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ON THE EMERGING PROBLEMS OF DEVELOPMENT POLICY

Brazilian Size Distribution of Income

By ALBERT FISHLOW*

The two postwar decades have resolved definitively the capacity of developing nations to expand at rates in excess of 2 percent per capita. Yet it has become increasingly apparent that such a yardstick is an inadequate measure of performance. Here I examine another and more neglected dimension of development, the distribution of income. My objectives are fourfold: to describe briefly the procedures used to derive an estimated income distribution for Brazil for 1960;¹ to discuss the profile of poverty as it presents itself in a developing country; to indicate the factors operating to produce skewness in the Brazilian distribution; and to assess, in light of these and governmental policy measures in the 1960's, the apparent changes between 1960 and 1970.

I

The four distributions of income set out in Table 1 derive from a stratified sample of approximately eleven thousand families drawn from the 1960 Brazilian census returns and accurately reproducing the population as a whole. The distributions labeled as "original" include monetary remuneration only, as requested by the census. To these, four adjustments are

then made, leading to the corrected distributions. The adjustments are of two basic types, one set to incorporate nonmonetary income excluded from the census inquiry, the other to reallocate income to family workers reported as economically active but without monetary remuneration. After allowance for income in kind for imputed rent, imputed rural home consumption, and imputed room and board for domestic servants, and distribution of some fraction of household chief's income to family workers, income per worker is increased almost 20 percent and concentration significantly reduced. Family income is affected in the same direction but to a lesser degree.²

The resultant concentration of income reported in Table 1, as measured by the Gini coefficient, is similar to that of most of the Latin American countries. Such an index also bespeaks considerably more inequality than currently prevails for the United States, Canada, Japan, and Western Europe. (See Irving B. Kravis and Econ. Comm. for Latin America 1967.)

² These reported distributions differ from those of William R. Cline and Economic Commission of Latin America 1970 for the following principal reasons. In the first place, both used estimates for the open-ended class derived from a Pareto coefficient for the entire distribution; I had a smaller upper class, and used an extrapolation of only the last two classes to determine the Pareto coefficient applicable. Secondly, the corrections here are both more extensive and keyed upon individual characteristics available on the sample. Thirdly, the sample method made it possible to construct the family income series.

* University of California, Berkeley. I wish to acknowledge the valuable assistance and contributions of Astra Meesook to this summary of joint ongoing research.

¹ Fuller detail is being made available in a Technical Appendix by Albert Fishlow and Astra Meesook, available on request from the author.

TABLE 1—BRAZILIAN^a SIZE DISTRIBUTIONS OF INCOME, 1960

Monthly Income in 1960, NCr\$	Economically Active Population ^b				Families			
	Original		Corrected		Original		Corrected	
	Percent- age of Pop- ulation	Percent- age of Income	Percent- age of Pop- ulation	Percent- age of Income	Percent- age of Pop- ulation	Percent- age of Income	Percent- age of Pop- ulation	Percent- age of Income
None	14.7	0.0	.5	0.0	2.7	0.0	1.7	0.0
0- 2.1	22.3	5.2	26.1	5.2	14.8	2.1	5.4	.7
2.1- 3.3	14.4	7.0	16.2	6.4	15.0	4.3	12.5	2.9
3.3- 4.5	10.5	7.4	11.8	7.1	12.9	5.5	12.1	4.4
4.5- 6.0	13.1	12.3	14.0	11.3	13.1	7.4	14.6	7.1
6.0-10.0	13.8	20.0	17.3	21.0	16.7	14.3	22.3	16.0
10.0-20.0	8.2	22.2	10.5	23.6	15.5	24.2	20.4	26.7
20.0-50.0	2.6	16.4	3.1	16.8	7.5	25.0	8.9	25.3
Over 50.0	.5	9.4	.5	8.6	1.8	17.2	2.1	16.8
Mean	5.52		6.51		9.24		10.95	
Mean (US\$/year) ^c	513		606		860		939	
Gini Coefficient	.59		.52		.55		.50	

^a Excludes Center-West and North, which accounted for 7.7 percent of the population in 1960.

^b The distribution of the economically active population plus individuals receiving income is not significantly different: the top 3.2 percent receive 26.8 percent of the income (uncorrected). Since most of the analysis applied subsequently is more appropriate to the economically active population, we shall use it as our basic distribution of individuals.

^c Converted at an exchange rate of .129 NCr\$ per dollar, the purchasing power equivalent rates in June 1960 as reported in *Econ. Bull. for Latin America*, Oct. 1963, 203.

Source: See text.

More precise comparisons would require value judgments concerning the rate of decline of marginal utility as income rises, as well as more confidence in the income distributions reported in other sources (Anthony B. Atkinson). But that is not my interest here.

Rather, I wish to focus on the internal welfare implications of the size distribution of income in Brazil. Comparisons of measures of inequality require simultaneous comparison of absolute income levels if they are to be meaningful. Income more equally distributed about a low level may imply a considerably greater incidence of poverty than less equal distributions about a higher mean. The tragedy of the Brazilian situation, like that of most developing countries, is that the distribution and the level go together. By American standards of poverty, virtually the entire popu-

lation would qualify. This is after the extensive redistribution occasioned by grouping into family units. The small decline in the Gini coefficient as one moves from the distribution of the economically active population to families is deceptive. The relevant comparison is with the much greater inequality of the distribution of *all* individuals, some 70 percent of whom earn no income at all. But families, while an important mechanism for redistribution of income at a moment of time, also are an important source for transmitting inequality into the future. To the extent that the probability of children earning increased income in the future is influenced by parents' income, equality of opportunity will not prevail, and inequality will tend to persist.

The characteristics of poverty in Brazil strongly suggest that such a mechanism is

TABLE 2—THE PROFILE OF BRAZILIAN POVERTY, 1960
(In Percent)^a

	Poor Families	All Other
Sex of Head of Household		
Male	83	92
Female	17	8
Age of Head of Household		
14-29	17	20
30-60	70	66
61+	13	14
Education of Head of Household		
None	64	35
Primary	35	55
Lower Secondary	1	5
Upper Secondary	—	2
University	—	2
Head of Household Economically Active	83	92
Sectoral Distribution of Economically Active		
Agriculture and Extractive Industry	68	49
Commerce	10	15
Services	5	11
Transport and Communications	9	8
Liberal professions, Governmental, Administrative, etc.	5	8
	2	8
Position in Occupation of Head of Household		
Employer	1	4
Self-employed	51	45
Employee in Private Sector	37	38
Employee in Public Sector	3	9
Sharecropper	8	4
Number of Workers per Family		
0	11	3
1	62	59
2	15	21
3+	12	17
Migratory Status of Head of Household		
Migrant from Rural Area	14	14
Migrant from Urban Area	19	37
Nonmigrant	67	49
Location of Family		
Urban	40	54
Rural	60	46

^a May not add due to rounding

Source: See text.

TABLE 2—(Continued)

	Poor Families	All Other
Region of Family		
Northeast	43	15
East	40	38
South	17	47
Family Size		
1	4	6
2-3	18	33
4-5	27	32
6+	51	29
Number of Children, 0-14		
0	15	35
1-2	29	39
3-4	29	19
5+	27	7
Number of Children in School		
0	67	67
1	13	16
2	10	9
3+	10	8

operative. Table 2 provides a profile of poverty in 1960, where poverty is defined by Brazilian standards themselves. The real minimum wage for 1960 in the Northeast, the poorest region, is taken as the lower limit of acceptable income for a family of 4.3 persons.³ For rural Brazil, the wage prevailing in the rural areas of the Northeast is taken; for the urban Northeast, the standard of the medium sized municipio is applied; and for all other urban residents, the Northeast level, incremented by 15 percent to allow for higher relative prices, is applied. The poverty line for different size families is defined with the aid of the elasticity of expenditure on food with respect to family size; because of

³ On the occasion of changing the definition of the minimum wage in 1950 to include necessities of family, rather than only those of the individual worker, an elaborate survey of incomes and family size was undertaken (Brasil 1949). The average size resulting was 4.3 persons, and was used for the average family. In fact, the sample reveals an average size in 1960 of 4.9 persons. The results do not hinge crucially on which size is taken.

economies of scale larger families need relatively less income, and conversely for smaller.⁴

The decision to employ a uniform national standard of poverty rather than the intricate, regionally differentiated system of minimum wages requires brief comment. While the minimums set by law are in theory regionally differentiated by required minimum standards, they are, in fact, reflections of the existing structure of relative incomes. The minimum wage is much higher in Rio de Janeiro than interior Ceará more because of relative income levels than relative prices. The latter vary by much less than the 100 percent implied in the 1960 structure. A poverty index based on varying minimum wages would therefore include all persons in the lower reaches of the different regional distributions independently of their absolute level of well-being. Instead, an absolute minimum has been adopted here, adjusted for

⁴ Functions of the form $\log F = a + b \log y + c \log S$ were fit to the data of the rural surveys described earlier, and to data generated from similar surveys of urban capital and interior cities in 1961-62 and 1962-63. The respective results, appropriately weighted, are

$$\log F_R = 1.60 + .39 \log Y_R + .54 \log S \quad R^2 = .99$$

(11.9) (3.4)

$$\log F_u = -1.87 + .54 \log Y_u + .37 \log S \quad R^2 = .88$$

(12.9) (3.6)

If we accept as a standard of identical welfares equal relative expenditures on food, we have

$$d \log F/Y = (b - 1)d \log Y + cd \log S = 0,$$

or

$$\frac{d \log Y}{d \log S} = \frac{c}{1 - b}$$

An elasticity less than unity such as results here, .89 for rural families, .82 for urban, implies economies of scale in consumption. Consequently for equivalent welfare, income need not increase as rapidly as family income above the standard, and income per capita must increase below.

The information cited on relative prices is based upon an index of relative general prices derived from the prices underlying the survey expenditures, as well as other regional prices directly obtained.

the much smaller apparent variation in relative prices.

Even by such a limiting criterion, fully 31 percent of Brazilian families in 1960 did not approach an acceptable standard of income. The differentiating characteristics of poverty emerge clearly in Table 2: low levels of education; concentration in agricultural activities; location in, and non-migration from, rural areas; limited number of workers per family; residence in the Northeast; larger than average family size and number of children; and relatively smaller opportunities for education of those children. The shape of poverty in Brazil thus differs importantly from the profile of the poor in the United States. In this country, an important segment of the poor consists of single-person households, the aged, families headed by females, and families whose head is not participating in the labor force. (Mollie Orshansky). In short, the 15 to 20 percent incidence of poverty in the United States is heavily weighted by special and relatively handicapped groups who are bypassed by income growth. The Brazilian problem is more one of low levels of productivity within the mainstream of the rural economy.

The policies appropriate to dealing with poverty are correspondingly differentiated. Negative income taxes, subsidies, and welfare programs have less role to play in Brazil than efforts directed at disseminating modern techniques in agriculture and accelerating growth more generally. Note that policies designed to tie the population to agriculture by making urban conditions less satisfactory will not help; the poor are not to be especially found as migrants engaged in marginal activities in urban areas.

Yet the problem of poverty will not easily yield. The average number of children per poor family is 3.1 compared to 1.7 for all others. The reason for the discrepancy is that family size and family income are not strongly associated; if they were

positively related, larger families would escape the poverty definition. Children reared in the circumstances of poverty consequently account for 44 percent of the total number, although poor families comprise less than a third of the population. These children carry with them not only the scars of malnutrition, no transference of past assets and status, and limited aspirations, but also deprivation of education. The probability of a poor child attending school is significantly smaller than one reared in more adequate circumstances. Poor children in school number only a third of the total; moreover, they stay fewer years and advance less rapidly. Past illiteracy and present poverty are strongly associated. But so are present poverty, future illiteracy, and probably future poverty. For this reason, the trade-off between redistribution and growth is generally exaggerated. There are possibilities of achieving both simultaneously by improved quality of human resources.

II

Thus far we have focused on the differentiating characteristics of poor families. It is possible to broaden our scope to the structural factors making for inequality among workers more generally. A useful inequality index for this purpose is that developed from information theory, and elaborated by Henri Theil. It may be written as

$$(1) \quad \sum_i y_i \log \frac{y_i}{x_i},$$

where y_i are the income shares of class i and x_i the population shares, and interpreted as the expected information of a message which transforms population shares into income shares. When per capita incomes in all classes are equal, it therefore takes a value of zero. Its extreme value is $\log N$, the number of individuals,

which corresponds to a situation where one person receives income, and no others do; where equivalent proportions receive corresponding income shares, the measure is identical, regardless of the absolute number of persons.

Like the Gini coefficient this inequality measure is distribution free. Its principal attraction in this context is its convenient aggregation properties. The measure can be decomposed two ways. One is into between and within components; the other is into the contribution to total inequality of variation in mean incomes among sectors, regimes, etc., taking account of interactions as well. We use both. We may write, respectively, for the case of two characteristics:

$$(2) \quad I_{ijk} = \sum_i y_{i..} \log \frac{y_{i..}}{x_{i..}} + \sum_i y_{i..} \left\{ \sum_j \frac{y_{ij.}}{y_{i..}} \log \frac{y_{ij.}/y_{i..}}{x_{ij.}/x_{i..}} \right\} + \sum_i \sum_j \frac{y_{ij.}}{y_{i..}} \left\{ \sum_k \frac{y_{ijk}}{y_{ij.}} \log \frac{y_{ijk}/y_{ij.}}{x_{ijk}/x_{ij.}} \right\}$$

and

$$(3) \quad I_{ijk} = \sum_j y_{.j} \log \frac{y_{.j}}{x_{.j}} + \sum_k y_{.k} \log \frac{y_{.k}}{x_{.k}} + \left\{ \sum_j \sum_k y_{jk} \log \frac{y_{jk}}{x_{jk}} - \sum_j y_{.j} \log \frac{y_{.j}}{x_{.j}} - \sum_k y_{.k} \log \frac{y_{.k}}{x_{.k}} \right\},$$

where y are the income shares, x the population shares, and the subscripts i , j , and k refer to income class, sector, and education. Then (2) shows how to express total inequality as a sum of the differences among income classes alone, plus the variation of sectors within income classes, plus the variation of the means of the different education classes, within sector and income cells. In fact, for our data there is no variation within income class—all ob-

servations are assumed clustered at the midpoint—and so the last two terms go to zero. Equation (2) permits us to determine total inequality of the population considering variation in income class alone. This is tabulated as the total of Table 3.

TABLE 3—DECOMPOSITION OF
INEQUALITY COEFFICIENT^a

	Corrected	Uncorrected
Total	.57	.72
Within	.25	.29
Between ^b	.32	.43
Education	.20 (.11)	.25 (.11)
Sector	.12 (.03)	.19 (.05)
Age	.09 (.09)	.13 (.11)
Region	.04 (.03)	.05 (.03)
Interactions		
E-S	-.10	-.15
E-A	-.01	-.02
E-R	-.03	-.04
S-A	-.02	-.04
S-R	-.02	-.03
A-R	.00	.00
E-S-A	+.02	+.04
E-S-R	+.02	+.03
S-A-R	.00	.00
E-A-R	.00	+.01

^a Measured in natural *log* units.

^b The three regions are the census-defined Northeast, East, and South. The seven ages are 10-14, 15-19, 20-29, 30-39, 40-49, 50-59, and 60+. The five sectors are agriculture and extractive; industry and construction; services; merchandise commerce, transport, and communications; and financial services, independent professions, and public administration. The six educational categories are none, primary incomplete, primary complete, lower secondary, upper secondary, and university.

Source: See text.

Equation (3) enables us in turn to determine how much of that total inequality can be explained by variation among sector means and education class means. The difference between (2) and (3) is due to the variation in income classes within the *j*-times-*k* sector-education cells, and is due to omitted characteristics. This is the "Within" category of Table 3. The terms in equation (3) further partition the

total explained inequality into three components. The first term is the weighted difference among sector per capita incomes relative to the average; the second is a similar variation of per capita income in different education classes around the average; and the third is an interaction between the two. These are reported as the component "Between" and "Interaction" entries of Table 3.

Turning at last to the substantive results, a number of findings emerge. In the first instance, age, sectoral, regional, and educational differences succeed in explaining something more than half the observed income inequality. These variables define the most important discriminants of productivity; variation of individual abilities, inherited wealth and status, and stochastic elements contribute to the further variability within these categories.

The explained proportion is higher for the uncorrected series since the concentration of low and zero income persons in the agricultural sector enhances the explanatory power of that variable. The relative hierarchy in significance of the four characteristics is not unequivocal, at least among education, sector, and age. Substantial interaction occurs between education and sector: limited education and employment in the agricultural sector together produce smaller incomes than would be expected from the educational or sectoral classifications alone. For this reason, I have tabulated the parenthetical values shown. They are the contributions of the specified characteristic, holding all the other characteristics constant, as it were; in terms of our expressions above, they are the last term of equation (2), after all other variables have been considered. This treatment of the interaction enhances the role of age especially, since it is by and large independent of the other classifications. It also establishes educa-

tion as more important than the sectoral differences.

What does seem clear, irrespective of the mode of calculation, is the limited contribution of income variations among regions to the observed total inequality. (Since the regional disparities maximize the per capita differences, separation into more units, say states, would have only a modest effect upon the magnitude of the regional contribution.) Even if regional equalization of incomes were to occur, the extent of reduction in existing inequality would be quite limited. Personal and other characteristics, as reflected in the "Within" contribution, and such immutables as age, contribute far more. Yet this is not to say that the long-standing commitment, intermittently implemented, to assist the Northeast is unwise, or refuted by these results. Since both the illiterate and those engaged in low productivity activities are more than proportionally concentrated there, there is indeed a much higher pay-off to regionally oriented policies that go to those fundamental factors. Moreover, the objective is not only greater equality, but less absolute poverty. And the data earlier presented leave no doubt about the regional concentration of incidence. What our findings sensibly suggest is that an equalization policy that did not attack those root causes would leave total income inequality substantially unaltered.

Another view of the regional situation is presented in Table 4. There a decomposition similar to that of Table 3 is presented, but differentiated by region. I would call attention to three points. The first is the fact that inequality is not closely associated with per capita income. The Northeast, with far lower income per capita than the East, displays less inequality; indeed, as measured by the Gini coefficient, it is less than the South. Differential regional income, while obviously influencing standards of living, does not by itself reduce

TABLE 4—REGIONAL DECOMPOSITION OF INEQUALITY COEFFICIENT^{a,b}

	Northeast	East	South
Total	.50	.56	.47
Within	.20	.23	.24
Between	.30	.33	.23
Education	.21 (.12)	.23 (.12)	.11 (.09)
Sector	.13 (.03)	.13 (.03)	.08 (.03)
Age	.08 (.07)	.10 (.08)	.09 (.09)
Interactions			
E-S	-.10	-.11	-.05
E-A	-.01	-.02	.00
S-A	-.01	-.03	-.02

^a Measured in natural *log* units.

^b Corrected.

Source: See text.

inequality. Second, as to be expected from the limited regional interaction present in Table 3, the relative importance of education, sector, and age do not considerably vary, although the first two are somewhat more important for the Northeast and East.

The third observation relates to the relative magnitude of the "Within" inequality. For although total inequality is independent of income levels, the contribution of the residual variation to total inequality is not. In other words, age, sectoral, and educational characteristics seem to be a *less* satisfactory predictor of inequality in the higher income regions. But a moment's reflection suggests that this is as it should be. Where personal characteristics can have more play, and social mobility is more prevalent, individual income will be less accurately characterized by group averages. By contrast, the more status-oriented a society, and the more rigid its resistances to mobility, the smaller the opportunities for individual variation within defined educational, sectoral, and age classifications. This interpretation suggests that attention to the "Within" as well as total inequality is called for, as an additional and informative

parameter of the income distribution. The wider applicability of this hypothesis, for other countries and for other groupings such as higher educational classes, skilled sectors, etc., remains to be examined.

The importance ascribed to age and education in the preceding decomposition lends support to an underlying model of human capital accumulation as a fundamental determinant of differential income levels and, accordingly, inequality. As presented by Gary S. Becker and Barry R. Chiswick, that formulation reduces to

$$(4) \quad \log E_i \cong a + \bar{r}'n_i + u_i,$$

where E_i are the earnings of the i th person, a the \log of the average income of unskilled persons, \bar{r}' the average rate of return adjusted for income foregone, n_i the investment period, and u_i a conjunction of individual abilities and chance. Then, excluding u_i , the variance and means of both rate of return and the investment period would enter into the determination of the variance of $\log E_i$ (Chiswick, p. 496):

$$(5) \quad \begin{aligned} \text{Var}(\ln E_i) &= \text{Var}(\bar{r}'n_i) \\ &= \text{Var}(n_i)\bar{r}'^2 + \text{Var}(\bar{r}')\bar{n}_i^2 \\ &\quad + \text{Var}(n_i)\text{Var}(\bar{r}'). \end{aligned}$$

Since the variance of the logarithm of income is another measure of income inequality, we have another decomposition, involving this time only returns and the investment period. Age is readily introduced, as well as other factors that systematically alter the rate of return.

Despite its obvious appeal, I would enter three caveats against uncritical acceptance of the model. In the first instance, it unequivocally implies causality from investment to income. Yet the data we use to implement the theory are corrupted by exactly the opposite relationship. In the case of Brazil this relationship

is important and pervasive, where family income is one of the significant determinants of school attendance (Lerner). If higher education is monopolized by those already wealthy, and they pass along to their children opportunities to command income unassociated with actual productivity, increasing the number of educated persons will not lead to the past pattern of results. A second and related point has to do with the persistence of inequality of which there is no mention in the model. In fact, of course, the Brazilian educational system itself is an important mechanism for guaranteeing the maintenance of the existing structure, rationing degrees not only to the already well-to-do but also predominantly to those with educated parents. If broader access to training is secured, it does not mean other institutional mechanisms favoring persistence of income differentials will not emerge.

Lastly, it is well to remember not only how much of inequality is explained by education, but also how little. Age and education together do not account for more than a third of the variation in individual incomes. When we put aside the stochastic error term, we are far from ignoring an insignificant part of the problem.⁵ Whether all the rest is totally independent and unsystematic may be doubted. Equation (5) and the corresponding assumption that inequality is directly affected by the rate of return and number of years of schooling alone is a long leap of faith. Statistical regression analysis at an aggregate level is not a useful discriminant. In applying the model to regional data for Brazil, it turns out that almost all income variation is explained by differential years of schooling— $R^2 = .994$ —despite our earlier finding of an indepen-

⁵ "For simplicity, let us neglect the residual U_i and assume that all income above \bar{Y}_0 is due to investments in training." [Chiswick, p. 496]

TABLE 5—SIZE DISTRIBUTION OF INCOME, 1970
In Percent

NCr\$ per Month	Total Economically Active Population		Agriculture		Nonagriculture	
	Population	Income	Population	Income	Population	Income
None	11.7	0.0	20.1	0.0	5.1	0.0
0-100	31.7	8.0	46.8	28.4	19.7	3.4
101-150	12.8	6.2	15.3	17.8	10.7	3.6
151-200	15.6	10.6	10.0	16.3	20.0	9.3
201-250	4.5	3.9	1.7	3.7	6.6	3.9
251-500	14.6	21.2	4.6	16.0	22.7	22.6
501-1000	5.9	17.1	1.0	7.2	9.7	19.3
1001-2000	2.2	13.0	.3	4.3	3.8	14.9
2001+	1.0	20.1	.1	6.4	1.7	23.0
Mean NCr\$	258.1		107.3		377.1	
Mean U.S. 1960 \$ per year ^a	679		282		992	
Gini coefficient	.63		.53		.58	

^a Converted at the 1960 parity rate multiplied by the Brazilian implicit *GDP* price deflator: NCr\$ 4.56.

Source: See text.

dent regional effect of not inconsiderable magnitude *after* allowing for education.

We may conclude that education takes us part, but unfortunately not all, of the way in explaining the Brazilian distribution of income in 1960. Research is continuing upon the composition of the "Within" variation and the systematic contribution of personal characteristics like sex, color, and migratory status. Ultimately there will still remain a large unexplained component. Its persistence and the institutional characteristics which nurture it must enter into any fully satisfying explanation of income inequality.

III

Since 1967 Brazil has grown at real rates of 9 percent and greater, and the immediate prospects seem equally auspicious. This economic "miracle" has already begun to rival the earlier German example. The common ingredient of greater scope to market forces and freer rein to the private sector has not gone unnoticed; there

is already talk of the applicability of the Brazilian model to other parts of the developing world.

Yet the recent publication of the preliminary results of the 1970 census give much less cause for satisfaction on the income distribution front (Brasil 1971). In Table 5 I have presented estimates of the income distribution for the total economically active population and its agricultural and nonagricultural components. The coverage of the censuses of 1960 and 1970 are quite comparable, and the treatment of the open-ended class is identical for the two dates. The conclusion that inequality has increased over the course of the decade accordingly seems correct, if lamentable. The upper 3.2 percent of the labor force commands 33.1 percent of the income in 1970, compared to about 27 percent in 1960. Although the concentration of income is less in agriculture than nonagriculture, thereby reversing their 1960 ordering, this accomplishment is not indicative of greater welfare in rural areas.

Rather, the sectoral differential in reported census incomes has widened, a phenomenon corroborated by the independent quarterly surveys of households conducted since 1968 (Brasil 1968).

It is legitimate to object that the 1970 data are not a fair test of what rapid growth in a capitalistic mold implies. Little more than half the decade is spanned by the continuity of military government since 1964, and only the last segment of that is characterized by substantial material progress. In fact, it is reasonable to presume that stabilization was more responsible than growth for the widening inequality portrayed in Table 5 (Fishlow). Between 1964 and 1967, as the consequence of policies both severely restraining nominal wages and inducing "corrective inflation"—adjustment of governmentally administered prices—real minimum wages declined 20 percent. They subsequently barely held their own. Average real salaries in industry fared somewhat better, declining by less and increasing more rapidly from their nadir. The 1970 level stands about 10 percent above 1964 receipts. Since per capita income rose considerably more rapidly over the same interval, 22 percent, someone gained relatively. As we have seen, it likely was not the rural sector, but rather urban, above-average income recipients in finance, commerce, etc. Such an interpretation is consistent with the aggregate income distribution for 1970.

The concentration of income resultant from stabilization was not wholly intentional. It occurred because actual inflation exceeded programmed price rises, and the latter were applied to the official wage formula. The increased inequality thus measures the failure of the conventional monetary and fiscal instruments applied during the Castello Branco administration. In a larger sense, however, the result was accurately indicative of priorities:

destruction of the urban proletariat as a political threat, and reestablishment of an economic order geared to private capital accumulation.

Because such goals persist, it is not easy to be sanguine about the distributional implications of more rapid growth over an extended period. The very strength of the recent expansion, after all, partially derives from the prior concentration of income. The leading sectors in the industrial revival have been consumer durables, automobiles especially, rather than foodstuffs or textiles. The differential is more than one would expect on the basis of income elasticities of demand, or perhaps even the greater facilities for credit, and is presumably not unassociated with some reallocation of income shares.

Governmental policy instruments as presently applied, moreover, hardly favor equity. One of the distinguishing characteristics of fiscal policy is its liberal concession of tax incentives for investment in the securities market, application in certain regions and specified sectors, etc. By its very nature this is a boon to those with tax liabilities and of no corresponding advantage to the poor. Despite progressivity of the tax structure, increased withholding, and attempts to eliminate evasion, the proportion of revenues originating in direct taxes has declined since the early 1960's. On the financial side, positive real rates of interest for savers, and an ebullient stock exchange, may satisfy the requirements of an efficient capital market but will also benefit relatively those with above-average incomes. Such apparent distributional counterweights as the Programa de Integracao Social and the Programa de Integracao Nacional (*PIN*) hardly rectify the balance. The former, financed by a tax levied upon employers, creates a fund to which workers have limited access. Its benefits are scaled to earnings, rather than the inverse relation-

ship that is implied by distributional objectives. Depending upon the ultimate incidence of the tax, there will likely be modest redistribution from capital to labor at best. In the meantime, the fund runs a surplus and these forced savings ultimately finance the acquisition of private assets that will set up skewed distributions of income in the future. The *PIN* is based upon the questionable premise that colonization is to be a major component of the solution of rural poverty. A proposal of doubtful direct economic profitability, it has the further cost of detracting energies from more effective alternatives designed to increase agricultural productivity directly.

It is important, however, not to place undue emphasis upon the possibilities of conventional policies in influencing the distribution of income. Even highly progressive tax systems have limited leverage. In the instances of the United States, Sweden, and the United Kingdom, the shares of income of the upper 5 percent of the population are diminished only by between 10 and 20 percent after taxes. (Simon Kuznets, pp. 208–11). In the case of Brazil this would at best mean an after-tax distribution in which the wealthiest 5 percent would have claim on something more than a third of the income. This is a considerable improvement, to be sure, well beyond what Brazilian fiscal policy is likely to achieve, and still leaves matters in an unsatisfactory state by comparative international standards.

In light of such constraints, it is especially disturbing to discover that such structural factors as the distribution of educational opportunities and the sectoral allocation of the labor force are not tending in favor of equality, but instead the opposite. Between 1960 and 1970 the average number of years of schooling of labor force participants increased from 2.24 to 2.95 years. Yet because the increase re-

sulted from the disproportionate gain in persons with training beyond the primary level, the variance increased by an even greater 48 percent. The consequence, to the extent that education is causal, is that the more skewed distribution of educational attainment itself accounts for about half the observed increase in total inequality over the decade.⁶

The causal factor making for inequality is the variance rather than the level of education. While in principle the greater educational attainment could tend to increase the concentration of income as in equation (5), in fact its quantitative contribution appears to be negligible.⁷ Thus there are some degrees of freedom for governmental policy. Some increase in variance and inequality may virtually be inevitable owing to the age structure of the labor force and the prior lack of education, but there is clearly scope for a policy that emphasizes to a greater extent extension of educational opportunities to the underprivileged—and various calculations of the rate of return to elementary schooling suggest it is a highly profitable strategy as well (Lerner, Levy). Thus an educational policy that succeeded in elimination of

⁶ The calculation performed is

$$\sum y_i' \dots \log \frac{y_i' \dots}{x_{i70} \dots} - \sum y_{i60} \dots \log \frac{y_{i60} \dots}{x_{i60} \dots},$$

where $y_i' \dots$ equals the share of income in 1970 corresponding to educational level i . Such a share is calculated by retaining the 1960 means, but applying the 1970 population proportions. To the extent that the differentials narrowed, the anticipated educational effect upon inequality is inappropriately magnified. Other evidence discussed in footnote 7 suggests that the hypothesis of constant differentials is not inappropriate.

⁷ Regressions of the form $\log Y = a + bS$ were calculated for both 1960 and 1970 using eight groups of states and eight sectors as the observations. The mean return by region in 1960 was 27.0 percent; in 1970, 26.9. By sector the means are .454 and .354 respectively. The corresponding variances are: .0070; .0040; .0026; and .0026. Chiswick emphasizes the negative association of years of schooling and equality, but uses indirect correlation measures rather than direct calculation of the effects of increased average education.

illiteracy among the young between 1960 and 1970 could have simultaneously increased the average level of educational attainment more, while reducing the variance less, than the pattern actually occurring. Current plans, however, seem to favor continuing emphasis upon secondary and university enrollment, without sensibility to the distributional implications of such a structure.

Similarly, while the reallocation of labor from agriculture to the nonagricultural sector has positive, albeit limited, possibilities for greater equality, the widened divergence in average incomes has produced the opposite result. Despite absorption of labor in the secondary sector in the 1960's at a much more rapid rate than in the 1950's, in large measure owing to opportunities in construction activity, the sectoral contribution to overall inequality actually increased.

In sum, in the absence of effective and far-reaching alteration in governmental attitudes, there is likely to be little progress and, quite possibly, retrogression in the distribution of income. It is mistaken to view such a result as an unfortunate but inevitable consequence of rapid growth. There is no necessary inconsistency between greater equity and expanding output. Brazilian poverty is directly linked to low levels of productivity, particularly rural, that are subject to attack. Policies can be developed. But first there must be recognition of an accounting system that reckons and applauds not only increases in aggregate output, but also tabulates the differential gains in welfare that are reflected in the distribution of income.

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