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ECONOMIC GROWTH CENTER

YALE UNIVERSITY

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CENTER DISCUSSION PAPER NO. 137

SOME DETERMINANTS OF CHANGING INCOME DISTRIBUTION
IN COLOMBIA: 1930-1970

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March 22, 1972

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IN COLOMBIA: 1930-1970

A. Berry

A. Evidence on Trends in Income Distribution from Point of Time Studies

As has been pointed out elsewhere, despite the fact that several useful studies of personal and family distribution of income in Colombia have been carried out at various points of time, it is difficult to use them in analysis of over time changes in income distribution,¹ because of differences in methodology, different availability of data, etc. The most detailed study--by Urrutia and Sandoval--refers to 1964, and reports that the top five percent of income earners received about 28 percent and the bottom 50 percent received about 13-14 percent.²

¹See Miguel Urrutia, "Reseña de los Estudios de Distribución de Ingresos en Colombia" Revista del Banco de la Republica, #508, Febrero, 1970.

²See Miguel Urrutia and Clara Elsa de Sandoval, "La Distribución de Ingresos Entre los Perceptores de Renta en Colombia--1964," Revista del Banco de la Republica, Julio 1970. The validity of this study receives support from the substantial similarity of the results achieved by Charles McClure in his study for the Musgrave tax commission report, using an independent methodology.

To exemplify difficulties of comparison, mention may be made of a third study, almost contemporaneous with the two just cited, and one which is interesting from a number of points of view, even though its basic objective was not to estimate an income distribution; it was carried out by the Ministry of Health, (see Ministerio de Salud Pública, Estudio de Recursos Humanos Para la Salud y la Educación Médica en Colombia, Bogota, Asociación de Facultades de Medicina, 1968). A comparison of CEDE and Ministry of Health data for Bogota indicated to Urrutia (see Miguel Urrutia, "Reseña, op. cit.") that underestimation of incomes in the Ministry study averaged close to 40 percent. The Ministry of Health distribution suggested greater inequality, possibly due to heavy understating on the part of the low income people. Since the average income assumed for the Ministry's top income category (which was open-ended in the study itself) came from CEDE estimates, understating there would not influence the differences between the two.

The most recent income distribution estimates (DANE, "La Distribución de Ingresos en Colombia," Boletín Mensual de Estadística #237, April 1971, p. 57) seem to be substantially comparable to the Urrutia-Sandoval urban figures, but appear to suffer from a severe underestimation of agricultural and rural incomes (perhaps 30-40 percent) so that the distribution estimated for that sector and

B. The Probable Worsening of Distribution, 1930s to early 1950s: Evidence

A quite speculative guess might be that distribution (always very bad) worsened from say 1930 until perhaps some time in the early 1950s. A number of factors were probably working in this direction, and not fully offset by such factors as tended to operate in the opposite direction. We consider them in turn.

I. The small but increasing size of the non-agricultural sector, with its substantially higher average income than that of agriculture.¹ As of 1945, the average income in agriculture was probably about 35-40 percent of that in non-agriculture; in 1935 it was perhaps 30-35 percent.² In 1964, the agricultural personal income distribution had about the same degree of inequality as the urban

Footnote 2 continued from page 1.

for the total economy are not comparable with the 1964 figures.

The first two attempts to rough out some information on distribution of income, by the World Bank mission headed by Lauchlin Currie in 1949 (International Bank for Reconstruction and Development, Bases for a Development Program in Colombia, Baltimore, Johns Hopkins, 1950 and the ECLA study (United Nations, Analysis and Projections of Economic Development: The Economic Development of Colombia, United Nations, Geneva 1957) carried out in the early 1950s both limited themselves to presenting average incomes for broad groups, within which the distribution would presumably be quite skewed; as a result they are not comparable with later more detailed studies. The ECLA study did report that the 4.6 percent of families paying income tax received 40.6 percent of total income--the top 5 percent of families might therefore have received 41 to 43 percent if those figures were accurate (see discussion in Urrutia, Reseña, op. cit., p. 181). A number of factors would have to be taken into account to compare such a figure with those of the later studies, e.g., (a) when a group not specifically defined as the 4.6 percent with the highest incomes has 40.6 percent of all income, then the top 4.6 percent must earn more than the indicated percent; (b) the distribution is by families whereas most of the subsequent ones are by persons; (c) there was probably some underestimation of total income in the ECLA study. Comparison with the current national accounts series suggests an underestimate of at least 10 percent; if the income of taxpayers was correctly measured, their share of total income might then be about 10 percent less than suggested by the figures taken directly. (Of course there is plenty of doubt as to whether the tax based income data would be accurate in the first place.)

¹For a discussion of the relevance of the relative size of the two sectors for changes in distribution, see A. Berry, "Déterminants Generales de Cambios en la Distribución del Ingreso Durante el Proceso de Desarrollo" mimeo 1971.

²See A. Berry The Development of the Agricultural Sector in Colombia, Ch. I, forthcoming.

one when unemployed persons were included in the urban labor force.¹ It is probable that the family distribution was more unequal in agriculture; this is suggested by the fact that when the unemployed were excluded from the urban labor force, that distribution was less unequal than the agricultural one; since evidence suggests that a good share of the urban unemployed are members of relatively well-off families, it may be more appropriate to exclude them in making the comparison.²

→ Since the agricultural income distribution appears to have been worsening substantially over the period in question, whereas there is less evidence to that effect (see below) in the case of the non-agricultural distribution, it may therefore be speculated that the agricultural one was less skewed 30 or 40 years ago than the non-agricultural one. If this was the case, the gradually increasing share of people in the non-agricultural sector would be expected to worsen overall distribution both because of the difference in average incomes of the two sectors and because of the greater inequality per se in the non-agricultural distribution.

2 The evidence of slower income growth for unskilled labor than for other groups, especially in agriculture. (This factor partially overlaps the one just discussed.) Between 1935 and 1968, average income per capita in agriculture probably rose by about 150-175 percent while the daily wage in agriculture appears not to have risen at all. (In 1938 the landless or nearly landless group

¹ See Albert Berry y Alfonso Padilla, "La Distribución de Ingresos Provenientes de la Agricultura en Colombia, 1960" in DANE Boletín Mensual de Estadística #234, Enero, 1971, p. XXI. The measure of inequality was the Gini coefficient. The urban distribution data on which the comparison is based are from Urrutia and Sandoval "La Distribución de Ingresos," op. cit.

² "Appropriate" in the sense that the income distribution is being thought of partly as a proxy for the "potential consumption" distribution. Even though these white collar unemployed may have no income their consumption may be relatively high.

accounted for 47.5 percent of the total agricultural labor force; in 1951 it was 55-57 percent.)¹ Whereas income per capita rose rather systematically over the whole post 1935 period, wages were lower in 1950 than in 1935 (have bottomed out in the early 1940s); they did increase 15-25 percent over the post 1950 period, less than income per capita but not so dramatically less.

While wage statistics are scarce on the non-agricultural sector before the 1950s, it appears that in manufacturing, at least during the late 1940s and early 50s, the distribution of labor income was worsening; a comparison of the 1945 and 1953 industrial censuses suggests that between those two years average blue collar wages rose by about 25 percent while average white collar wages were increasing by a phenomenal 100 percent.² The rapid growth of manufacturing during these years, and the particular focus on import substitution would be expected to contribute towards such a redistributive impact (see below). Such a comparison (white collar vs. blue collar wages) cannot be made for the universe of manufacturing firms before 1945; data from the firms reporting to DANE during the period 1936-1942 (between 400 and 1,000 according to the year) suggest

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This figure includes family helpers in 1951; whether it does in 1938 is unclear but it seems probable; when they are excluded the figures are of course lower. Perhaps the most relevant ratio which can be derived from the census data is "obreros/employers + independent farmers + obreros." This was 50.5 in 1951 (excluding people not reporting their occupational position); the comparable figure for 1938 is not deducible from the census, since family helpers (assuming they are included at all) are not separated from paid workers. If the family helper/paid worker ratio had been constant between the two years, the above indicator would have been about 43 percent in 1938. Since a number of obreros are sons who will inherit land, these ratios overestimate the percent which might be thought of as a "permanently landless class." Further, most of them have some land, so the line defining "landless" and "landed" is a rather arbitrary one.

The percentages referred to for 1951 appear not to have changed significantly in subsequent years.

² See Albert Berry, "Trends in Real Wages in Colombian Manufacturing and Construction," forthcoming. Note that this figure does not mean that white collar earnings rose by 100 percent for a given occupation. There was undoubtedly an upgrading of average education and training of the white collar workers in this period. (The number of engineers and certain other professionals probably rose markedly). Still the increase for the representative occupation must have been substantial.

approximately a 5 percent increase in real wages for blue collar workers and a 10 percent decrease for white collar workers.¹ This would be consistent with a pattern where the period of a rapidly widening white collar-blue collar differential began after World War I. This phenomenon was, as is well known, reversed beginning some time in the early or mid 1950s.

The movement of average wages of government employees (a category so heterogeneous² that it is doubtful that it can be given much interpretation) is somewhat different (see Table 1); like that of white collar workers in manufacturing, it seems not to have been increasing in the years preceding the end of World War II; a five year moving average of wages for all levels of government rises moderately over the succeeding decade (1945-55) and more rapidly in the following years. The movements are different for the different levels of government, in particular the national government wage series moves rather differently from those of the other two levels.³ One interesting subgroup, the primary school teachers underwent real wage declines during World War II, a rough constancy till some time in the early 50s, then a rather rapid increase. Both this subset of government workers and the category as a whole probably have substantial non-market elements in the determination of their wages, with the result that these

¹See Ibid.

²It includes professionals, teachers, police, street sweepers, and a host of other categories.

³The figures here probably understate the real increase through failure to take adequate account of the increase in prestaciones sociales. Moving averages are used since nominal wages tend to change in steps in the government sector, with the result that real wages fluctuate rather violently and probably do not reflect short run market phenomena.

TABLE # 1

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Real Wage Indices (Five Year Moving Averages) of Government Employees				
Year	National Government	Departmental Government	Municipal Government	Weighted Average of three Government Levels
	(1)	(2)	(3)	(4)
1941	86.13	75.94	58.00	76.43
1942	86.18	75.41	57.38	76.11
1943	88.83	73.65	56.26	76.24
1944	91.13	70.93	54.74	75.77
1945	89.69	68.85	55.50	74.52
1946	90.43	67.31	58.44	74.78
1947	93.63	67.84	61.44	76.88
1948	95.32	68.21	61.92	77.80
1949	93.54	69.04	63.60	77.75
1950	91.48	77.76	66.34	80.96
1951	89.16	80.90	68.28	81.68
1952	88.38	81.74	69.04	81.86
1953	88.82	84.04	74.26	84.00
1954	91.66	85.88	79.10	86.84
1955	95.76	80.00	80.50	86.40
1956	98.54	80.58	81.84	88.02
1957	98.94	81.64	85.10	89.25
1958	100.50	83.68	87.56	91.18
1959	101.14	87.40	89.44	93.30
1960	102.16	94.36	95.64	97.74
1961	106.38	99.10	101.36	102.46
1962	107.89	104.1	103.22	105.44
1963	108.07	108.12	106.01	107.68
1964	110.43	108.54	108.25	109.24
1965	109.93	108.08	109.39	109.08

1/ Middle year of the five year period.

Sources and Methodology for Table 1.

The source for the nominal wages on which the data of this table are based is, in the majority of years, the Anuario General de Estadística. For years in which information could not be found in the Anuario data from the publication Estadísticas Fiscales y Administrativas was used. The published data (in both cases) gave the total wage cost and the number of permanent employees. Various types of bias may come from assuming that the ratio of these two figures measures the wage rate, as for example when in different years a different share of the wage bill goes to temporary workers; also it is true that the apparent noninclusion of fringe benefits in the labor cost data introduces a negative bias over time, since fringe benefits have been an increasing share of total remuneration.

To convert the nominal figures to real ones the following indices were used; (1) 1954-63: the national white collar cost of living series was used in the case of the municipalities and departments and the corresponding Bogota series to deflate the national government salary series (given that a large part of the national government employees live in Bogota). (2) 1946-54: the Bogota white collar cost of living series was used (no national series was available over this period). (3) 1937-46: a blue collar Bogota cost of living series was used; not even a Bogota white collar series was available during this period. It is clear that the methodology used to convert the nominal salaries to real ones can introduce a variety of weaknesses in the series.

do not follow too closely general wage trends for people of comparable skill.¹

In the construction sector data are scarcer and more difficult to interpret. Nevertheless a rather clear hypothesis emerges from a comparison of the scattered data on unskilled construction worker wages with the agricultural wage figures. (See Table 2.) It appears, over the long run, that (a) a relatively close relationship has prevailed between the two series, and (b) that there has been a wage differential in favor of the urban (unskilled construction) worker; thus in the late 30s the typical daily wage of a peon in Bogota appears to have been 20-40 percent higher than the daily wage of peons in the agricultural regions near Bogota (compare Cols. (1) and (4), Table 2.²

The relationship appears to have become inverted in the early 50s with the agricultural wage slightly higher, perhaps in part a result of the violencia. The typical long run differential then reappeared in the late 50s and since, fluctuating between 10 and 25 percent; it appears to have narrowed in the last five years, perhaps due to a showdown in building, or perhaps to increasing efficiency of the labor market.

Some uncertainty attaches to this interpretation due to the fact that the

¹A comparison with industrial wages suggests that an above equilibrium component of government employee salaries may have been rising, but serious consideration of this hypothesis would involve careful disaggregation of both groups.

²Udall's study of the Bogota labor market indicates that average construction worker wages (not just obrero raso) rose about 23 percent during 1937-1963-4; over this period Cundinamarca agricultural wages rose 35-50 percent and those in Boyaca by about the same amount. (See Alan Udall, Migration and the Labor Market; Bogota, Colombia, Yale Ph.D. dissertation in progress.

wage figures presented in Col. (1) for 1935-1942 are public sector wages, while the post 1950 figures refer primarily to the private sector; in any case these Bogota public sector unskilled construction wages bore a fairly consistent relation to the Cundinamarca agricultural wages over the 1935-1942 period; the real construction wage showed no measurable change while that in agriculture fell a little.¹ No figures are available between 1942 and 1950, but if it be assumed that the recorded public sector wages for the 1932-1942 period corresponded to the same skill level (or more generally to the same labor market) as those of the 1950-1970 series (not exclusively or even primarily public sector), then it would be concluded that the real wage fell by about 20 percent (from an index of 75 to one of 61) over the period.² (Meanwhile the Cundinamarca agricultural wage rose by 28 percent, about the same in cool climate regions as in the hot zones.) (Thus the suggested 1935-50 wage movement clearly fits a "worsening distribution" pattern.

Over the period 1950-71, real wages of unskilled workers rose by perhaps

¹The figures indicate that both unskilled construction workers and agricultural workers suffered declines in real wages in the late 30s, after increases in the early 30s when prices were falling rather rapidly, but it seems probable that during both these periods the market was in disequilibrium; the rising real wages of the early 30s were probably associated with increasing employment problems, so that in a more general sense there may have been no increase in real income, conversely the decrease in the measured real wage probably was accompanied by improved employment possibilities and is therefore a misleading indicator when taken by itself.

²Deflating by the Bogota blue collar/cost of living series.

50 percent in Bogota, with the increase rather concentrated in the period 1958-1965, Udall's figures, together with those of Table A-1, suggest that the period 1936-1955 was one of no increase, a pattern more extreme than that in manufacturing, but apparently part of a similar long run pattern.

For the country as a whole, unskilled construction wage series are unavailable before 1950. A less close relationship between construction and agricultural wages would be expected at the national level due to different regional weightings for the two occupations, etc. It is worth noting that the evidence available for the post 1950 period is consistent with a rather close tie.¹ In view of this, it seems rather unlikely that the country-wide average unskilled construction wage differed markedly from that for Bogota over any extended period, especially since the two agricultural wage series have quite parallel movements.² Consequently, it seems probable that construction wages in general suffered a decline in the 1930-50 period as a whole, or at least the 1935-50 period.

For Bogota Udall's figures on wages in commerce fit the general pattern

¹As of 1971 (1st semester) wage differences across cities were not dramatic (see Table A-2), which indicates that 7 of 10 cities sampled had average "helper" wages in the range 18.5-20.7 pesos per day and all but Cali (affected by the Pan American Games) had average "official" salaries between 25 and 35 pesos per day. It seems probably that regional differences were greater in earlier years when geographic mobility was more limited just as agricultural wages varied more by department in earlier years).

²It may be noted also, in connection with stability in wage structure that construction workers apart from the unskilled "obrero raso" category appear to have received about the same extent of wage increases as that group; the wage structure in the industry therefore has not altered much at least as say, as can be judged by Bogota data.

Table 2

Unskilled Construction Wages in Bogota, Compared to Other Selected Wage Series (all wages expressed in daily terms)

Unskilled Construction Workers: Bogota	(1)	Agricultural		Agricultural		Unskilled Workers		Construction Workers		Unskilled Construction Workers	
		Salaries: Cundina-marca	Salaries: Cold Climate, Cundina-marca	Salaries: Colombia	Salaries: Fenecia	(Peones)	Peones	Helpers	Peones	Helpers	Peones
		(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
1935 (.80)											
1936 (.75)											
1937 (.93)											
1938 (.94)		.60	0.60		1.06	1.30	0.90	0.93			
1939 (.96)		.60	0.60	0.74	1.00	1.37	1.00	0.94			
1940 (.95)		.80	0.80		n.a.	1.44	1.08	0.96			
1941 (.94)		.80	0.90	0.78	1.00	1.60	1.20	0.95			
1942 (.92)		0.65	0.60	0.71	1.28	1.68	1.35	0.94			
1943		0.60	0.60	0.72	1.12						
1944		0.90	0.80	0.73	1.03						
1945		1.05	1.00	0.94	1.00						
1946		1.50	1.50	1.09	1.20						
1947		1.75	1.50	1.25	1.87						
1948		1.85	1.70	1.62							
1949		2.05	2.00	2.02							
1950 2.24		2.50	2.30	2.03							
1951 2.34		2.90	2.60	2.52							
1952 2.45		2.70	2.40	2.84							
1953 2.50		2.95	2.55	2.81							
1954 2.74		3.42	2.90	2.92							
1955 2.93		3.67	3.25	3.27							
1956 3.98		3.92	3.35	3.46							
1957 4.30		4.37	3.90	3.54							
1958 5.01		5.05	4.50	3.89							
1959 6.00		5.25	4.75	4.55							
1960 6.50		5.90	5.25	5.00							
1961 7.60		6.50	5.80	5.51							
1962 8.50		7.10	6.55	6.29							
1963 10.20		9.15	8.40	6.92							
1964 12.55		10.10	9.75	8.99							
1965 15.00		11.65	11.60	10.60							
1966 16.00 ^a		13.72	12.60	11.28							
1967 17.00 ^a		15.67	14.20	13.17 ^c							
1968 18.00 ^a		16.80	14.50	14.07 ^c							
				14.82 ^d							

Table 2 (continued)

Unskilled Construction Workers: Bogota	Unskilled Construction Workers: Country	Agricultural Salaries: Cundinamarca	Agricultural Salaries: Cold Cundinamarca	Agricultural Salaries: Colombia
(1)	(2)	(3)	(4)	(5)
Year				
1969 19.00 ^a		18.50	17.22	17.00 ^e
1970 20.00 ^a				
1971* 21.57 ^f	20.3 ^b			

- Interpolated by guessing.
- Bogota value times .9431, estimated from Table A-2.
- DANE, Anuario General de Estadística, 1966-67.
- Interpolated (in the absence of access to the correct figure) taking into account an estimate of the change in the real agricultural wage between 1967 and 1968.
- DANE, Boletín Mensual de Estadística #240, p. 32; equal weight was given to cold and hot regions.
- 20.39 + 1.5 without fringe benefits for those benefits.

*First semester.

Sources and Methodology: For the years 1950 to 1958 the series is based on unpublished data kindly supplied by Robert Merrill; for subsequent years the lower figure of the CAMACOL series and the ICT series was chosen. In certain years in which ICT was paying the minimal wage, the CAMACOL figures were lower still and the assumption is that the market wage was in fact below the minimum wage at those times. In the last years the CAMACOL figures have been above those of ICT and also above figures suggested by data from CEDE, DANE, and experts in the field; for that reason we have accepted the ICT figures for 1965, 1966, and 1967. (It would be possible to verify more completely the consistency with the CEDE data during 1963-1966 if we knew the educational distribution among the unskilled workers, but we do not.) Cols. (3) and (4) are based on DANE information published in the Anuario General de Estadística and/or the Boletín Mensual de Estadística. For Col. (3) the cold and warm regions of Cundinamarca were weighted equally in the calculation.

Col. (5) comes from Berry, "The Development..." op. cit., Ch. 3, through 1965. (The original sources are the two just cited.) The specific sources for the subsequent years are cited in the footnotes.

Cols. (6) to (9) are from Table A-1.

Table 3

Selected Real Annual Wage Series (1958 prices)

Year	Construction		Manufacturing		Commerce		Maids	
	Unskilled Construction Workers	Artisan Manufaturing	Plants of < 5 Workers*	Plants of < 10 Workers	Establishments of < 5 Workers	Food & Beverage Stores with Sale of < 100,000 per Year (1967 pesos)	(Index: 1958 = 100)	(7)
	(1)	(2)	(3)	(4)	(5)	(6)		
1950	1091							
1951	1048							
1952	1122							
1953	1067	2517		2320				
1954	1075				1900-2700	1070		
1955	1138							
1956	1463		2390					
1957	1353							
1958	1378							100
1959	1540							
1960	1606							
1961	1727							
1962	1884							
1963	1713							
1964	1793	3129						
1965	2071							
1966	1843		2820-3080	2800-3060				
1967	1810				2900	1680		130
1968	1810							
1969	1735							
1970	1708							

* Adn less than 24,000 pesos output.

Sources and Methodology:

Col. (1) is based on the nominal wage series of Table 2, deflated to 1958 prices and assuming 275 days paid per year. Col. (2) is from Miguel Urrutia and Clara Elsa Villalba "El sector Artesanal en el Desarrollo Colombiano" Revista de Planeacion y Desarrollo, Vol. 1, #3, October 1969.

Cols. (3) and (4) are calculations by the author, making use of John Todd's correction factors for the year 1966 (to offset a bias introduced by DANE's methodology in the years since 1962). See John Todd, Size of Firm and Efficiency in Colombian Manufacturing, Yale Ph.D. dissertation in progress.

Cols. (5) and (6) are based on the commerce censuses of 1954 and 1967 respectively. In Col. (5) the 1954 estimated range is preliminary; data are not fully comparable between the two censuses. The estimates of Col. (6) are from A. Berry "Unemployment as a Social Problem in Colombia: Some Preliminary Hypotheses and Interpretations" mimeo, p. 98. Col. (7) is from Alan Udall, "Migration and the Labor Market, Bogota, Colombia" Yale Ph.D. dissertation in progress.

precisely; he finds a decrease between the years 1936 and 1954¹ and a subsequent rather sharp increase to 1963-64.² Maids wages in Bogota, according to Udall, rose rapidly over 1936-1945, fluctuated around the 1945 level till around 1950 when a sharp dip appeared followed by a recovery which however only brought the wage up to its 1934 level around 1958, after which time a substantial percentage increase has occurred, amounting over 1958-67 period to more than 25 percent.³

Data from the 1954 and 1967 commerce censuses suggest that these wages rose, in some cases very substantially and perhaps overall somewhat more than either small firm wages in manufacturing or unskilled construction workers. Real wage changes in these latter two categories (over roughly the same period) were about 20-30 percent [1953 to 1966] and 50-60 percent [1950 to 1970] respectively while in small scale commerce they appear to have been 20-40 percent (1954 to 1967). (See Table 3).

To summarize, the information for agricultural wages, blue collar manufacturing wages, construction wages, and commerce wages all show small or no increases from some point in the 30s to some point in the 50s. Maids' wages in Bogota (the weakest series in terms of methodology) are a partial exception--according to Udall's figures--depending on the particular period chosen. White collar workers in manufacturing and government both showed moderate or rapid increases at least over 1945-1955, suggesting a widening of the overall white

¹The 1936-54 change is open to some question both because of the small sample in both years and possible differences in the definition of "small," but also because of the fact that Udall had to assume the same ratio of average wages to average incomes in the two years, the two pieces of data apparently only being available together in 1954. (See Udall, op. cit.).

²For 1963-64 Udall used wage data from CEDE's unemployment surveys.

³Udall obtained an observation every 2-4 years since 1945, based on classified advertisement data; although the methodology leaves room for some doubt, it is consistent over time. It is more doubtful that the calculated change over 1936-45 is accurate since the sources of information were different. One might speculate that Alfonso Lopez' social legislation had some impact on these wages though it would be surprising if a money wage series would catch much of it.

collar-blue collar gap.¹ There appear during this period to have been a labor surplus phenomenon in a number of sectors with the corresponding downward impact on wages. As already seen in the above discussion, this is in contrast to the events of a subsequent period (beginning some time in the early 50s and extending to some time in the early or mid 60s, according to the sector) during which the blue collar wages rose rapidly and white collar-blue collar gaps were narrowed. This period is discussed in more detail below.

Though empirical information on capital incomes is scarce, theory and some observation would suggest that the import substitution policy begun in the 30s, but reaching substantial proportions especially after the war, raised these incomes in manufacturing (and commercial agriculture to some extent) and led to greater inequality of the distribution of labor incomes. As just discussed, this latter phenomenon showed up, for example, in the increasing ratio of white collar to blue collar incomes in manufacturing after World War II; the import substitution policy was probably one factor working in this direction. Information on the capital share is shaky. In manufacturing it appears not to have changed much between 1944-45 and 1953; in 1953 the labor share of gross value added (at factor cost) appeared to be a little over 30 percent (28.7 percent using DANE's upward biased value added figures--not all of purchased import was subtracted out in DANE's calculations of value added); a rough estimate based on data kindly made available by David Chu suggested a not very different labor share in 1944-45.² In agriculture an increase does appear to have occurred (the labor share seems clearly to have been falling) though it is unclear how much of it was associated with import substitution.

C. Possible Improvements in Distribution Since the Early Fifties

Since some time in the 50s while conclusions as to which way distribution

¹The fact that white collar workers were (and are) a minority of the total labor force, but a growing one, would lead one to expect this increasing inequality (e.g., in terms of the Gini coefficient) even in the ratio "white collar/wage/blue collar wage" did not rise; the same reasoning is involved as explained in the

(Footnotes continued from previous page)

context of the agriculture to non-agriculture structural shift over time and its impact.

²Import substitution was occurring during the war as well as after it-- in the former period it was a result of the restrictions on world trade associated with the conflict. One might not therefore have predicted any increase in the capital share in industry during this period but rather over say 1935-1950. Further, it must be noted that the overall capital share increasing impact of import substitution might have occurred primarily through changes in the relative size of different sectors, e.g., a decrease in relative importance of agriculture (which had at that time a relatively high labor share) and an increase in that of industry.

has been shifting remain speculative, the weight of evidence would appear to suggest an improvement. Factors probably working toward equalization (of one sort or other) are:

(1) the spread of primary education (very much associated with the phenomenon of urbanization). Whereas in 1936 probably less than 40 percent of the 7-11 age group was attending school, by 1950 this ratio reached 47-52 percent and by 1968 about 80 percent.

On the other hand the spread of university education, and secondary as well, would be expected to have, on balance, inequality increasing effects; the GINI coefficient of the number of years of education changed--from about in 1938 to 0.59 in 1951 and to 0.84 in 1964 (for men 15-59 years). It is not true of course, that a year of education has the same income increasing effect regardless of the level. Table A-4 shows for Bogota (1966) how salaries of men varied with educational level and age; taking a rough average age, one observes that the average year of university raises the hourly wage by 1.70 pesos, that of secondary (academic) by 2.00, and that of primary by 44 centavos. The first year of primary raises income by 50 centavos. It is clear, then, that a year of education is worth more at the secondary and university levels than the primary.¹ At the same time the percent increase in income effected by a one year increase at each level is

To Primary 1: about 25 percent

To Primary 5: about 120 percent over 5 years or a geometric average of about 17 percent

Primary 5 to
Secondary 6: about 290 percent (less for people under 30), a geometric average of about 25 percent

Secondary 6 to
University 5-6: about 60 percent (less for people over 35) or a geometric average of about 9 percent per year.

¹The differentials just quoted could be different after appropriate normalization for age and other relevant factors, but probably not greatly so.

If everyone's education in years were to increase by the same percent between two points of time, (except for the highest education category, complete university) the Gini coefficient of male labor income in urban areas would rise, at least for small or moderate percentage increases. (A 10 percent percentage increase would, for example, raise the Gini coefficient from .40 to .42.)¹

As observed below, the capital share increased consistently since 1950; so a better or even unchanging distribution of it would be expected to work towards improving the overall distribution. In fact the distribution of human capital share has probably worsened.

(ii) Capital accumulation per se, which unless the elasticity of substitution is greater than one, may be expected to increase the labor share. (There is no convincing evidence, however, that the long run elasticity of substitution is below one, analyses of this question are only now beginning.)

(iii) The declining importance of import substitution as the easier stages are completed,² so that domestic demand and exports begin to account for a larger share of the output increase.

Factors probably pushing in the other direction are:

(i) the increasing commercialization of agriculture probably has been the major factor in worsening the distribution there. In this and other sectors the labor saving bias of technological change has doubtless tended to worsen distribution.

¹Where Bogota wage figures (as a function of amount of education) are applied to the educational breakdown for the urban areas as a whole. Precisely comparable figures are not available.

²Import substitution has, of course, moved into more and more complicated branches of production. But the monopoly profits associated with the newer branches may be less than those associated with earlier ones; even if they were the same, some of the earlier monopoly profit rates have probably been bid down, and the average rate thereby decreased. Once again, this conclusion is essentially speculative. Average age specific fertility and gross reproduction rates for women was less than 1/2 as high where family income is 30,000 pesos and up where it is less than 3,600 in 1965-6. (See Ministerio de Salud Publica y Ascofame, Hechos demograficos, Table 28). Meanwhile there was evidence that these differences had not been as wide in the past. Number of living children was only slightly higher for the lowest income class (5.1), that the highest (4.8); this small difference is presumably due in part to the higher child death rate of poorer mothers--a differential which is undoubtedly diminishing--and in part to the fact that the difference in age specific birth rates as a function of income were smaller in the past than in the present.

(2) Widening dispersion of blue collar labor incomes in manufacturing--and possibly other sectors--as large size firms become more important in total output and wages paid.¹ This increasing size phenomenon may help to maintain or increase the concentration of capital incomes, although this is less clear.

(3) Widening differences in family size as between wealthy and poor.² By 1965 this difference was quite substantial; it appears probable, although data is not readily available, that there was less dispersion of family size in earlier decades. This trend may be starting to reverse itself by now.

Factors whose impact is unclear include:

(i) The changing importance of monopoly; as noted above, the importance of monopoly related to the import substitution process may well have decreased. But it is less clear whether a comparable overall decrease in the "monopoly profit share" of national income has occurred.

(ii) The changing share of income from asset appreciation. The share of non-reproducible assets (land especially) in total capital may have moved up or down and its tendency to appreciate may also have undergone change, but data

¹It was observed earlier that the white collar-blue collar differential in manufacturing has decreased substantially in percentage terms, favoring decreasing inequality. There has probably been increasing inequality in the blue collar industrial labor force, and possibly in the total labor force. No over time estimates have as yet been carried out.

²Average age specific fertility and gross reproduction rates for women was less than half as high where family income was 30,000 pesos as where it was less than 3,600 in 1965-66. (See Ministerio de Salud Publica y Ascofame, Hechos demograficos, Table 28.) Meanwhile there was evidence that these differences had not been as wide as in the past. Number of living children was only slightly higher for the lowest income class (5.1) than the highest (4.8); this small difference is presumably due in part to the higher child death rate of poorer mothers--a differential which is undoubtedly diminishing--and in part to the fact that the difference in age specific birth rates as a function of income were smaller in the past than at present.

are not adequate to ascertain such movements.¹

(iii) Urbanization. At the start of the 50s (1951) something less than 40 percent of the population was to be found in urban areas (defined as centres with 1,500 people or more) and even less in towns of some size. By 1964 a little over 50 percent of the population was so classified and by 1970 about 56 percent.² Since at the start of the period the distribution of income in agriculture was probably less uneven than that in the urban areas, and the urban population was smaller than the rural, migration may have had a distribution worsening effect. Toward the end of the period, by which time a minority of the population was in rural areas and distribution (at least in agriculture) was worse than in the cities, the opposite might have been the case.³

D. Functional Distribution of Income Over Time

It is easier to construct historical series on functional distribution than on personal or family distribution, and since the two may be expected to bear a rather close relation, this is a useful exercise. The basic distinction usually made is between labor income and capital income--where the former includes all payments (and imputations, if the calculation is a sophisticated one) to labor. Within labor income it is often of interest to distinguish the part accruing to "human capital" and within capital income the "rentier share" i.e., the income corresponding to the holding of assets whose management requires no

¹Note that in any case asset appreciation income is not included in the national accounts; the subsequent discussion of functional income therefore excludes it. This leads to a downward biased estimate of the capital share.

²See DANE, Encuesta de Hogares, 1971.

³The fact that many large income earners from agriculture have always lived in cities complicates this analysis, however, since the rural distribution may have been better than the urban one throughout the whole period; in that case the distribution improving impact of migration would be more in doubt.

or almost no effort, and income from those whose management does require such effort. Another way to phrase this distinction is as between assets whose holders perform no social function and those whose holders do; the former might be called "renter income." The assets usually corresponding most closely to the latter concept are absentee held land, and other real estate (apartments, urban land, etc.).

We turn first to a discussion of the apparent movements of the labor share. In the analysis of changes in income distribution over time, three "labor shares" are of particular interest: (a) the share of national income paid to people in return for their services (paid labor share); the total labor share, i.e., the paid labor share plus the imputed income of the self employed corresponding to their labor inputs and (c) the pure labor share, i.e., the share of national income corresponding to basic labor services as distinct from the additional income related to services which are based on education and learned skills. Unfortunately the paid labor share is, from a conceptual point of view, the least interesting of the measures but it is the only one for whose calculation data are fairly readily available. That part of income which accrues as a result of holding capital, either physical or human, is the complement of the pure labor share, so in some contexts it is the most interesting labor share. But since certain institutions, such as primary universal education, may imply that the distribution of human wealth is less unequal than that of physical wealth, and, since in any case it tends to have different determinants, the total labor share is also of considerable interest, as the complement to the physical capital (including land) share. The paid labor share is of interest primarily in that it constitutes a first step in the measurement of the other two.

As seen in Table 4, the paid labor share of gross domestic product (at factor cost) ranged from about 32 to almost 39 percent over the period 1950-1969 and showed a general upward trend. The share of estimated net domestic product (at factor cost) rose from 34.2 to 42.5 percent.¹ While there are undoubtedly errors in these figures, they are probably not so serious as to throw into question the clear increase in the paid labor share. This is especially true when account is taken of the fact that the indirect tax share has risen slightly over the period--this category never accrues either to labor or to capital. Although part of the increase in the paid labor share during this period was associated with increases in specific sectors, in particular manufacturing, transportation and in smaller degree a couple of other sectors, agriculture (the largest single sector) showed a substantial decline so that the net effect of intrasectoral changes in the share was less than one point, (i.e., with the 1950 sectoral distribution of value added and 1967 labor shares within each sector, the overall paid labor share (of G.D.P.) would have risen only from 32.0 to about 32.7.) Most of the increase was associated with the intersectoral shifts, especially towards government, banks, etc., and construction. During the latter part of the period the decrease in the share of agriculture² also contributed, since by that time its labor share was well below the overall

¹As observed in the sources and methodology to Table 4, it is widely believed that the national accounts overestimate private sector depreciation, and by an increasing amount over time; this, by itself, would imply that these figures are upward biased (other data being correct) by an increasing amount; on the other hand, no account is taken in the national accounts of public sector depreciation, which could have been increasing over time.

²In agriculture the decline in the labor share is associated with the advent of commercial agriculture whose share in total agricultural production (including livestock) rose from about 7-10 percent in 1950 to about 18-24 percent in 1967, (in 1958 prices), where commercial agriculture is defined as including cotton, rice, sugar, for refining, barley, sorghum, soybeans, sesame, 50 percent of wheat output and 10 percent of the production of corn and potatoes.

Table 4

Paid Labor Share of Value Added at Factor Cost, by Sector, 1950-1969

Year	Agricul- ture (1)	Fishing & Hunting (2)	Silvi- culture (3)	Mining (4)	Manufac- turing (5)	Construc- tion (6)	Commerce (7)	Transpor- tation (8)	Communications (9)
1950	27.4	9.0	24.9	34.7	27.47	73.0	18.3	35.8	54.7
1951	27.4	9.7	30.6	31.2	28.3	75.5	18.3	36.2	53.7
1952	25.7	9.8	29.2	27.5	29.5	74.1	18.3	35.6	50.4
1953	26.0	9.8	30.5	31.5	30.1	73.1	18.3	37.2	51.0
1954	23.7	10.7	30.5	32.6	30.8	71.8	18.3	37.0	52.6
1955	25.4	11.6	31.5	34.1	32.4	71.97	18.3	37.3	54.3
1956	22.9	11.6	32.1	33.8	32.7	72.2	18.3	33.9	50.5
1957	20.9	13.8	32.9	29.6	34.0	71.2	18.3	37.3	53.7
1958	21.6	13.7	31.1	23.3	34.8	72.0	18.3	39.0	50.7
1959	22.0	11.2	30.2	26.4	35.0	71.3	18.3	38.7	50.9
1960	23.0	12.1	30.1	26.8	34.85	72.28	18.32	43.79	50.2
1961	23.6	14.4	30.6	27.0	36.2	72.1	18.3	45.7	60.5
1962	24.6	13.9	30.2	33.0	36.3	71.4	19.5	47.8	57.4
1963	25.8	16.3	30.9	34.5	36.5	73.6	18.3	46.3	62.1
1964	22.1	15.6	33.7	38.8	38.1	73.8	18.3	46.8	55.8
1965	24.9	17.9	32.0	35.0	38.1	74.4	18.3	48.4	55.4
1966	23.4	21.9	31.4	39.1	37.8	75.6	18.3	49.8	58.2
1967	23.6	18.3	29.1	41.0	38.93	77.41	18.3	47.9	57.2
1968	22.0	13.4	28.2	34.1	40.1	78.1	21.5	43.7	55.5
1969	22.7	11.6	27.0	34.7	39.9	81.1	21.7	45.3	55.9

Table 4 (continued)

Year	Electricity, Gas, Water	Personal Services	Services Government	Bank Insur- ance & Real Estate	Total Paid Labor Share of Gross Domestic Product at Factor Cost	Basic Estimate (14)	Alternative Estimate (15)	Paid Labor Share of Net Domes- tic Product	Paid Labor Share of G.D.P. in Non- Agriculture
	(10)	(11)	(12)	(13)	(14)	(14)	(15)	(16)	(17)
1950	34.0	48.0	100.0	48.9	31.99	31.99	36.01	34.20	34.78
1951	26.5	48.2		48.5	32.24	32.24	36.2	34.69	35.23
1952	28.6	48.6		44.6	31.77	31.77	35.5	34.23	35.54
1953	26.2	48.6		45.9	32.57	32.57	36.2	35.05	36.49
1954	27.0	48.7		45.8	31.98	31.98	35.5	34.29	47.27
1955	26.2	49.0	" "	49.3	33.68	33.68	37.2	36.39	38.45
1956	24.8	49.9		48.6	32.50	32.50	35.7	35.19	38.19
1957	26.6	49.1		55.1	31.71	31.71	34.7	35.14	38.39
1958	26.9	49.6		58.0	32.24	32.24	35.3	36.90	38.41
1959	29.4	50.9		54.8	32.72	32.72	35.6	36.97	38.52
1960	29.2	50.74	" "	58.7	33.78	33.78	36.7	37.80	39.19
1961	32.0	49.6		60.8	35.04	35.04	37.9	38.84	40.42
1962	31.3	51.3		64.0	36.66	36.66	39.5	40.58	41.96
1963	43.9	49.0		63.5	37.27	37.27	40.2	41.36	42.10
1964	39.2	48.9		64.5	36.17	36.17	38.3	39.54	42.01
1965	37.7	49.0	" "	65.0	36.34	36.34	39.2	39.84	41.34
1966	36.3	50.1		65.9	36.74	36.74	39.4	40.49	42.38
1967	37.9	47.8		67.7	37.68	37.68	39.6	41.52	43.82
1968	36.6	47.7		67.6	37.02	37.02	39.5	40.76	43.63
1969	35.1	58.6		66.2	38.66	38.66	41.2	42.42	45.37

Sources and Methodology - Table 4

For all sectors with the exception of agriculture the figures represent the national accounts datum "payments of labor" related to gross domestic product at factor cost, with all figures in current pesos. The labor payment figure includes salaries, bonuses, commissions, and other forms of income in money or specie calculated before the deduction of personal charges for social security. Payments to people habitually residing in other countries are excluded while those received by nationals but paid by other countries are included. Employer contributions to social security are included. There is no imputation for the labor income of self-employed. (See Banco de la Republica Cuentas Nacionales 1950-1967, p. 7.

The national accounts figures appear to be reasonable for most of the sectors, though estimates are particularly difficult to effect in agriculture and some of the smaller sectors. The author's estimate in an independent study of wage shares in agriculture indicated a paid labor share of 23 percent in 1960 as opposed to the 31.8 percent given in the national accounts. Both estimates have substantial elements of the arbitrary in them, in particular estimates on days worked per year, etc., and they are only partially independent of each other. The difference, however, lies in the fact that the national accounts estimate of the total paid labor force in agriculture is higher than my own, due to their including all workers classified in the population censuses as working for someone else plus a portion (one-half) of the independent workers. While it is indeed true that many independent workers also earn income as laborers, it seems clear on the other hand that some of the population classified in the census as workers hold small farms from which a part of their income accrues; they are not full time workers. I assumed that these two effects offset each other. The Banco estimate of the paid labor share for this sector was thus decreased in each year by the coefficient .725 (the ratio of my estimate to theirs in 1960). Since occupational structure has changed little over the period in question, it seemed fairly safe to apply the same coefficient for all years.

An independent estimate of the manufacturing paid labor share of gross value added differs somewhat (on the lower side) from the national accounts figures presented here. My figure for 1960 was 31.4 instead of the national accounts 34.9; for 1967 mine was 34.0 instead of 38.9. In commerce, the national accounts left unchanged up to 1968 the 18.3 percent estimate coming from the 1954 commerce census; the 1967 census suggested a figure of 21.7 percent; its coverage, however, appeared to be less complete than that of 1954, which might suggest a relative upward bias in 1967, since the establishments missed were almost certainly disproportionately small sized ones. Any increase presumably occurred gradually over the years. This problem is relatively unimportant in the estimation of the total paid labor share. In other sectors it is very difficult to execute independent checks. In construction it is possible that value added is underestimated and the labor share overestimated, but it is not clear whether by an increasing or decreasing amount. Overall it appears that the national accounts estimates are well within the ballpark after the adjustment made in agriculture; it would, for example, be very

Sources and Methodology for Table 4 continued

surprising if the figures were in error by more than 5 percent in the overall paid labor share figure. For purposes of comparison, Col. (15) presents the result of accepting the national accounts remuneration figure for agriculture; Col. (14) uses the author's estimates, i.e., it is consistent with all of the sectoral figures presented.

Somewhat greater doubt attaches to the estimates of labor share of net domestic product since the depreciation figures appear dubious; in the private sector they are probably biased up, but no calculation is made for public capital like roads, so the net bias is unclear. The private sector upward bias may well have increased over time (as a share of G.D.P.), but so may the public sector downward bias. A guess would be that there has been a net increase in an upward bias over time, but this result is too speculative to make it worthwhile incorporating into the calculations.

Col. (17) presents the paid labor share of G.D.P. in non-agriculture.

average. The increased share of commerce worked in the opposite direction. The paid labor share for non-agriculture as a whole rose very substantially from just under 35 percent to about 45 percent.

The increase registered in the paid labor share for the period 1950-1969 of over 6.5 percent of gross domestic product may, though it does not by any means necessarily, imply that the total labor share moved in the same direction. The increased number of large size firms and the gradual decrease in the relative importance of the family unit and of the unpaid worker (be he manager or family helper) tends, in some economies, to raise the paid labor share over time when the total labor share is not increasing; the former phenomenon (an increasing share of the labor force working for pay) does appear to have been occurring in Colombia--the share of paid workers rose from 55.4 percent in 1951 to about 58 percent in 1964 and about 60 percent in 1970¹ (see Table 5)--still there is no decrease in the total labor share of private sector income--instead there is a 3-4 percent shift in the other direction (predictly less than the increase in the paid labor share). (See Table 6). As observed in Table 6b, the increase in the total labor share is small (less than 2 percent) when related to gross national income; given the uncertainty surrounding the depreciation figures, one cannot say conclusively that an increase has occurred; obviously the opposite cannot be said either. In either case it appears that the occupational position shift is responsible for much of the increase in the paid labor share. If the average imputed wage income of people not receiving

¹The 1970 figure may be somewhat overestimated since the Encuesta de Hogares appears to have underestimated the relative size of the agricultural labor force, where paid workers are a lower share of the total than in non-agriculture. On the other hand, of three alternative estimates available two put the figure above 60 percent. So, although it might be as low as 59 percent, 60 percent is perhaps a best estimate.

Over the same years the share of the male population found in the categories "employers, independent workers, and family helpers" fell from 47.5 percent in 1951 to 54.5 in 1964 to 40-41 percent in 1970; in the non-agricultural sector the decline was from 31.97% in 1951 to 30.00 in 1964; a 1970 calculation is not yet available.

Table 5

Occupational Position of the Economically Active Population (men and women);
1951, 1964, and 1970 (percent distribution)

Year	Employers	Independent Workers	Family Helpers	All Three	Independent Workers and Family Helpers
1951	10.85	25.00	8.74	44.59	33.74
1964	8.30	25.34	8.31	41.95	33.65
1970	8.69 ^b - 8.97 ^a	22.85 ^b - 22.87 ^a	7.43 ^a - 8.53 ^b	39.27 ^a - 40.08 ^b	30.30 ^a - 31.38 ^b
MEN ONLY					
1951	12.54	25.31	9.63	47.48	34.94
1964	9.55	26.92	9.05	45.52	35.97
1970	11.04 ^a	21.90 ^a	7.92 ^a	40.86 ^a	29.82 ^a

a. Authors calculations based on the apparent expansion coefficients implied by the ratio of the regional population totals estimated by DANE (in Encuesta de Hogares, p. XIII) to the size of sample (from the Encuesta tabulados).

b. Also based on DANE's Encuesta de Hogares; presented in Boletín Mensual de Estadística #237, p. 77.

Sources: The 1951 and 1964 figures are from the population censuses of these two years. In both cases persons whose occupational position was not reported were excluded. Two estimates are presented for total labor force in 1970 due to the inconsistency between the figures deduced by the author and those presented by DANE. For men only, since DANE did not publish any estimate for the country as a whole, the only estimate available is that made by the author (a).

Table 6a

Labor Share and Capital Shares of Net National Income at Factor Cost

Year	Paid Labor (1)	Imputed Labor (2)	Total Labor (3)	Capital Income of Persons & Un- incorporated Enterprises (4)	Business Savings & Direct Taxes of Incorporated Entities (5)	Private Sector Capital Income (6)= (4)+(5)	Public Sector Capital Income ¹ (7)	Total Capital (8)
1950	34.57	28.76	63.33	33.06	3.21	36.27	0.40	36.67
1951	35.12	28.20	63.32	32.56	3.33	35.89	.79	36.68
1952	34.55	28.76	63.31	32.80	3.15	35.95	.74	36.69
1953	35.37	28.38	63.75	32.37	2.99	35.36	.89	36.25
1954	34.53	28.82	63.35	32.60	3.35	35.95	.70	36.65
1955	36.62	27.57	68.19	31.41	3.63	35.04	.77	35.81
1956	35.44	28.33	63.77	31.85	3.66	35.51	.72	36.23
1957	35.67	28.10	63.77	31.48	4.06	35.54	.69	36.23
1958	37.78	26.53	64.31	29.45	4.81	34.26	.82	35.08
1959	37.55	26.37	63.92	29.71	5.44	35.15	.93	36.08
1960	38.32	25.81	64.13	29.12	5.94	35.06	.81	35.87
1961	39.44	25.57	65.01	28.82	5.20	34.02	.97	34.99
1962	41.28	25.03	66.31	28.22	4.75	32.97	.72	33.69
1963	42.28	24.20	66.48	27.51	5.63	33.14	.38	33.52
1964	40.24	25.76	66.00	28.13	5.73	33.86	.14	34.00
1965	40.54	25.09	65.63	28.23	5.73	34.01	.36	34.37
1966	41.32	24.65	65.97	27.65	5.90	33.55	.48	34.03
1967	42.41	24.42	66.83	27.43	5.57	33.00	.17	33.17
1968	41.79	24.57	66.36	27.35	5.70	33.05	.59	33.64
1969	43.68	23.36	67.04	26.17	6.28	32.45	.24	32.69

Source: Cuentas Nacionales for the paid labor estimates, except for agriculture. (See the discussion with Table 4). Imputed labor income was estimated as follows. The share of labor force in each of the categories employers, independent workers, white collar workers and blue collar workers was calculated for 1951, 1964, and 1970 based on population census and sample information and was interpolated for the intervening years. (See Table A-4). Relative remunerations for the four categories were based on DANE's 1970 Encuesta de Hogares and CEDE, Encuestas de Empleo y Desempleo, Anexo Estadístico. These two sources were not fully consistent and more faith was placed in the latter. The same relative income ratios were assumed to hold for the whole period. It was assumed for employers and independent workers that 50 percent of their income was due to their labor input. (See Table A-6).

¹ Defined as public corporation profits minus interest on the public debt.

Table 6b

Labor and Capital Shares of Gross National Income at Factor Cost

<u>Year</u>	<u>Total Labor Share (1)</u>	<u>Capital In- come of Persons & Un- incorporated Enterprises (2)</u>	<u>Business Savings & Direct Taxes on Incorpor- ated Entities (3)</u>	<u>Private Sector Capital Income (4)</u>	<u>Public Sector Capital Income (5)</u>	<u>Total Capital Share (6)</u>
1950	59.18	37.45	3.00	40.45	.37	40.82
1951	58.80	37.38	3.09	40.47	.73	41.20
1952	58.72	37.67	2.92	40.59	.69	41.28
1953	59.20	37.19	2.78	39.97	.83	40.80
1954	59.06	37.17	3.12	40.29	.65	40.94
1955	59.38	36.55	3.36	39.91	.71	40.62
1956	58.85	37.10	3.38	40.48	.66	41.14
1957	57.46	38.26	3.66	41.92	.62	42.54
1958	56.03	39.07	4.10	43.26	.71	43.97
1959	56.47	38.50	4.81	43.31	.82	43.53
1960	57.23	36.65	5.30	41.95	.72	42.77
1961	58.56	35.89	4.68	40.57	.87	41.44
1962	59.81	35.26	4.28	39.54	.65	40.19
1963	59.78	34.82	5.06	39.88	.34	40.22
1964	60.28	34.36	5.23	39.59	.13	39.72
1965	59.77	34.68	5.22	39.90	.33	40.23
1966	59.74	34.49	5.34	39.83	.43	40.26
1967	60.53	34.27	5.05	39.32	.15	39.17
1968	60.19	34.11	5.17	39.28	.53	39.81
1969	60.94	33.13	5.71	38.84	.22	39.06

Sources and Methodology: Same as for Table 6a.

a paid wage is equal to that of those who are (an assumption not much different from that implicit in the figures of Table 6--see Table A-6), a shift of 4.5 percent of the labor force from the unpaid category to the paid would (assuming also that the group which shifts receives an average level of wages) increase the paid wage share by 4.5 percent of total income. It would thus account for the bulk of the actually observed increase of 6-8 percent (depending on whether gross or net domestic product is the base). In fact the assumption that the imputed wage of the "group which shifts"¹ be equal to the average wage of paid people is probably upward biased since this group involves in large measure farmers. At the same time it is true that the paid workers/labor force ratio rose more rapidly for men than in total; since men have higher wages and earnings than women, this factor would work in the opposite direction. Even on the conservative assumption that their average income was one-half that of other paid workers, this factor would still account for one-quarter to one-third of the observed increase; at the other extreme (if the G.D.P. figures are the more relevant base) this shift could account for 75 percent or more of the increase. But though it is conceivable that little increase occurred in the total labor share, it seems very unlikely that this could have been the case in the non-agricultural sector; the national accounts figures indicate an increase of the paid labor share between 1950 and 1969 of about 35 to 45 percent; the share of non-agricultural workers receiving remuneration rose from about 68 percent to perhaps 71 percent.² over this period, so unless the marginal group of independent workers in 1951

¹In fact, of course, it is possible that most of the change in the share of people who are paid occurs via retirements and entities to the labor force, and not by actual shifting.

²The figure was 70 percent in 1964; no estimate is yet available for 1970 so the change of the previous period was extrapolated.

who in fact had "switched" to employee status by 1964 were high in the income distribution, this switch could not be the sole factor.

How has the distribution of total labor income as between that accruing to "pure" labor and that accruing to human capital changed over time? Unfortunately, estimating the pure labor share is difficult--even in conceptual terms--in an economy with such prevalence of imperfect labor markets as Colombia's. The concept is perhaps more meaningful in agriculture, where a substantial portion of the labor force may have relatively little "human capital" but the exercise is worthwhile for the economy as a whole. One might guess, crudely, that in the period 1950-1969 the pure labor share in the system (according to precisely how one defines it and depending also on uncertainties in statistical information¹) fell by about 7-9 percent. Perhaps the most interesting series--(Col. 1 of Table 7, i.e., where the pure wage rate is assumed to correspond to that of the agricultural male (over 18 years)², indicates a decrease from 36 percent in 1950 to 28 percent in 1969. (Splicing the earlier national accounts series onto the one used here permits the calculation of the ratio for 1945-1950, during

¹As explained in the methodology of Table 7, the key wage series used here are those of agricultural workers and unskilled construction workers. As observed in Table 2 these two series bear a rather close relation to each other over time, and thus lend some mutual support to the relevance of each in measuring the (more or less) equilibrium wage of groups with little human capital. It might be argued that since the two wage rates are not identical that either (a) construction workers have more human capital than agricultural workers in which case we have upward biased changes in the pure labor share over time, or that a labor market imperfection associated with imperfect labor mobility accounts for the differential--in which case the interpretation of the pure labor share becomes cloudier. These refinements cannot be handled without more information; of course there are other interpretations of the differential, e.g., cost of living differences.

²Bogota street sweepers and other individuals occupied in jobs where minimum wage legislation can play a role cannot be used as a measure of the equilibrium pure labor wage, even though it is of course relevant that groups of people with no human capital may receive above equilibrium wage levels because of monopoly power or social legislation.

Table 7

Factor Shares of Net Domestic Income: 1950-1969

Year	Pure Labor Share		Human Capital Share		Total Labor Share	Capital Share	Paid Labor Share	Pure Labor Share	
	Est. A ¹	Est. B ²	Est. A	Est. B				Agriculture	Non-agriculture
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1945	38.2	34.87	26.68	27.81	62.68	37.32	34.20	47.85	25.37
1946	36.7	34.53	25.75	28.02	62.55	37.45	34.69	47.77	24.52
1947	38.4	33.11	28.32	29.61	62.72	37.28	34.23	43.68	24.75
1948	40.4	31.36	30.37	31.81	63.17	36.83	35.05	41.91	23.28
1949	34.7	29.90	31.30	33.00	62.90	36.10	34.29	38.49	22.71
1950	36.0								
1951	36.8	34.53	25.75	28.02	62.55	37.45	34.69	47.77	24.52
1952	34.4	33.11	28.32	29.61	62.72	37.28	34.23	43.68	24.75
1953	32.8	31.36	30.37	31.81	63.17	36.83	35.05	41.91	23.28
1954	31.6	29.90	31.30	33.00	62.90	36.10	34.29	38.49	22.71
1955	31.8	31.52	31.99	32.27	63.79	36.21	36.39	42.38	23.38
1956	30.7	33.13	32.63	30.20	63.33	36.67	35.19	37.92	28.67
1957	29.2	31.69	33.65	31.13	62.82	37.18	35.14	34.10	28.49
1958	31.2	33.91	31.61	28.90	62.81	37.19	36.90	36.38	30.48
1959	30.2	34.51	32.72	28.41	62.92	37.08	36.97	36.88	31.29
1960	29.8	33.74	33.46	29.52	63.26	36.74	37.80	37.99	29.56
1961	30.1	34.71	33.92	29.31	64.02	35.98	38.84	39.50	30.26
1962	30.0	34.94	35.18	30.24	65.18	34.82	40.58	41.34	29.88
1963	31.4	35.12	34.63	29.91	65.03	34.97	41.36	44.03	28.89
1964	30.6	35.25	34.26	29.51	64.86	35.14	39.54	39.34	30.82
1965	29.8	36.90	34.29	27.59	64.49	35.51	39.84	39.91	33.04
1966	30.1	35.36	34.54	29.28	64.64	35.36	40.49	40.14	30.63
1967	29.1	34.21	36.52	31.21	65.42	34.58	41.52	38.75	29.58
1968	27.24	32.26	37.49	32.45	64.71	35.29	40.76	35.81	28.11
1969	27.90	31.47	37.20	33.63	65.10	34.90	42.42	36.90	26.45

¹As noted above, net domestic product (income) has been a decreasing share of gross domestic product (income) over time, according to the national accounts estimates; if those estimates are inaccurate the labor shares would have risen less than indicated here, or possibly not at all (see Table 4).

Sources and Methodology for Table 7.

Estimate A is based on the assumption that pure labor income corresponded to the male agricultural wage, and that the days worked per year were 250 for everyone. This procedure has at least one upward biasing feature, the assumption that ^{the} male wage be applied to women and children (who have lower wages) and to family helpers (who probably work on average considerably less than 250 days). A downward biasing feature is the assumption of 250 days worked for everyone; the average in urban areas is higher.

For estimate B the above assumptions were applied only with respect to the agricultural labor force while the wage series for unskilled construction workers (of Table 2) was applied to the non-agricultural labor force, with the assumption of 275 days worked. Col. (5), total labor share, is based on the summation of the paid labor income (Table 4) and imputed labor income, the latter calculated as 50 percent of total income of unpaid workers (employers and own-account workers). Col. (7), presented for purposes of comparison, is from Table 4.

For Col. (8) it was assumed that net domestic income in agriculture was .95 times gross value added, and (different from Col. (1)) an adjustment was made (multiplication by the coefficient 0.92) to take account of the fact that unpaid family helpers work less than other members of the labor force and that women and children earn lower incomes (and hence presumably have lower inputs).

Col. (9) used the assumptions of Col. (2) applied to the non-agricultural sector.

which period, although fluctuating erratically,¹ it appears to have fallen a little. While there is substantial margin of error in these figures,² a gradual downward trend from something which might have been around 40 percent in the late 40s to something probably now well under 30 is hardly mistakable. It is of interest to note that the periods of rapid decline in this share have been, not surprisingly, those in which income per capita has grown most rapidly, i.e., 1945-1956 and 1967-1969. Meanwhile the human capital share has risen considerably as an increasing share of the population attains each level of education. This increase is concentrated in the two periods of rapid decrease in the pure labor share, although it continued to ease up during the slow growth period, 1957-1966. Though there are suggestions of a decrease in the rate of return to certain types of human capital over time (e.g., the decreasing ratio of white collar/blue collar wages in industry) this factor, if present, has been outweighed by the other.³ The total physical capital share (i.e., the complement of the total labor share) declined from about 37 percent in 1950 to about 35 percent in 1969;

¹Probably due in part to the lower quality of the data in this period.

²Note that there is some difficulty in the use of the national accounts income figures together with my independent estimates of employed population, which are generally greater than those used in the national accounts estimates. Since some components of the national accounts are based on average income times number of people, such estimates would have been higher had the higher population figures been used. This means that the figures presented here may overestimate the labor share at all points in time, assuming the national accounts use correct average income figures in all cases. The error implicit is not likely to be too great and the change in the bias over time even less.

³The total labor share may be decomposed alternatively into the pure labor share, the primary education share, the secondary education share and the university share; this alternative way of viewing changes over time may be of interest in terms of educational and other policies.

the share of net domestic product reaching the hands of individuals fell by about 5 percent as business savings and direct taxes on corporations rose (see Table 6).

Sectoral trends of the pure labor share are generally similar to those of the paid labor share. In agriculture the pure labor share, according to an estimate presented in a separate study,¹ was within the range 30 percent to 36 percent in 1960, having fallen from somewhere in the range 43-50 in 1950. As of 1969 the range appeared to be about the same or a shade lower. In manufacturing one could argue that a minimum estimate of the return to human capital (i.e., the part not going to "pure labor") would be the differential between the average earnings of workers in the larger firms and those in the smaller firms--the difference would be due either to human capital or to monopoly power of the laborers. Such a calculation would indicate that, as of 1964, this share was about 30 percent in factory manufacturing, i.e., about two-thirds of total labor income.²

For a full appreciation of changes in income shares of factors, one should treat capital appreciation as a form of income; usually its effects are not allowed for unless there is some marketability of the capital and are therefore not treated in the case of human capital. The ratio of appreciation of physical capital to other forms of income in the period in question has probably

¹See Albert Berry, "Land Distribution, Income Distribution and the Productive Efficiency of Colombian Agriculture," Growth Center Discussion Paper #108, 1971.

²The average wage rate in 1964 was about 12.2 thousand pesos whereas the wage rate of the smallest size group was only about 4 thousand. Note that a good deal of this human capital share goes to white collar workers. The paid labor share of gross value added in 1964 was 38.1 (see Table 4). This would be higher (say 42 percent) in the factory subsector. As a share of net value added, it would be say 46 percent. Inclusion of unpaid workers' labor income could raise it to 47 percent. Two-thirds of this is a little over 30 percent.

been in the range of 10-20 percent in Colombia.¹

Savings as a Function of Income and Wealth

Regardless of the precise accuracy of the figures of Tables 6 and 7, it is clear that the opportunity to save and to invest productively (in physical or human capital) is key to the possibility of achieving a high income level and hence an important determinant of the income distribution. Different savings theories suggest different relationships between the wealth level, the income level, and the share of income saved in the short or long run.² Unfortunately there is almost no evidence available on levels of wealth in Colombia and hence on its relationship with other economic variables so nothing of a more than impressionistic nature can be said on this issue at present.

There is, however, some information available on the relationship between savings rates and income levels. Very scattered evidence from the agricultural sector suggests that (at least in the mid 50s) the savings rate was a positive function of the income level, with a high marginal propensity to save over a certain range of incomes and a lower but still positive marginal propensity for higher levels. It seems probable also that, for a given income level, the savings ratio is higher for individuals who own farms or who operate them for landless workers.³

In the urban sector only two budget studies are available which permit fairly direct comparison of savings rates across families of different income

¹A crude estimate by the author suggests a ratio of tangible wealth held by individuals to national income of about 4:1 in 1956. It seems probable that the real appreciation of these assets falls in the range 2-5 percent. This would imply an "appreciation income" equal to 8-20 percent of the regular "national accounts" income. The roughly half of the capital which corresponds to urban land and real estate (including houses) probably appreciates at close to the upper margin of the range set but some other assets may not tend to appreciate at all. (Appreciation of financial assets appears quite limited.)

²If the rate of return on capital is equal for everyone the pattern of savings will lead to an increasing concentration of wealth (and therefore of income from capital) over time, if the ratio "current savings/wealth" is an increasing function of wealth.

³See Albert Berry, "The Development...", op. cit., Chapter 3.

levels. The 1953 DANE study suggested a high marginal propensity to save, both for empleados and obreros. In the range of income up to 1,000 pesos per month,¹ the marginal propensity to save appears to have been about 0.25 for both groups considering the income range where savings were positive.^{2,3} For reasons explained in Table 8, the marginal savings rate estimates are probably better than the average ones, which are probably upward biased. (See Table 8.) The second major budget study was carried out by CEDE in 1967;⁴ a comparison with the 1953 results, though not fully possible due to differences in the sample base, does tend to reinforce those earlier results.⁵ (See Table 8.) The strong association of the savings rate with the income level is quite clear, with the marginal propensity to save about 30 percent over the 5,000 to 20,000 (per three months) income range. Although the data as presented do not permit a fully accurate calculation of the savings rate for various income groups, it seems clear that the annual family income at which the savings rate becomes positive is about

¹About 5,500 per month in 1971 pesos, converted by an average of the national blue collar and white collar costs of living indices.

²Inclusion of the negative savings ranges does not affect the estimates much. Above 1,000 pesos for obreros and 1,500 for empleados estimates become more speculative since the highest income category is open-ended.

³We need not here go into the difficulties of interpretation of family budget studies on a cross sectional basis. Many things may affect the savings of a given family in a given year besides current income, so it may be difficult to learn much from it with respect to the long run relationship between income and the savings rate. One theory, of course, is that the savings rate is essentially independent of the long run or "permanent" income level. There is too little data in Colombia to test the validity of this contention. Although it is consistent with the low savings rates of low income white collar workers, many of whom are probably young and have permanent incomes well above over time data on total personal savings are too inaccurate to test for consistency with the cross section budget studies.

⁴Rafael Prieto D., Estructura del Gasto y Distribucion del Ingreso Familiar en Cuatro Ciudades Colombianas 1967-68, CEDE, Universidad de Los Andes, Bogota, Mayo 1971.

⁵The income level at which savings become positive appears to have risen somewhat between the two studies. The exclusion in 1953 of small families and own account workers biased its results down and statistical problems appear to have biased them up; the direction of the bias is therefore indeterminant; probably it is not too great.

Table 8

The Savings Rate and Income Levels, 1953 and 1967/8
(Income Levels Expressed in 1953 Pesos)

Monthly Income	1953			1967-8			1967-8			Estimated Savings Rate (Using 1967-8 Categories)
	Seven Cities			Four Largest Cities			1967-8			
	Paid			Paid			Esti- mated			
	Blue Collar Workers	White Collar Workers	Paid Blue & White Collar Workers	Blue Collar Workers	White Collar Workers	Savings Rate				
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)		
100-199	-1.8	-4.1	-2.0	-1.9		-50	<83	0-999	-60.0-80.0	
200-299	0.5	-15.5	-6.5	0.8	-15.5	-30.0	83-166	1000-1999	-23.0-30.0	
300-399	4.5	-3.4	3.0	3.4	4.2	-18.0	166-249	2000-2999	- 9.3	
400-499	9.0	0.6	6.7	4.7	0.2	- 8.5	249-332	3000-3999	- 7.7	
500-599	15.1	9.9	14.0	14.0	10.1	7.5	332-415	4000-4999	- 0.5	
600-699	14.3	0.1	7.5	13.2	- 0.7	6.0	415-581	5000-6999	8.5	
700-799	21.2	7.4	13.1	19.9	6.4	8.0	581-749	7000-8999	5.8	
800-899	23.2	11.2	14.5	19.7	9.8	12.0				
900-999	19.2	13.4	14.9	19.2	13.5	15.0	747-1245	9000-14,999	20.0	
1000-1499	26.7	28.3	28.1	24.6	27.7	20.0	1245-1660	15000-19999	18.0	
>1500		34.1	34.1	31.6		24.0	716-60	20,000	24.0	

Note: All figures in Cols. (1) to (5) contain an upward bias whose overall magnitude is known byt whose impact within each income category is not. Hence the figures have been presented here without correction for that bias. (See the discussion in "Sources and Methodology.")

Sources and Methodology: Table 8

The comparison of savings rates between 1953 and 1967-8 is complicated by the different natures of the samples in the two years. The four cities dealt with in 1967-8 were all covered in 1953 as well, but a basic problem is the non-random character of the 1953 sample. For a family to be included it had to be a complete family (mother, father and one or more children) or incomplete (one parent and at least one child, and at least one other adult) and with the further characteristic that at least one member of the family had to be a remunerated worker. A husband and wife with children not their own could be included. No families of less than three persons were included, and there were always, apparently, two or more adults. (See DANE, Economia y Estadística #85, 1958, p. 15.) The requirements of two adults does not come through clearly in the discussion of requisites (op. cit., p. 8) but the families listed all seem to have this characteristic. This sample appears to have been a random search for families with the cited characteristics. It is not clear whether, if the wife or child were remunerated but not working full time this would satisfy the requirement; it seems unlikely, since the proportion of total income supplied by wives was extremely small (about 1 percent) although in the case of children it was substantial (16.8 percent for empleados and 22 percent for obreros) see ibid., p. 65. Cols. (1) and (2) present weighted averages of the savings rates found in each city; the weights are the 1951 populations of the cities. (Better weights would have been the 1951 remunerated white collar and blue collar workers, but the population census and this sample did not use the same definitions, so this approach would be difficult, if not impossible).

Assuming that a random search was carried out for empleados and obreros, and apart from differential rates of rejection, they should have appeared in the sample in about the same proportions as in the universe, so it should be appropriate to lump the two together in each city to get a single savings rate, and then apply the city weights just referred to. Col. (3) is thus a weighted average of the figures of Cols. (1) and (2), weighted by the original relative sample sizes before rejections occurred. Cols. (4), (5) present the same series as (1) and (2) but for the 4 largest cities only, in an attempt to gain greater comparability with the 1967/8 data.

The 1967-8 sample was not constrained; there was a stratification into high, medium, and low groups, but the blowup factor after the sample presumably was corrected for the use of different sampling ratios in these categories; there appear to have been no constraints for family size. Some of the tables and income expenditure comparisons include total expenditure and total income, others disposable income and expenditures excluding taxes and social security contributions. (In 1953 the treatment in this respect was different (in that income included credit as well as current income)--see the discussion below.

Col. (6) presents a rough guess at the savings rate for the four city sample in 1967-8 with values interpolated to match the 1953 income categories. (Deflation to 1953 pesos was by an average of the obrero and empleado national cost of living indices. Col. (7) shows the monthly income brackets which correspond after deflation to the 1967-8 brackets (Col. 8). Col. (9) presents estimates of the 1967-8 savings ratios (corresponding to the categories of (Col. (8)). These are only estimates as Prieto "Estructura", op. cit., did not present average

incomes of the categories and these had to be guessed at.

The 1953 figures presented in Table 8 contain one upward bias in that the concepts used for income includes credits (see p. 55) while that for expenditure is on consumption exclusively. Credits bear an unknown ratio to current income, since the study did not present them separately from what it considered to be unreported income (where total disbursements, carefully measured, exceeded total reported availability of funds). It was noted that this underreported income was small (p. 79) so it could be concluded on balance that credit accounted for from 2 to 25.7 percent of current income. On average its inclusion in the income figures used as a base for Table 8 would bias the savings rate up by between zero and 2-3 points. At the same time cross checks revealed underreporting of income (p. 74) when the employer's statement was compared to that of the employee; since on the expenditure side it would seem as probable or more so that investment items or savings were missed (vs. consumer items) this problem would constitute a downward bias in the savings rate. The net error probably lay in this direction as it seems implausible that in all of the cities the obreros could have negative savings rates (reaching 8 percent in Medellin)--the implication of accepting the figure at face value (see p. 78).

Overall, it cannot even be concluded with certainty that the savings rates of Table 8 are upward biased, though it is more likely than not.

18,000 pesos, i.e., about 1,500 pesos per month. This implies that about 55-60 percent of families in the sample are saving and about 40-45 percent dissaving.

It is interesting to note that the dividing line between savers and dissavers appears to have risen, in fact the whole savings function appears to have shifted down. As noted above, the marginal propensity to save is high in both cases, perhaps about the same level in each case.¹ The higher dissaving rates corresponding to low income levels are very noticeable in 1967/8; this is due, presumably, to the higher long run average (or permanent) income, associated with the higher average income than in the earlier years.

Average savings rates for the two universes were almost the same, 1.1 percent in 1967/8 and perhaps a little higher in 1953.² The proximate explanation of the failure of the average rate to increase in the face of increasing incomes, is the overall downward shift of the whole savings function, especially in the just mentioned dissaving range of the low income groups.³

¹The calculated marginal propensity is somewhat greater in 1967/8 but the inclusion of own account workers (especially employers) would be expected to produce a higher marginal rate than in 1953 when they were excluded.

²In 1953 the calculated savings rates for empleados and obreros (with the by city rates weighted in each case by city populations) were 4.1 percent and -4.5 percent respectively. Weighting again by the relative importance of the income of each group, one arrives at a measured average savings rate of about zero. (There were about 2.5 times as many obreros but their average income was less than half as much). If own account workers had been included, it seems likely the average savings rate would be raised a few percent, at least.

³It might be speculated that many of the members of those income categories which dissave should not be assumed to be permanent members of those categories. Either they had higher income before or expect to have it in the future.

Comparisons between the two surveys should not be pushed far, however, due to the incomparability of the sample base. It seems clear that a higher observed savings rate would have been expected in 1967-8 if no real change had occurred, due to the inclusion of small families not included in 1953, who tend to have high savings rates (26 percent in this study). Two-person families also have higher savings rates than any of the others.¹ Although it constitutes a bias, this is not an important problem; it can be seen in Table A-7 that if one and two person families were excluded, the average expenditure income ratio could not be much above 0.995, say. A possibly more serious incomparability relates to the exclusion in 1953 of persons who did not work for a wage. It is generally observed that these people have higher savings than wage or salary earners, so it may be concluded, with little doubt, that the savings figures from 1953 are downward biased relative to the universe at that time, perhaps substantially.² For this reason it does indeed appear fairly safe to conclude that the savings function has shifted down between the years in question,³ though by how much remains to be seen.^{4,5}

¹It is possible, of course, that one person and two person families have higher incomes, but it seems more likely that this factor works in the other direction. Such families do, of course, have higher per capita incomes for a given family income so it would be very surprising if their savings ratio was not higher at a given family income level.

²The impact of excluding families with non-remunerated workers in 1953 is harder to get at in quantitative terms. No statistics which would help to permit the necessary separation seem to be presented in the CEDE study.

³This phenomenon is, of course, well documented in the developed countries.

⁴Another factor which would have created incomparabilities between the two years is different "cyclical phases" of the urban economy. But both years were in periods of rapid growth (although 1953 had more years of sustained growth before it than 1967-8) so it is not likely that too great a problem is involved. The issue would deserve further study, however.

⁵One worry about the 1967-8 study is that whole cities showed up with negative

Of prime relevance to the theme of this paper is the long run relationship between income (and wealth) levels and savings. Unfortunately the data of Table 8 do not fulfill this need. As Friedman observed, an increasing propensity to save observed in a budget study does not imply a long run difference in the savings rates for the families involved.¹ Further disaggregation, e.g., by income and occupation group would be helpful in ascertaining the degree to which transitory factors explain the increasing average propensity. The fact that higher occupational categories have higher savings rates suggests that long run differences do exist. (See Table A-8.) Professionals and managers have a savings rate of 12.4 percent, empleados and sales personnel one of 3.3 percent, and obreros (in industry, construction and transportation) one of about 3.0 percent.²

Forms of Wealth, Investment Opportunity, and the Rate of Return to Capital of Savers

Colombia's markets for financial assets and for many forms of real wealth are quite imperfect, and it may logically be hypothesized that the rate of return

⁴savings rates. The average propensity to consume was 113.8 in Barranquilla, 102.8 in Cali, 98.1 in Bogota and 89.3 in Medellin, with an average of 98.9. (Absolute consumption is highest in Bogota, then Barranquilla, Cali and Medellin in that order.) Except for the top income category, Barranquilla has the highest spending in each category, and in the lowest category, in particular, it is more than twice any of the other cities. Typically Bogota is second, Cali third and Medellin last. When a whole city, with presumably balanced representation of young dissavers, middle age savers, et. al is dissaving, it is strongly suggestive either of data problems or of some general transitory factor, such as that discussed in the previous footnote. Conceptually a city could be "subsidized" by other cities but for one the size of Barranquilla this explanation seems little plausible.

¹Milton Friedman, A Theory of the Consumption Function, Princeton University Press, Princeton, 1957.

²Prieto, op. cit., parte I, p. 73. The figures presented here are slightly different from Prietos, being savings out of disposable rather than total income. The savings function for professionals and directors appears to lie below the overall savings function; Table 8 indicates that the typical savings rate for incomes in the 15,000-20,000 range (where the average for this group falls) is 18 percent.

to capital is on average higher for the large scale saver than the small scale one; this seems clearly to be true for transferred savings, but it is more difficult to substantiate overall since many small scale savers who invest in their own enterprise, their own farm, or whatever, could conceivably be earning high returns on this capital. Since both their labor and their capital income is imputed, and it is necessary to separate the two in order to measure the rate of return to their capital, this turns out to be extremely difficult.¹

A limited amount of information available on the forms of wealth in Colombia gives circumstantial evidence as to the distribution of wealth holding by people in different income categories. The major forms of physical capital are agricultural land and other agricultural capital, urban land and buildings, machinery and equipment in industry and other non-agricultural sectors; smaller but still important categories are automobiles and consumer durables. Of the financial assets, the most important are industrial stocks, cash, life insurance, mortgage and capitalization cédulas, etc. Very crude estimates can be made as to the total amount of wealth represented by some of these assets (see Table 9) but there is to date insufficient information on the extent of the "layering" of these assets and on the extent to which non-individuals (e.g., producing

¹In fact, in situations where the total factor productivity of different economic units varies according to their size, there may be no theoretically determinable rate of return to either input or at least there may be no meaningful pair of rates such that their application to the quantity of each input implies a total factor remuneration which adds up to the total income of the individual. For a further discussion of this problem in the context of agriculture see the authors' "Land Distribution, Income Distribution and the Efficiency of Colombian Agriculture," op. cit., pp. 24, 25.

Table 9

Some Crude Estimate Figures of Wealth Composition - 1952 and 1965

(millions of current pesos)

I. <u>Tangible Assets</u>	1952	1965
Rural real estate (land, buildings, plantations)	9,000-15,000	40,000-50,000
Cattle	2,500-4,000	15,000-20,000
Urban real estate (land, buildings and capital)	9,000-15,000	60,000-90,000
Non-agricultural capital equipment in private sector	9,000-13,000	70,000-90,000
Of which corporations held	2,500-4,000	10,000-15,000
Dwellings	3,000-5,000	20,000-25,000
Automobiles, trucks, etc.	800-1,000	12,000-18,000
Consumer durables	1,000-1,500	6,000-10,000
Total Tangible Wealth	25,000-37,000	190,000-250,000
Of which held by individuals	20,000-32,000	180,000-238,000
II. <u>Claims</u>		
Cash	610	3,764
Savings deposits	175	1,400
Capitalization cédulas		279*
Mortgage cédulas	142	1,251
Corporate stocks	1,500-3,000	10,000-20,000
Of which individuals held	350-700	2,500-5,000
Investment funds		260**
Government bonds	n.a.	n.a.
Life insurance	100-150	1,500-2,000

* December 1964.

** November 1965.

Sources: These data (except those taken from statistical sources) are designed only to give rough approximations; some might be in error by as much as 50 per cent. The data on financial assets comes usually from the Revista de la Superintendencia Bancaria. The estimates for tangible assets are the author's, based on a variety of sources and comparisons.

corporations) control them.¹ In terms of the present discussion, the matter of interest is the extent to which the various assets are and can be held by the small capital owner, and the rate of return he earns compared to the large one. With respect to some assets it is clear that there is a minimum feasible size which can be held, due to informational barriers, red tape, and so on.

Tables A-9 through A-11 present scattered information on the distribution by size of some of the assets; this is summarized in Table 10. Of the physical assets held by individuals, automobiles are probably the most highly concentrated,²

¹Some of the financial assets, of course, are essentially the proxy in the hands of individuals of productive capital owned by corporations.

A check on the amount of real assets held, apart from non-produced forms of capital, is provided by the national accounts; there exists one estimate or another over a long period of time, and a summation of the net investment figures over the years provides a conceptually interesting estimate of total produced capital. Unfortunately depreciation is very difficult to calculate so it is possible that the national accounts estimate is somewhat off the mark. Harburger has estimated capital stock over time with the same inclusions as those of Table 9. (See Arnold Harburger, "La Tasa de Rendimiento de Capital en Colombia" Revista de Planeacion y Desarrollo, Vol. #3, October 1969, Cuadro 18). Converting his estimate for 1965 to current prices by the GDP deflator produces a figure of about 220 billion pesos, in the middle of the range estimated in Table 9. This provides a certain amount of extra confidence in the data of Table 9. (The two estimates are entirely independent except for the land component.)

Another check could be performed with data supplied in the income-wealth tax collection procedure; here individuals are required to report their patrimony; even allowing for a considerable amount of underreporting, the figure would have some interest for purposes of consistency checking; such a calculation has not yet been made to my knowledge.

²The top 12.4 percent of families, with incomes above 15,000, accounted for 89.2 percent of expenditures on maintenance and operation of vehicles (not exclusively cars, but presumably almost). The top decile would appear to account for about 85 percent. The second decile accounts for about 9-10 percent so that the two together account for almost 95 percent.

It should be noted that the CEDE sample produced a remarkably high figure for expenditure on new vehicles in the income category 9,000-14,999; either this is an error or the purchase of new cars must be increasingly frequent in this middle-income bracket. (See Parte III, p. 14.)

Table 10

Estimates of the Concentration of Selected Forms of Wealth*

	Total Income	Disposable Income	Auto- mobiles	Durable Consumer Goods Purchases	Housing		All Housing Units	All Buildings	Educational Expenditures	
					Owner	Dwelt in by			Private	Total
Bogota										
Top decile		37.3 ^a								
Top 2 deciles		53.0 ^a								
Four Largest Cities										
Top decile		38.4 ^a	85	55.0						
Top 2 deciles		54.4 ^a	95	71.5						
Colombia										
Top decile	≈48.2 ^b								52.58	30.7
Top 2 deciles	≈63.1 ^b								66.83	43.4

*Note: Some of the figures in this table refer not to items held but items purchased during a given period; these two distributions are, of course, not the same.

^a Prieto, op. cit., p. 157.

^b Miguel Urrutia y Clara Elsa de Sandoval "La Distribucion de Ingresos entre Los Perceptores de Renta en Colombia--1964," Revista del Banco de la Republica, Julio, 1970. This distribution refers to the economically active population (excluding family helpers)--unlike the distributions presented for Bogota and the four largest cities, which refer to families.

and consumer durables rather high.¹

A substantial amount of investment--some of it probably yielding good returns-- occurs at present in the form of education, (see Table A-12); some is paid for by the public and some by families.

As can be seen (Col. 9 of Table A-12b) the distribution of total educational expenditures is considerably less unequal than the distribution of income (see Urrutia-Sandoval, Cuadro A-6) and hence even less unequal than most of other forms of capital;² the top three deciles while having about 73 percent of the income have, according to these figures, received the effects of only about 54 percent of the educational expenditures. The bottom two deciles, according to these figures are the ones which benefit most, having only 2.8 percent of the income but 4.5 percent of the education. Note, however, that these figures could be biased up depending on how accurate the Urrutia-Sandoval assumptions

¹ The top 12.4 percent of consumer units in the four cities (trimestral incomes of 15,000 pesos and up) have perhaps 43.3 percent of disposable income, judging by the decile distribution (Prieto, *op. cit.*, Parte I, p. 157). This group has 36.18 percent of expenditures (*ibid*, Part I, p. 54 and Part III, p. 200). They have 55.1 percent of durable consumer goods, as estimated by applying the expenditure coefficients by category (Part III, p. 13) to an estimate of the distribution of total expenditures by income category. Meanwhile the top roughly 8 percent (with trimestral incomes of 20,000 and up) have say, 33.6 percent of income (perhaps more), 27.76 of total consumption and purchase 63.23 percent of the durable consumer goods.

Interpolating between these two sets of figures, it appears that the top decile must have about 74 percent of the durable goods purchases.

The top two deciles have about 54.4 percent of disposable income (Parte I, p. 157) and the cutoff income is about 10,500 pesos. (Parte I, p. 138.) The roughly 7.6 percent of consumer units with incomes in the 10,500-15,000 pesos range has about 13.1 percent of disposable income, a somewhat lower percent of expenditures and about 16.3 percent of consumer durable expenditures. Thus the top two deciles account for about 71.4 percent of consumer durable expenditures.

² A comparison between the current flow of educational expenditures by income and the distribution of some other form of wealth is not appropriate, however. The current distribution of existing human capital due to education is presumably more unequal than the current flow.

are with respect to the share of rural population which does receive some primary education. Note that private expenditures on education are even more skewed than income distribution, tending to make up substantially for the apparently positive redistributive impact of the public expenditures in this area. If it were not for the public education, the distribution of this form of capital might well be as skewed as that of other forms.

It is interesting to note that, if our estimate of total education expenditure in 1966 was accurate, (5.246 billion pesos) it compares rather favorably with the total physical investment for that year of 15.040 billion pesos. Part of the explanation of low private savings (when educational expenditures are included in savings) at low income levels may, of course, be the presence of public schools. And there may be some indivisibility involved in educational investment; if a family cannot produce the amount necessary for a semester or a year for the child, then it may be unable to invest.¹ The extent of inequality of the existing stock of education has been alluded to earlier; when measured in terms of years of education the top decile has percent and the Gini coefficient is . when measured in terms of apparent income generating power (judging by wage differentials in Bogota 1963-66) the top decile has percent and the GINI coefficient is . Probably the true return to education is less than that implicit in these latter figures,² so a true picture would be given by figures falling between the two sets just presented.

¹This is something of an exaggeration, since frequently different quality levels of education at different costs may be available; but this is not always the case.

²See the argument as presented on p. 16, footnote 2.

Differences in the overall return to capital for people at different income and wealth levels could be due to different rates on the same assets, or to different access to groups or types of assets whose rates of return tend to be different. In the present context, the relevant concept of "return" involves capital gains as well as the income based on the current productivity of the asset.

It is generally plausible to assume that real assets yield more than financial ones; the latter are "proxies" for real assets, and assuming the existence of transactions costs and "borrowers surplus" on the part of the entities emitting the financial assets, the yield must be greater on the real assets. The conclusion that the average rate of return should be higher on real assets as a group than on financial assets as a group does not follow directly from this fact, however. If financial assets were emitted as proxies only for high yielding real capital, the opposite relationship could hold between the averages; in fact, however, this seems unlikely.¹

Financial proxies for real capital owe their existence to the size of certain investment projects or firms and to the possibilities they (the assets) give of risk spreading (across different real investments). The existence of economies of scale in certain production processes suggests that the rate of return will be higher on larger blocks of real capital. And with respect to the financial capital, where large chunks of it are required, the transactions

¹Impressionistically one might guess that it is "middle yielding" real assets for which financial proxies appear. In the case of very high yielding ones, the operator of the enterprise may have a strong incentive to use as much of his own capital as possible, unless the capital market is good enough to permit his borrowing at a more or less fixed rate and earning a high increment; in large capital markets this may be the case. Very low yielding real assets are not likely to generate financial proxies.

costs are substantially smaller if the corresponding financial asset has large denominations; otherwise it might be necessary to have more than one layer of financial assets to work up the necessary funds.¹ Another factor working in the same direction, perhaps with respect to both types of capital, is economies of scale for the investor--either the own investor or the financial investor. If one has very little capital, while the incentive effect may make him invest it carefully, it is difficult for him to acquire information on a wide variety of assets and he cannot risk certain ones, (in general he must be a risk averter); since the financial system reacts to all this, certain assets will not be at his disposal.

The above conclusion is not a necessary one; there could be diseconomies of scale in certain production processes, and it could be too costly for large investors to undergo the transactions costs of lending to many separate producers. In summary, the relative rates of return depend in part on (a) the prevalence of economies of scale in the system relative to (b) the distribution of capital between small savers and large savers. The theoretical case for a positive relation is less clear for real assets than for financial ones, partly for the reason just cited (diseconomies of scale) and partly due to other factors.

In the case of assets utilized by the small scale (potential) saver and with respect to whose use he has little choice, i.e., if he does not own them he must rent--for example, dwellings, land if he is a farm operator--the transaction costs may make the rental price higher relative to the amount of capital involved than in the case of larger chunks of capital. As a result the rate

¹If a factor like economies of scale in the basic production process were important, one might expect a certain parallel between real and financial capital in terms of the relation of size and return.

of return to owning such an asset can be high for the small scale saver. Evidence of this does appear to hold in the case of housing, and the evidence from agriculture is not entirely contradictory to it, though it remains unclear. In the specific case of self-constructed housing, the evidence suggests that the rate of return may be in the range of 10-20 percent.¹

One might anticipate a higher rate of return to investment on the part of small savers if their time rate of discount were considerably higher than that of richer persons. Each saver may be conceived of as having a decreasing "marginal productivity of investment" function (where investment includes purchase of financial assets); other things being equal, the average and marginal returns will be a positive function of the alternatives open to a person and of his time rate of discount. (If it is high he will limit himself only to high yielding alternatives.) If this latter factor

dominates, then the small savers' marginal investment will yield more than that of the large saver; this is not the same as saying that the average savings yields more, however, though it would seem likely. (See below.) Possibly the situation for many small savers involves a very rapidly decreasing rate of return with the amount of investment; the high payoff items are ones like those just cited, where owning the item is a substitute for having to rent it since its use is inevitable; but after an individual has all the capital required to produce these services for himself and wishes to transfer savings elsewhere, the return falls off very sharply. For the large scale saver, since he does not constitute so big a problem as a borrower as does the small one, the rate of return on "rent-substituting investments" would be less than for the small saver, but on savings transferred to others it will be greater; in short, his curve will be much more elastic.

¹A rough estimate based on data from Planeacion Nacional.

The plausible hypothesis in Colombia would be that the rate of return on financial assets is a generally increasing function of the amount of capital held for all levels,¹ while that on real assets is positive over a range above the wealth level at which the individual is using his capital to produce a service for his own use;² the relation for smaller levels of wealth would be indeterminate. Perhaps the most striking difference in rates of return is that between the few financial instruments practically available to (or adopted by)³ the small saver, i.e., liquid funds, savings deposits, and possibly a few government bonds--and the better yielding assets held by larger savers (cedulas, extra bank credit instruments, certain stocks, etc.)⁴ Many, if not most, of the "small scale" financial assets typically earn negative rates of return.

The situation is cloudier in the case of real capital. Some information is available, albeit crude and imprecise, giving hints as to the relative rates of return to capital by size of unit in the agricultural and industrial sectors. In the former the size of unit is likely to represent directly the average

¹Perhaps the only possible exception would be related to small scale loan sharks (or, less pejoratively, "prestamistas"), documented especially in rural areas. They loan small quantities at interest rates of 2-3 percent or more per month. Real return is exaggerated by this figure of course, since some losses occur, and transactions costs are high. But it seems unlikely, in any case, that many of these people are in the low wealth category, even though they make small loans.

²A substantial share of capital income may come from appreciation of assets. This form of income is probably quite concentrated, as it depends relatively more on connections, information, etc., than does income from current production.

³Failure to take advantage of some existing alternatives lowers the small savers' rate of return further, i.e., the low rate is only partly due to the absence of alternatives. People who hold cash rather than the (less negatively yielding) savings deposits are a case in point; suspicion and lack of familiarity are components of their attitudes. The extent and determinants of such phenomena require much more study.

⁴Although the evidence remains limited, it does not appear that even these "large saver" assets have really high returns in Colombia, apart from the extra bank credit.

wealth (and income) of the owner. The relationship is less clear in the industrial sector, since some large units are widely held;¹ as a result the distribution of the capital income from them is a little more difficult to trace down. In agriculture the imputation problem creates serious difficulties, and the fact that most of the total value of the enterprises consists of non-reproducible capital makes the rate of return figure itself a difficult one to compare across size units.²

Table 11 presents alternative estimates of the relationship between capital income and the value of physical capital (including land valued at market prices as nearly as possible) in agriculture, (i.e., estimates of the rate of return to capital)³ by farm size. The data is, unfortunately, not precise enough even to permit a conclusion that there is a generally positive or negative relationship between farm size and rate of return to capital. If the opportunity cost of the producer's labor were, for example, one half the average market value, then (for farms above two hectares) his rate of return of

¹Though the share of all large scale sector real capital in the hands of small and medium stockholders appears low. Studies of the holding of corporate stocks suggest great concentration. A study carried out by the Superintendencia de Sociedades Anonimas for 483 corporations in 1959 and 1960 indicated that the 0.13 percent of stockholders (300-400 in absolute numbers) with most stocks held about 54 percent of the total value; but it appears that legal persons holding stocks (and at this time they held about 60 percent of all stocks) were included as stockholders--this procedure is not very meaningful; it is not clear how the result would have varied if only persons had been included.

²From our point of view here, the question of interest is whether the ratio "capital income/savings" is higher for wealthy people or for poor people. The question is straightforward when the savings are used to purchase a capital good for a price determined by the production costs of that unit and presumably therefore in the long run relatively independent of the demand for it. But the issue becomes complicated when a high share of the capital is of non-reproducible form. An attempt can be made to estimate relative rates of return to savings as long as it is assumed that there are no changes in the relative price of land held in large farms to that held in small ones over time. This problem is not so severe in the case of industry although some part of the value of an enterprise is, of course, related to the intangible and non-reproducible aspects of it.

³No attempt was made to quantify human capital and the implicit assumption that it was proportional to physical capital was used in these calculations.

Table 11

Implicit Rate of Return to Capital*by Farm Size: 1960

<u>Farm Size</u> (in hectares)	<u>Estimate 1</u>	<u>Estimate 2</u>
<1/2	.60	.99
1/2-1	3.08	4.61
1-2	4.82	6.35
2-3	11.88	15.43
3-4	11.40	14.61
4-5	12.44	
5-10	15.92	
10-20	16.54	
20-30	13.38	
30-40	11.70	
40-50	11.42	
50-100	11.56	
100-200	11.71	
200-500	11.85	
500-1000	11.39	
1000-2500	10.72	
>2500	13.67	
<u>Total</u>	<u>11.98</u>	
<hr/>		
Broader Size Categories		
0-3	5.69	} 7.75
3-5	11.84	
5-10	15.92	
10-50	14.05	
50-500	12.49	
>500	11.31	

*The rate of return to capital is defined as value added minus implicit labor cost all divided by value of capital (including land); it is an overestimate of the true rate of return since working capital has not been included. Further, human capital of the producer is disregarded; while this may not lead to extensive bias in comparisons across farm sizes (since human and physical capital might be fairly well correlated), it leads to an upward bias in this figure, viewed as a rate of return on physical capital.

Estimate uses the "best estimate" physical capital series from Berry

capital would be larger than that of the large farmer, for most assumptions with respect to the relative amounts of capital; (alternative capital series were constructed due to the uncertainties of the data though only the "best estimate" series is used here). On the other hand, if the small farmers' opportunity cost of labor is the average market rate, or even well below it, the rate of return on farms up to two hectares is distinctly below that of all the other farm sizes. Overall, it seems clear that the relationship is not a monotonic one. Perhaps the most striking aspect of the figures is the rather strong suggestion that the rate of return does not vary much in either direction across the great majority of the size categories.

Are Rate of Return Differentials Inevitable in Colombia?

It is frequently argued (as noted above) that the difference between the rate of return on large and small units of capital is, in many sectors of the economy, a natural result of (a) economies of scale in the physical production process and (b) economies of scale in the financial intermediation system, these latter implying that even if all savings are aggregated to be invested in a large scale production unit, the rate of return paid to the small saver must be reduced by the greater cost of intermediation per dollar. It is intuitively clear that the second argument carries some validity, and generally accepted that there are economies of scale in various sectors of the economy, although the degree and pervasiveness of these remains to be ascertained.

It is equally clear, however, that some of whatever difference may exist between the rate of return to the small saver and the large one is artificially introduced by the nature of the capital markets and is not inevitable. An example is the savings deposits with their low real rate of return; the 4 percent paid on them is fixed by law; in general the absence of indexed bonds¹ too must be attributed to institutional rather than underlying economic factors.² Avoidable market imperfections tending to create a rate of return differential in favor of the large unit are particularly obvious in terms of the distribution of public and private credit; it is perhaps more surprising that public credit tends to go (even for such institutions as the Caja Agraria, whose formal goal is the financing of the smaller scale unit) to relatively high income persons³; quantification of this phenomenon is still meager but impressionistic evidence for both agriculture and the non-agricultural sectors is strong. That import licenses go primarily to large firms is manifested in the unpublished statistics of DANE which indicate that in 1964 26.6 percent of the raw materials used by the largest category of plants (200 workers and up) were imported while the

¹Bonds with a readjustment clause guaranteeing that the principal retain its real value over time.

²It might be argued that a major institution-based discriminating factor is the inflation. It is responsible for the low real return on money and many financial assets, especially simple ones like savings accounts. Since the inflation is partly a result of rapid credit expansion--going disproportionately to the large savers--its overall effect on the relative return to capital of small savers is almost certainly negative, possibly heavily so.

³An institution like the Caja Agraria should not be blamed unduly for this, since in agriculture there is no way to give credit to the bottom deciles of the income distribution (with no or very little land) and there are always special problems in giving it to fairly small farms; a very special effort must be made, based on detailed knowledge of the context; it is not easy.

corresponding ratio for plants with less than 15 workers was less than 10 percent.¹ Impressionistic evidence confirms the fact that not all of this differential is accounted for by factors other than the "nature of the market." The non-market element in the distribution of import licenses is also suggested by the particularly high share of imported raw materials used by plants located in Bogota (33.7% of all raw materials used in Bogota as compared with a ratio of 17.8% for plants elsewhere; part of the differential may once again be considered as unrelated to market imperfections, e.g. on the grounds that for independent reasons Bogota's industrial growth coincided with a new emphasis on import intensive industries; when the 'Bogotá-rest of Colombia' comparison is made at the two digit level, the relation is highly variable; Though it is in considerable measure consistent with that hypothesis, direct observation does suggest that import intensive industries have tended to concentrate in Bogotá because of the greater ease of achieving import licenses there.

It is difficult to judge the reaction which might be forthcoming from small savers (something relevant both for promotion of overall growth and for improvement in the income distribution) in the presence of better investment alternatives. It is interesting to observe that in the agricultural sector the ratio of produced capital to the value of land appears to

¹Part of this differential corresponds to a different sectoral composition of the plants of different sizes, but the phenomenon in question is present within all or almost all two digit industrial sectors, and probably for any degree of disaggregation. It might be even more marked were it possible to do a parallel classification by size of firm rather than of plant.

be higher on smaller farms than on larger ones;¹ while this does not suggest that the smaller farmers have as high a savings rate as the larger ones (presumably the latter invest much of their savings outside agriculture) it does suggest in some absolute sense a willingness or desire to save and invest, and difficulties in finding appropriate outside instruments. Consistent with this is the low savings rate of landless workers in agriculture, . . . Housing may present a phenomenon similar to this agricultural one; a substantial share of very low income urban dwellers appear to own (or be acquiring) their homes in Bogota about 30% of families with monthly income below 1000 pesos in 1970 fall in this category.²

Differential Fertility and Income Distribution Over Time

At present fertility level differentials of families at different income levels are very marked, and may be a factor of some significance in the maintenance of a highly skewed income distribution. Table 12 presents guesses³ of the average implicit completed family size as a function of income using a recent fertility study,³ and rough guesses at infant mortality rates by income. The data suggest that if these fertility rates remained applicable over time, urban families with incomes above 12,000 pesos and rural families with incomes above 30,000⁴ pesos would have completed families

¹ A. Berry, The Development op. cit., Chapter 3.

² See DANE, Encuesta de Hogares, 1970, tabulados.

³ See Ministerio de Salud y Ascofame, Hechos Demográficos, op. cit.

⁴ It should be borne in mind that there was probably quite substantial underestimation in incomes in this study.

T A B L E - # 12

Relation Between Implicit Number of Children Born Over Fertile Period, Family Income, and Rural Urban Location: 1965

A. Urban Areas								
Income	→	>3,600	3,600-6000	6000-12000	12,000-30,000	>30,000	Total	
Age of Mother Age Specific Birth Rates								
15-24		172.7	121.1	110.1	83.8	45.4	110.6	
25-34		237.4	267.5	232.7	199.3	158.4	232.4	
35-44		138.3	131.1	144.0	72.8	52.2	116.5	
Implicit Total births during fertile period ¹		5.48.4	5.197	4.868	3.559	2.560	4.595	
Possible Infant Deaths ²		1.346	0.981	0.535	0.285	0.179	0.785	
Illustrative Implicit Completed family size ³		4.138	4.216	4.333	3.274	2.381	3.810	
Rural Age								
15-24		231.8	224.9	198.5	117.1	52.7	215.2	
25-34		340.3	338.1	280.3	354.2	238.6	327.0	
35-44		216.8	242.0	225.4	98.3	50.5	204.3	
45-54		25.5	-	-	-	-	21.4	
Implicit Total Births During Fertile Period		8.144	8.000	7.042	5.706	3.418	7.68.9	
Possible Infant Deaths		2.972	1.946	0.215	0.628	0.342	2.307	
Illustrative Implicit Completed Family Size		5.172	6.054	6.127	5.078	3.076	5,382	

¹ Assuming no mortality, the figures here could under special circumstances, correspond to completed family size. The actual completed family size would be less than these figures indicate, partly

Table #12 Continued:

due to mortality; also, of course, age specific rates change over time, so no real world pass through all the age brackets when the age specific rates were those shown here.

² Infant mortality data was not studied in the Ministry of Health-Ascofame work cited above. Here we take note of the probable average mortality over the 0-15 span, and assume that the level of this variable for the top income group approximates that of developed countries. The rest of the figures are guestimates.

³ An estimate of the survival rate to age 15 is taken from Enrique Pery S. Proyecciones de la Poblacion Colombiana 1965-1985, CEDE, Universidad de Los Andes, Bogota, Octubre, 1968, p. 19. We then assume a death by age 15 about twice as high in rural as urban areas (30% vs 15.47%) and made arbitrary estimates of the relation between this coefficient and family income. The coefficients applied for each income category were, of course, constrained to imply the overall infant death rates of each region. Implicit total births minus estimated infant deaths.

Sources: Ministerio de Salud-Ascofame, Hechos Demográficos, op. cit., Tabla 28.

(i.e. after infant mortality is taken into account) of about three children or less. Other urban groups would have completed size of 4-5 and other rural families of 5-6.¹ The figures do not suggest much relation with size up to the 12,000 peso income level (though see footnote 1). The lack of such a relation for 80 or 85 percent of the population,² however, is not too relevant to the issue under consideration, since wealth is so concentrated in the top 10 or 15 percent, that the key question is whether that small group has a different fertility rate. Here the average implicit size for the high income-low fertility categories is 3.03, while that for all the other categories together is 4.55. And the roughly 40 percent of all families which are rural and have incomes below 6,000 pesos have average completed size of close to six; these people are quite low in the overall income distribution.

Since there is little data available to provide historical background on the differential fertility phenomenon, it is not possible to ascertain whether the present implicit differential has existed for some time or not; some observers feel that it has not, and that the relatively small family size characterizing upper income groups now is a recent phenomenon; it is accordingly unclear whether in attempting to ascertain the historical relevance of this phenomenon in perpetuating inequality, the current differentials

¹Since the infant and child mortality estimates used here are guesstimates, the completed family size figures are subject to considerable error. Probably what is least in doubt, however, are the rates for high income families, and as long as these are reasonably accurate the differential just cited does hold. The relative completed size estimates for income levels up to 12,000 pesos are much more vulnerable.

²The three groups cited as having markedly lower implicit family sizes constitute about 12% of all families.

³A striking implication of the figures is that, within the income range where the great bulk of the population falls, a decreasing family size is not implicit in income increases, whereas it is implicit in the rural to urban shift. Presumably a good part of the differential is related to different educational levels (at the same income level) between rural and urban, so this implication may not be relevant if rural education can be improved quickly, a doubtful point.

could be assumed or not¹; conceivably in earlier generations the very high infant and child mortality rate for lower income groups meant that the survival ratios and completed families sizes were rather similar across all income groups.

To compare the importance of fertility differentials relative to such phenomena as differentials in the rate of return to capital and in savings rates in the perpetuation of inequality, several associated demographic factors must be considered. One which can be fairly quickly dealt with is the extent to which poor and rich families inter-marry, thus producing a sort of "averaging out of wealth" phenomenon; it appears infrequent in the Colombian context. The nature of bequest must be considered in such an analysis, in particular the extent to which wealth can be passed on to the next generation relative to that accumulated by the present one. Inheritance taxes in Colombia probably take such a small proportion of total wealth passed from generation to generation that they can be ignored for the purposes of the present analysis.²

¹Scattered evidence from the thirties suggests that the completed family size of the working class was larger at that time. See A. Berry, Breve Estudio de los Determinantes del Crecimiento de la Población en Colombia, CEDE, 1966.

²As of the mid-sixties, inheritance taxes constituted about 1.5 percent of total tax revenue (excluding payments to social security), 0.2 percent of national income, and say 0.05 percent of estimated total privately held wealth. If we assume, crudely, that 3 percent of total privately held wealth is being passed between generations in a given year then the ratio the inheritance tax bears to this transferred wealth is 1.65 percent. Although obviously crude, it is doubtful that this figure could be downward biased by a factor of more than 2 or 3; even if it were, one would conclude that an insignificant part of private wealth passed to the government during the inheritance process. (One bias in the above calculation may have been the implicit assumption that wealth holders do not run their wealth down significantly before death.)

Summary

It is now possible to trace out roughly some broad patterns of income distribution change over the last 40 years in Colombia. Evidence on labor income from wage series suggests a probable worsening of distribution from around 1940-when a number of the series began-until some time in the 50s, followed by an improvement until the mid 60s and a probable worsening again in the last five years.

The labor share of income generated in the production process has risen marginally, while suffering some small fluctuations; the paid labor share has risen substantially, from about 32 percent of GDP in 1950 to about 38.5 percent in 1969, but most of this is accounted for by a shift of workers from unpaid to paid categories. The increases in the labor share (both paid and total) have been stronger in the non-agricultural sector than for the total since the labor share fell in agriculture during this period. The pure labor share has fallen by perhaps 10 percentage points since 1945 and the human capital share has risen 6-10 points since 1950 to where it now surpasses the pure labor share as defined here. The physical capital share has fallen by perhaps 2-4 points since 1950, and now represents about one-third of G.D.P.

Factors determining these various movements are discussed in the text. It is interesting to note that labor income appear to have become less equal during periods of rapid growth (1940 to about 1955 and 1966 - present) and more equal during stagnation (1955-66). The first stages of rapid import substitution (1945-55) may have had a distribution worsening effect. The shift out of agriculture has probably had a positive effect, especially in the last decade. Differential fertility rates presumably have some negative

impact but historical data are too sparse to guess at its magnitude.

Differential savings rates have undoubtedly played an important role in maintaining a highly unequal distribution of capital. There is no evidence of significant changes in the impact of this phenomenon over time. (It is possible that a considerable part of both savings rate differentials and rate of return to capital differentials favoring high income and wealth persons are due to capital market imperfections.) Public education has a clear positive effect in distribution of capital at present.

Over the long run there is no evidence that distribution as measured by any single indicator (e.g., the Gini coefficient) has been improving or worsening. There is some evidence that the top 1-2 percent have lost over time, and that the people in perhaps the second to fourth deciles have been gaining; some low income groups have gained relatively fast but it is not clear how the bottom two or three deciles have fared. This is clearly a priority issue for further research.

TABLE A-1

Selected Blue Collar (Mostly Unskilled) Daily, ¹⁹⁵⁰ Rates Over Time
(Centavos Per Day)

	Medellin:			Bogota:		Cleaning Lady		Unskilled		Private Sector		Unskilled		Public Sector		Street Sweepers:		Bogota Municipal Employees				Agricultural Wage	
	Female Workers, Selected Industries			Penicillin Factory		Ministry of Finance		Construction		(peones) **		Construction		Bogota		(Peas)		Unskilled Worker		(with food)			
	Nominal (1)	Real** (2a)	Real** (2b)	Nominal (3)	Real (4)	Nominal Real* (5)	Nominal Real* (6)	Nominal (7)	Real (8)	Nominal (9)	Real (10)	Nominal (11)	Real (12)	Nominal (13)	Real (14)	Nominal (15)	Nominal (16)	Nominal (17)	Real (18)				
1915	29.5					14.25				42				123		70							
	30.5					20				47				n.a.		70							
	29.25					20				47				140		70							
	n.a.					23				50				140		70							
1920	53.6					23				51		72		147		87							
	42.9					23				59		223		153		87							
	42.8					23				66		226		167		81							
	45.9	45.9		80		23				50		385		187		81							
	47.7	44.7	89			23				54	.731	405		167		81							
1925	50.0	46.8	49.8	78		23				64	.753	366		183		n.a.							
	52.5					-				62	.682	365		183		110							
	56.5	36.3	43.7	83						75	.757	361		200		-							
	60.5	45.9	60.3	90						1.04	.984	386		200		-							
	79.5	49.1	66.7	104						1.06	1.024	411		233		-							
1930	76.0	54.6	72.8	97						1.05	.856	476		230		-							
	67.0	69.3	87.0	92						99	.957	n.a.		167		-							
	53.0	65.2	80.0	70						104	1.153	470		233		83							
	45.0	80.3	86.5	63				106	184.9	106	1.649	492		233		83							
	50.9	76.2	92.6	72				111	166.9	111	.902	497		200		100							
	50.5	54.2	65.6	80				117	127.6	70	.763	525		233		83				68			
1935	61.7	61.3	75.6	113				124	129.0	80	.832	515		233		1.00				67			
	70.0	65.6	83.1	110				130	124.6	75	.719	559		267		"				72			
	70.0	60.1	74.2	121				137	136.2	93	.924	505		267		"				72			
	70.2	55.3	61.0	100				144	133.5	94	.871	512		267		"				74			
	78.9	57.8		n.a.		30	25.36	152	128.5	96	.811	1,153		267		"				78			
1940				115		30	26.18	160	139.6	95	.829	1,166		267		"				71			
						30	26.55	168	148.7	94	.832	1,476		267		"				72			
						30	24.43			92	.791	1,605		267		"				73			
						40	20.44							267		"				94			
						40	20.99							267		"				109			
						42.5	20.99							267		"				125			
						60	24.37							267		"							

Table A-1 Continued: * Real prices of 1937.
 ** Real prices of 1923.

Sources and Methodology

Col (1) is from Luis Ospina Vasquez, Industria y Proteccion en Colombia, Editorial Sante Fe Medellin 1955.

Col.s(3), (5), (7), (9), (11), (13), (15) and (16) are from Miguel Urrutia, "Estadistas de Salarios en Bogota, 1863-1933" in Miguel Urrutia and Mario Arrubla, (editors), Compendio de Estadisticas Historicas de Colombia, Direccion de Divulgacion Nacional, Universidad Nacional de Colombia, Bogota, 1970.

Col. (17) is from DANE, Anuario General de Estadistica, various years.

Deflation has been effected using for the most part food price series collected and published by the Banco de la Republica. In the case of Medellin (Col. 2) two series were available; a food price series by the Central Bank, used to calculate Col. 2a, and a white collar family cost of living series, used for Col. 2b. As can be seen, the two diverge very seriously. The Bogota series (Cols. 6, 8, and 10) were calculated using the Central Bank price series. It must be remembered that these were not a cost of living series, since equal weights were given to each of a selected set of items.

TABLE A-2

Average Daily Wages in Construction (Excluding Fringe Benefits): First Semester of 1971
(pesos)

C I T Y	M A E S T R O	O F F I C I A L	H E L P E R
Bogotá	83.61	33.19	20.39
Medellin	65.98	29.32	20.72
Cali	103.60	41.60	20.64
Barranquilla	69.16	33.84	25.49
Cartagena	68.49	35.94	19.66
Bucaramanga	76.19	28.27	18.55
Cúcuta	63.50	33.18	18.62
Pasto	62.00	25.20	14.64
Manizales	53.58	26.37	14.91
Neiva	94.86	35.94	18.71
Promedio Total Nacional	74.10	32.29	19.23

Source: Unpublished data of [DANE], compiled by Jorge Rodriguez, of Planeación Nacional.

TABLE A. 3
CONSTRUCTION WAGES BY SKILL LEVEL, BOGOTA

[illegible]

b) Years of known samplings.

Sources: Worksheets made available by Robert Merrill (current pesos per day).

T A B L E A - 5

Occupational Distribution of the Income Earning Population: 1950-1970
(Percent)

	<u>Blue Collar Workers</u>	<u>White Collar Workers</u>	<u>Own Account Workers</u>	<u>Employers</u>
1950	38.48	22.04	27.38	12.10
51	38.15	22.57	27.40	11.88
52	37.82	23.10	27.42	11.66
53	37.49	23.63	27.44	11.44
54	37.16	24.16	27.46	11.22
1955	36.83	24.69	27.47	11.01
56	36.50	25.22	27.49	10.79
57	36.17	25.75	27.51	10.57
58	35.84	26.28	27.53	10.35
59	35.51	26.81	27.54	10.14
1960	35.18	27.34	27.56	9.22
61	34.85	27.87	27.58	9.70
62	34.52	28.40	27.60	9.48
63	34.20	28.93	27.61	9.26
64	33.87	29.46	27.63	9.04
1965	33.21	30.44	27.21	9.14
66	32.55	31.41	26.79	9.25
67	31.89	32.38	26.38	9.35
68	31.23	33.35	25.96	9.46
69	30.57	34.32	25.55	9.56
1970	29.92	35.30	25.11	9.67

Sources and Methodology: Data for Table A-6.

T A B L E A - 6

Incomes by Occupational Position: 1950-1970
(Value Figures in Millions)

	(1) Employers #	(2) Independent Workers #	(3) Total Unpaid Earners #	(4) Income of Unpaid Workers (Millions)	(5) Per Capita Income of Unpaid Workers	(6) Imputed Labor Income of Unpaid Workers	(7) Objeros *	(8) # Empleados	(9) Total # remune- rados	(10) Total Payments to Labor	(11) Labor Income Per Paid Worker	(12) Labor Income Per Objero	(13) Labor Income Per Empleado
1950													
1951	3,898.08	9,075.82	12,973.90	3,938.5	3,330.1	1,969.3	12,635.30	7,402.04	20,038.34	2,661.8	1,509.4	918.98	2,246.91
2	3,920.18	9,320.87	13,241.05	4,320.5	3,594.4	2,160.3	12,851.12	7,761.04	20,612.16	3,194.4	1,549.8	1,001.23	2,448.01
3	3,942.40	9,572.53	13,514.93	4,759.3	3,869.6	2,379.7	13,069.59	8,137.45	21,207.04	3,626.8	1,710.2	1,097.27	2,682.83
4	3,964.76	9,830.98	13,795.74	5,229.8	4,169.2	3,151.8	13,291.77	8,532.12	21,823.99	4,190.1	1,920.0	1,223.48	2,991.41
5	3,987.24	10,096.43	14,083.69	5,703.6	4,413.3	3,107.8	13,517.73	8,945.92	22,463.65	4,560.0	2,029.9	1,284.83	3,141.41
1956	4,009.85	10,369.03	14,378.88	6,215.5	4,613.3	3,604.3	13,747.53	9,379.80	23,127.33	4,957.2	2,143.4	1,347.71	3,295.15
7	4,032.59	10,648.99	14,681.58	7,208.5	5,013.3	4,182.5	13,981.24	9,834.72	23,815.96	5,811.5	2,440.2	1,521.89	3,721.02
8	4,055.45	10,936.52	14,991.97	8,365.0	5,697.6	4,743.8	14,218.92	10,311.70	24,530.62	6,807.9	2,775.3	1,722.29	4,211.00
9	4,078.45	11,231.80	15,310.25	10,163.4	6,638.3	5,081.7	14,460.64	10,811.82	25,272.46	7,880.0	3,118.0	1,922.79	4,701.22
60	4,101.57	11,535.06	15,636.63	11,408.2	7,295.8	5,704.1	14,706.47	11,335.20	26,042.67	9,202.0	3,533.4	2,165.21	5,253.94
1961	4,124.82	11,846.51	15,971.33	13,026.3	8,156.1	6,513.2	14,956.48	11,886.00	26,842.48	10,874.8	4,051.3	2,467.00	6,031.82
2	4,148.21	12,166.36	16,314.57	14,427.0	8,843.0	7,213.5	15,210.74	12,462.47	27,673.21	12,816.0	4,631.2	2,803.39	6,854.29
3	4,171.73	12,494.85	16,666.58	17,619.9	10,572.0	8,810.0	15,469.32	13,066.90	28,536.22	16,595.6	5,815.6	3,498.74	8,554.42
4	4,198.82	12,830.97	17,029.79	23,359.6	13,717.0	11,679.8	15,725.72	13,677.17	29,402.89	19,324.0	6,572.1	3,930.21	9,609.36
5	4,222.63	13,177.41	17,400.04	25,586.9	14,705.1	12,793.5	15,993.06	14,340.51	30,333.57	22,300.8	7,351.9	4,347.92	10,630.66
1966	4,246.57	13,479.77	17,726.34	29,753.9	16,734.7	14,877.0	16,264.94	15,036.03	31,300.97	26,753.9	8,547.3	4,999.59	12,224.00
7	4,270.65	13,769.24	18,039.89	33,382.7	18,373.2	16,691.4	16,541.14	15,765.27	32,306.41	31,049.3	9,610.9	5,562.19	13,599.55
8	4,294.86	14,068.71	18,363.57	36,635.3	20,806.7	19,317.7	16,822.65	16,529.89	33,352.54	35,044.7	10,507.4	6,017.64	14,713.13
9	4,319.21	14,378.46	18,697.67	42,063.7	22,163.9	21,031.9	17,108.63	17,331.59	34,400.22	41,852.3	12,169.2	6,897.86	16,863.27
1970													

Table A-6 Continued:

Sources and Methodology:

Cols. (1) and (2), are based on the population census of 1951 and 1964 and DANES Encuesta de Hogares 1970, which provide estimates of those three years. Intervening years estimates were produced by interpolation. Some adjustments were made to take account of censal underenumeration; in particular, we adjusted 1951 figures for employees up by one percent and those for obreros and independent workers by two percent; the objective was to obtain the same remaining degree of under (or over) enumeration in the two cases; 1970 figures were designed to imply a labor force growth rate over 1964-70 in accord with the judgment of demographers.

Col. (4) is the national accounts category "income of family units and non-incorporated enterprises". It constitutes, conceptually an overestimate of the income of unpaid workers, since some of it accrues to people listed as paid workers.

Col. (6), one half of Col. (5), incorporates the assumption that one half of the income of unpaid workers was imputed labor income. (Taking into account the bias just cited to Col. (4), the implicit assumption really is that more than half of the income of this group is from labor).

Cols. (7) to (13) have sources symmetrical to those of Col. (1)-(6). Col. (10) is from the national accounts and may, therefore, for reasons explained elsewhere (See Table 4) constitute an upward biased estimate.

T A B L E A - 7

Expenditure/Income Ratios by Family Size, Four Cities: 1967

1.967

Family Size		Expenditure/Income Ratio
1	Person	74.0
2	Persons	92.0
3-5	Persons	98.1
6-8	Persons	101.6
9	or more Persons.	98.2
TOTAL		98.9

FUENTE: Prieto, Estructura op. cit., Parte Primera, p. 63.

TABLE A - 8

Estimates of the distribution of Urban Occupied Dwellings:
1964

	OWNED	RENTER	OTHER ^{1/}	TOTAL
Number	693,883	497,674	90,044	1,281,601
Percent	54.14	38.83	7.03	100.00

^{1/} Usually the residents are caretakers, have the dwelling in fidecomisio, or some such arrangement.

TABLE A-12a

Distribution of Private Investment in Education by Income Levels:

Four Largest Cities: 1967-8

(Values expressed in 1966 pesos)

Decile (bottom to top)	Data Adjusted to Decile Basis (values expressed in 1966 pesos)				Original Data		
	Percent of Total Income	Three Monthly Family Income ^b	Annual Personal Income ^c	Share of Expenditure Going to Education	Share of Income pen on Education	Three Monthly Family Income Level	Share of Expenditure Going to Education
(1)	(2)	(3)	(4)	(5)	(6)	(7)	
1	1.9	0-883	0-2208	2.9	4.28	0-999	2.9
2	3.0	883-1767	2208-4160	1.4	2.00	1000-1999	1.4
3	3.9	1767-2652	4160-6632	2.4	2.76	2000-2900	2.4
4	4.7	2652-3536	6632-8840	3.7	4.28	3000-3999	3.7
5	5.8	3536-4420	8840-11052	4.1	3.69	4000-4999	4.1
6	7.0	4420-6189	11052-15,472	4.5	3.94	5000-6999	4.5
7	8.5	6189-7957	15,472-19,892	5.5	5.32	7000-8999	5.5
8	10.8	7957-13262	19,892-33,148	5.8	5.55	9000-14999	5.8
9	16.0	13,262-17680	33,148-44,200	6.6	5.71	15000-19999	6.6
10	39.4	≥17,680	≥44,200	7.5	5.62-6.00 ^a	≥20,000	7.5
Total	100.0			4.5	4.4		4.5

^a Assuming alternative savings rates of .20 and .25; since this income category was open ended (no average income figures were provided) the estimation of the average income involves a higher possible error than in the other categories.

^b Assuming a price increase of 10% between the two years, (the GNI deflator rose by 10%, the GDP deflator by 8.9% and that of private consumption by 9.6%) conversion CED data to 1966 requires deflation by 1.131, since it refers to the period May 1967 to May 1968.

Assumes that there were 1.6 persons per family, based on the 1964 census data.

Sources and Methodology for Table A-12a

The data of Col. (1) are from Prieto "Estructura...", op. cit. Col. (2); the income categories from Prieto have been converted from the 1967 pesos in which they were originally presented to 1966 pesos (see Footnote b).

Col. (3) was based on Col. (2) and the assumption that there were 1.6 persons per family, based on the 1964 population census data.

Cols. (4) and (5) were estimated by interpolation to convert the expenditure data from the income categories used by Prieto to the decile breakdown use here.

Col. (6) is the income classification used by Prieto and Col. (7) shows the share of all expenditures going to education in each of these categories (from Prieto, Parte III, p. 14).

T A B L E A - 1 3

**Share of All Raw Materials Imported:
Bogota vs Rest of Colombia**

	Bogota			Rest			Total		
	Imported Inputs (1)	Total Inputs (2)	Imported Total (1/2)	Imported Inputs (4)	Total Inputs (5)	Imported Total (4/5)	Imported Inputs (6)	Total Inputs (7)	Imported Total (7/8)
Food	315.6	1,652.2	19.10	536.5	7,271.4	7.37	852.1	8,923.6	9.55
Beverages	57.3	372.1	15.40	130.3	775.4	16.80	187.6	1,147.5	16.35
Tobacco	6.05	60.01	10.09	18.65	201.79	9.24	24.7	261.8	9.47
Textiles	39.5	353.1	11.19	272.8	2,192.5	12.44	312.3	2,545.6	12.26
Clothing & Footwear	2.3	222.3	1.05	7.2	881.9	0.82	9.5	1,104.2	0.86
Wood (excl. furniture)	4.4	26.2	16.90	1.2	156.9	0.76	5.6	183.1	3.10
Wood furniture & accessories	0.30	40.5	0.75	0.27	48.9	0.55	0.57	89.4	0.64
Paper & Paper Products	11.3	116.6	9.70	172.0	730.5	23.54	183.3	847.1	21.64
Publishing & related industries	127.2	194.9	65.25	78.3	240.4	32.57	205.5	435.3	47.21
Leather (excl. footwear)	5.1	69.5	7.45	25.7	245.9	10.45	30.8	315.4	9.77
Rubber goods	31.6	69.7	45.41	211.1	413.9	51.00	242.7	483.6	50.18
Chemical products	536.0	790.2	67.83	959.5	1,668.9	57.49	1,495.5	2,459.1	60.81
Petroleum & Coal derivatives	21.6	27.7	78.14	20.8	123.7	2.25	42.4	951.4	4.46
Non-metallic mineral products	12.8	141.2	9.11	128.1	568.85	22.51	140.9	710.05	19.84
Basic Metal Industries	82.2	121.9	67.47	136.3	1,043.7	13.05	218.5	1,165.6	18.74
Metal products (excl. machinery + transport equip. Non-electric machinery	117.4	302.5	38.82	260.0	609.6	42.65	377.4	912.1	41.38
Electric machinery + related articles	138.5	333.6	41.51	192.1	356.49	53.88	330.6	690.09	47.91
Transportation materials	266.4	405.3	65.73	80.4	200.3	40.13	346.8	605.6	57.26
Other manufacturing industries	112.5	309.3	36.39	83.8	229.6	36.49	196.3	538.9	36.43
Total	1,904.4	5,649.5	33.71	3,353.8	18,890.8	17.75	5,258.2	24,540.2	21.43