, many firms are raising the absolute educational prerequisites for employment in a given skill class. This phenomenon is most marked for semi-skilled workers in the modern sector of the economy, the employment class where the excess of labor supply over demand is relatively greatest. Whereas five years ago the general educational requirement for employment in modern manufacturing was not likely to have been higher than the primary school certificate, many firms now require two or three years of secondary education for all workers. A few firms whose production operations cannot be routinized now even require that production trainees be secondary school graduates.<sup>1</sup>

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<sup>1</sup>It should be noted that these firms have experienced a rate of labor turnover in these positions that is phenomenal by Colombian standards.

It is also common to find increased educational requirements for supervisory personnel. In the past, production supervisors (foremen) have typically been recruited from the blue-collar labor force, but many firms are now hiring secondary school graduates or college drop-outs and training them specifically for such positions. A similar upgrading of the educational requirements for office or administrative chiefs of section is evident. Whereas these positions have commonly been filled by individuals with no more than a secondary school certificate who worked through the ranks, some firms are now redefining them as "executive" jobs and establishing a university degree as an educational prerequisite.

This trend toward an upgrading of the educational requirements embodied in a given job title is not simply a response to a situation of excess supply of most skill classes. It also represents a change in managerial perception of the way in which labor enters into the production process. These changes in the educational requirements embodied in various job titles should remind us that the demand for labor of a given skill class is not simply a reflection of aggregate demand. As technology changes (technology in the broad including managerial practice) the rate of growth of the demand for various labor skills will change even in the absence of a change in the rate of growth of aggregate demand. By and large it appears that the more highly educated the management the greater the relative demand for skilled and highly skilled manpower. This preference represents a perception of the relative productivities of alternative labor skill mixes rather than a cultural bias, and although anything like "proof" of the rightness of this perception is hardly available it can be observed that the firms taking the lead in upgrading the quality of their labor force have typically amassed impressive growth and profit records.

Most of the professionally trained management in Colombia believe that the educational system is creating a supply of skilled manpower that is greater than the demand but less than the need. The critical determinant of the future demand for skilled manpower (for any given level of aggregate demand) is thus the kind of management that will be typical of the firms in the modern sector. At the moment only a very

small segment of the Colombian urban economy is managed by men who perceive a high productivity premium in the adaptability to new situations or further educability of a labor force that has received considerable education. The trend among professional management is to accept this point of view, however, and the trend in Colombian management is either for family control to be exercised with increasingly professional expertise or for non-family management to be given ever greater authority.<sup>1</sup>

The chief bottleneck today to the expansion of "professionalism" in business management is probably the limited capacity of the educational system to train management specialists. The supply of formally trained management specialists is small and less than current demand.<sup>2</sup> This is the one important skill class that is not currently in excess supply. In the past the demand for such individuals has been small, and it is more this fact than any inherent inertia on the part of Colombian educational institutions that explains the current thinness of supply. The rapidly increasing demand for management specialists can probably be ascribed to a number of factors. One is the higher level of educational attainments of the younger generation of "owner-managers." Another is that many Colombian businessmen have served their managerial apprenticeships in foreign firms. The increasing complexity of the typical Colombian business operation itself creates a further need for professionalism in management. Improvements in

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<sup>1</sup>I am not sure that it is possible to give an adequate definition of "professionalism" or "professional management." The essence of what I am trying to identify with such words is the habit of constant re-examination of the profit-making possibilities of the firm. Typically this will involve the acquisition of sufficient technical expertise to permit re-evaluation of production processes in light of changes in technological opportunities, a non-passive attitude toward product and market development, and a strong concern for the possibilities of increasing administrative efficiency through specialization.

<sup>2</sup>The undergraduate faculty of business at the Universidad del Valle may dispute this assertion on the grounds that it has had some difficulty in placing all of their graduates. I suspect that this difficulty will disappear quickly once the high quality of this faculty is more widely publicized outside Cali. In both Bogota and Medellin the demand for management specialists does not appear to be satisfied.

transportation have widened markets and exposed local monopolies to the threat of competition. The technology of the industries created in the surge toward import substitution is more complex than in the older industries and -- more important -- it is more subject to change. The growth of a union movement that is increasingly "professional" in its bargaining techniques has also created a demand for a new type of management specialist.

The demand for skilled and highly skilled labor derived from a given increment in aggregate demand is thus likely to grow. But this is essentially a long-term phenomenon. In the short run, skill shortages are simply not an important bottleneck toward achieving an accelerated rate of growth.

### VIII. CONCLUSION

The basic conjecture examined in this Memorandum is the prediction that the inequality of the distribution of income will increase if growth of the modern sector is retarded after the transition from agrarianism to the dual economy is begun. The available data for Colombia are quite consistent with this hypothesis. Although direct measurement of changes of income distribution in Colombia is not possible, the indirect evidence is very strong that the inequality of the distribution of wages outside agriculture has been widening in Colombia over the past fifteen years or so. Most of this change appears explicable in terms of a dual economy hypothesis. Wages in those sectors that are characterized by modern, changing technology have been growing rapidly relative to wages in the low-productivity sectors where technology is largely static. The effect of changes in relative wages in widening wage income inequalities has been magnified by the fact that employment in the craft subsectors (and unemployment) appears to be growing more rapidly than employment in the modern subsectors.

There are a number of possible explanations for the widening of the wage differential between the modern and traditional subsectors of the nonagricultural economy. One reason is the emergence of a stronger differential in the level of effective education between individuals whose cultural background is rural and those who have grown up or lived for some time in the cities. The human capital created by formal vocational training and -- more important -- through on-the-job training -- has not been distributed equally over the population. Except for individuals with a very high level of formal education, the recent migrant finds it almost impossible to obtain employment in the very modern sector of the urban economy. To obtain access to employment in the modern economy today demands either formal education beyond the primary level (vocational or secondary training) or a substantial apprenticeship in those sectors of the economy that are technologically transitional. The urban-bred or long-term urban residents have much greater access to these opportunities. It is very

important to remember that the simple fact of employment in the very modern sector creates human capital in the individuals so employed. The on-the-job training (mostly informal) that such employees receive greatly augments their productivity relative to employees in the traditional sectors. Part of this increased productivity is simply the result of workers having grown accustomed to the demands of the "industrial system" with respect to punctuality and teamwork.

A second important reason for the increase in the inter-sectoral wage differential is market structure. Most producers in the modern sector of the Colombian economy produce under terms of partial monopoly. By and large the supply of labor to these producers is offered monopolistically, and wage rates are set in the context of bilateral monopoly. Monopoly and partial monopoly in selling arise from high rates of tariff protection or outright prohibition of importing items produced locally and the small size of the local market in relation to efficient plant sizes. Monopoly in labor supply arises out of union activity. Although there are no reliable data on union membership in Colombia, it is comparatively rare to find a firm within the modern sector of the economy whose workers are unorganized. The various unions differ radically in their nature, however, some partaking of the characteristics of "company unions."

Partly because of the ability of modern firms to collect monopoly profits the profit rate in the modern sector of the Colombian economy is relatively high. My own calculations suggest that the profit rate before taxes in modern manufacturing was at least 30 percent in 1964 and probably was closer to 40 percent.<sup>1</sup> Faced with opportunities for

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<sup>1</sup>By "profit rate" I mean the ratio of value added less total labor costs and depreciation to the sum of fixed capital (valued in terms of replacement cost), inventories, and that part of working capital not financed by accounts payable. If there is no long-term fixed debt this will be the rate of return on equity. I have used DANE data for value added; labor cost; and investment in plant, equipment, and inventories. The estimates for the fixed capital stock were obtained by cumulating DANE figures for gross investment on a revised version of the CEPAL estimate of the value of the fixed capital stock in manufacturing in 1953. The revision in this case consisted of reducing the CEPAL

monopoly profit, the modern sector has found it possible to accommodate to vigorous and well-organized wage bargaining and (in certain cases) to gratify the paternalistic urge to do well by its workers. The result is that the wages of many if not most unskilled and semi-skilled workers in the modern sector contain an important element of monopoly rent. For such workers the job is a valuable property right.

The importance of monopolies in the supply of labor in influencing the wage bargain is further amplified by the continuing shortage of imports. For many firms, the effective determinant of production and employment is the availability of imported intermediate goods. In this circumstance the marginal value productivity of labor at the current limit of productive capacity is indeterminate, and the range of wage rates that represent feasible solutions to the bargaining process is widened.

Market structure is also important in explaining differences in the abilities of the modern and traditional sectors to maintain their relative price position in the context of the generalized inflation of recent years. Wage bargaining in the modern sector is definitely linked to changes in the price level. Employers appear to be reluctant to offer (or unions to accept) a wage package that calls for an increase in money wages that is less than the increase in the cost of living. In the traditional sectors the phenomenon of rapid price changes has to be understood in conjunction with the phenomenon of gradually increasing excess supply in real terms. Employment in these sectors has been

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estimate by 33 percent. All data had first been expressed in terms of 1964 investment-good prices. Depreciation was assumed to be 5 percent of the annual stock. Even so the marginal capital/output ratio implied by these assumptions is only 0.8. Given these assumptions the average before-tax profit rate in 1964 was slightly more than 30 percent. Without revision of the CEPAL estimate and with the assumption of an 8 percent depreciation rate, the marginal capital/output ratio over the period 1953-1964 implied by the DANE data for manufacturing is actually negative. The implication is rather strong that the official data understate investment (and profits). This is also the consensus of the accounting profession in Colombia. If it is assumed that actual investment is 33 percent higher than reported (and profits are higher by that absolute amount) the average profit rate in modern manufacturing in 1964 was about 40 percent.

sustained by declining real wages and increased underemployment of the self-employed. In the modern sector the pressure to maintain real wages in the face of stagnant aggregate real demand has stimulated a fuller exploitation of the monopoly pricing powers of producers.

Increased inequality in income distribution has also resulted from differential rates of growth of employment in the modern and traditional subsectors. In recent years this difference has increased. The evidence is quite strong that average personal income in real terms fell slightly during the period 1963-1966. Although official figures are not yet available, I think it doubtful that the trend has reversed itself in the last two years. This decline has mainly resulted from the slowing down of the growth of employment in the modern subsectors of the economy. The proximate cause of this slowdown is Colombia's limited access to foreign exchange.<sup>1</sup> As of now, constraints in the form of limited supplies of labor skills do not appear to be important. The foreign exchange constraint has its origin in the shift of Colombia's terms of trade that resulted from the break in coffee prices in the mid-1950s and in the excessively indiscriminate policy of import substitution and the "disequilibrium" system of quantitative controls that has been the official policy response to that price break.

The wage changes in the modern and traditional sectors have contributed to the continuing existence of the import constraint in several respects. First, although the quantitative magnitude of wage pressure in the dynamics of inflation is not known, it is fairly clear that wage pressure in the modern sector has contributed heavily to the momentum of the general inflationary sequence. The continuing price increases have eroded the relative international price effects of the spasmodic increases in the nominal exchange rate, and the exchange rate has thus been persistently overvalued. Second, the wage drift between the modern and traditional sectors has increased the political

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<sup>1</sup>See J. Vanek, Estimating Foreign Resource Needs for Economic Development, New York, McGraw-Hill, 1967.

costs of pursuing an exchange rate policy that gives an adequate incentive for the growth of new exports and the orderly substitution of existing imports. A policy of progressively increasing the exchange rate to keep pace with the rise in unit labor costs in the modern (export) subsectors will almost inevitably lead to some quickening of the rate of increase of domestic prices. The price increases will imply a reduction of real wages in the traditional subsectors where money wage rates are growing slowly. The more rapid the wage drift the greater the rate of devaluation and the greater the rate of decrease of the share of the low-income traditional subsectors in total labor income. The dilemma of the policymaker is quite evident. It will be exceedingly difficult to impose a wages policy if the rate of growth of real output per worker in the modern nonagricultural sectors does not increase. Yet it will be politically difficult to secure the permanent increase in foreign exchange availability that is needed to achieve that higher growth rate if exchange rate policy is not supplemented by a wages policy that aims at controlling the intersectoral wage drift.

The question remains as to whether the recent changes in income distribution in Colombia reflect economic processes that are common to most countries in the initial phases of the transition from agrarianism to maturity. My suspicion is that the Colombian experience is qualitatively typical but quantitatively extreme. In a dualistic economy there is likely to be a strong tendency toward wage drift between the modern and traditional sectors. The pressures of collective bargaining, the unequal distribution of human capital -- either from increased dispersion in the distribution of the formal educational attainments of the work force or learning by doing -- and the increased wage premium for labor of very high quality all conspire to create a push in that direction. This wage drift is consistent with a stable distribution of income only if employment in the modern subsectors grows more rapidly than the total labor force. If the rate of population growth is high, the capital and skill requirements for such a rate of growth will be extremely large and difficult to attain

even if the government is fortunate in its choice of economic policies and even if foreign lending is carried out on a large scale.

The Colombian situation is somewhat extreme in two respects: the capacity to import is less today than it was ten to fifteen years ago, and the rate of population growth is very high. If the rate of population growth is controlled, if export (hence import) capabilities are developed, and if the quality of the labor force is upgraded such that the difficult passage from dualism dominated by traditional sectors to dualism dominated by modern sectors can be made, the pattern of increased income inequality will probably be reversed. Even in Colombia there is some evidence that income dispersion within the modern subsectors has decreased somewhat through time, and it is this phenomenon that has been most characteristic of economies that have reached or are approaching economic maturity.