A PRELIMINARY STUDY OF INCOME DISTRIBUTION IN BRASIL

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1. Introduction

This memorandum summarizes the results of a brief investigation of the distribution of income in one state in Brasil, Espírito Santo, in 1959-60. Espírito Santo was chosen because it is covered by one of the three regional volumes of the Censo Demográfico de 1960 which have been published at this time. I am not aware of any data on the distribution of income or wealth in Brasil pertaining to any year prior to 1960 or of any studies of Brasilian income distribution based on the 1960 Censo Demográfico or any other data, but I have not yet investigated this subject carefully. If such data or such studies do exist I would appreciate it if they were brought to my attention.

The purposes of this limited study were threefold: 1) to determine whether the data on incomes provided by the census could be reconciled with other information on income, i.e., the Contas Nacionais, so that any future investigation might be assured of using a meaningful and consistent income concept; 2) to describe the methodology used in the analysis of the distribution of incomes; and 3) to determine whether useful conclusions can be drawn from the comparison of the Brasilian income distribution with those of other countries. Each of these questions is discussed in the sections which follow, although not exactly in the order stated above. It should perhaps be mentioned here that the income data obtained from the demographic census do appear to be consistent with the data of the national accounts and therefore I feel that further research based on this source should certainly be undertaken when more published census information becomes available.

The report is organized as follows: Part 2 summarizes the findings of the study, showing the income distribution of Espírito Santo, comparing it with those of other countries and explaining the methods commonly employed to analyize income distributions. Part 3 describes in detail the nature of the income data provided by the demographic

census and indicates how it can be reconciled with personal income from the national accounts. Part 4 points out some of the problems involved in measuring personal income and describing its distribution. Part 5 discusses the additional data on Brasilian incomes which is now or will be available and points out possible areas for further research in this field.

Before turning to the examination of personal income in Espírito Santo it might be useful to compare the average income of that state with the average income of Brasil. This comparison will be made in terms of gross domestic product (equals Produto Interno Bruto or PIB) since personal income figures are not directly available on a state level.

The PIB of Brasil in 1960 was Cr$2,418.8 billion and the product per-capita was approximately Cr$34,500. This represents a per-capita income of U.S.$183 if we use the implicit free market exchange rate of 189 given by the Fundação Getulio Vargas for 1960.(1) The PIB of Espírito Santo was Cr$25,818.4 million(2) or only slightly more than one percent of the PIB for the entire country; Espírito Santo ranked 15th out of the 21 states in gross product in 1960.

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(1) See the Índices Econômicos Nacionais in the Conjuntura Economica. There are a variety of exchange rates and thus a variety of incomes in dollars to choose from. Using the 1960 average exchange rate for imports (223) gives a per-capita income of U.S.$ 155. The 1960 average exchange rate for exports (160) gives approximately U.S.$ 215. (These rates are obtained from the EPEA Diagnóstico Preliminar, Setor de Comércio Internacional.) It seems safe to assume that Brasil's per-capita income in dollars for 1960 lay within these limits. The United Nations Yearbook of National Accounts Statistics reports a per-capita gross domestic product of U.S.$ 179 for Brasil in 1961 (p. 328), derived on a purchasing power parity concept with a 1938 base and an implicit parity rate of 227 for 1961 (i.e., the parity rate for 1961 was estimated by adjusting the 1938 free market exchange rate by the relative change in prices from 1938 to 1961 between the United States and Brasil.)

(2) The PIB by state was not directly available so it was estimated from the Renda Interna by states. The Renda Interna equals National Income (Renda Nacional) plus or minus net income transactions on foreign account. National Income, it should be remembered, equals GNP less depreciation allowances and indirect business taxes plus business subsidies. The Renda Interna of Brasil in 1960 was 79.58 percent of PIB; this ratio was assumed to hold for the Renda Interna/PIB of Espírito Santo as well. The Renda Interna of Espírito Santo was Cr$20,546.2 million in 1960.

The PIB per-capita for Espírito Santo in 1960 was only Cr$ 22,075 or approximately U.S.$ 117 at the exchange rate of Cr$ 189 = $1. This is a per-capita income of only 64 percent of the average for Brasil, but Espírito Santo actually ranked in the upper half of states (10th out of 21) in per-capita PIB; this is because the very much higher per-capita incomes of São Paulo and Guanabara, 1.8 and 2.9 times the national average, raised the national average above the averages of all but two other states. The per-capita gross product of Espírito Santo in 1960 was, in other words, at about the median level for the individual states but was only slightly less than two-thirds of the national average.

2. Summary of findings

The Censo Demográfico data on the distribution of personal incomes in Espírito Santo are shown in Table 1. The total income for each income bracket was estimated by multiplying

TABLE 1

MONTHLY INCOME OF PERSONS 10 YEARS AND OLDER IN ESPÍRITO SANTO

1960

MONTHLY INCOME Cr$	NUMBER OF PERSONS			MEDIAN OF INCOME CLASS	TOTAL MONTHLY INCOME (EQUALS NO. IN CLASS X MEDIAN
	MALE	FEMALE	TOTAL		
0-2100	49,096	19,373	68,469	1050	71,892,450
2101-3300	60,430	4,755	65,185	2700	175,999,500
3301-4500	49,003	3,802	52,805	3900	205,939,500
4501-6000	36,772	4,162	40,934	5250	214,903,500
6001-10000	31,129	5,357	36,486	8000	291,888,000
10001-20000	13,827	1,035	14,862	15000	222,930,000
20001-50000	5,058	223	5,281	35000	184,835,000
50001-	692	46	738	62500	46,125,000
TOTALS	246,007	38,753	284,760		1,414,512,950
WITHOUT INCOME	143,968	341,899	485,867		
WITHOUT DECLARATION	1,481	262	1,743		
TOTAL 10 AND OVER	391,456	380,914	772,370		
TOTAL STATE POPULATION	594,423	575,130	1,169,553		

SOURCE: Censo Demográfico de 1960, Série Regional, Vol.1, Tomo X Parte 1, pp. 24-25.

the number of persons in each bracket by the median income for the group. In other words, it was assumed that income recipients were evenly distributed about the median in each group. It was arbitrar-

ily assumed that the median income of the open-ended upper--most group was equal to 125 percent of the base income value for the group. This assumption, or an assumption of a median = 150 percent of the base income is frequently made in such studies. Clearly, it is less likely that the average and median incomes are equal for this group than it is for the other groups and the hypothesized median should be deliberately overstated to take account of the skewness in the distribution of higher incomes. Since the open-ended group is small in this distribution the assumption made about the median of this group is not crucial to this study. If the assumed median income of the highest group is raised from Cr$ 62,500 to Cr$ 75,000 per month the share of this group in total income is raised only from 3.26 percent to 3.89 percent. Similarly, the share of the upper 20 percent of income recipients increases from only 52.10 percent to 52.42 percent of total income.

The income distribution shown in Table 1 is presented in a slightly different fashion in Table 2; here the data are regrouped to show the shares of income recipients in total income by quintiles. The assumption was maintained that persons were evenly distributed over the groupings shown by Table 1; thus the median income of each quintile represents a weighted average of the median incomes of the sub-groups from which the quintile is drawn.(3) On this basis the data can be compared with those for other countries.

TABLE 2

SHARES IN TOTAL INCOME OF INCOME RECIPIENTS IN ESPÍRITO SANTO 1960

QUINTILE	RANGE OF MONTHLY INCOME	AVERAGE INCOME Cr$	TOTAL INCOME Cr$	PERCENT OF TOTAL INCOME
LOWEST	0-1746	873	49,741,877	3.52
SECOND	1747-2937	2506	142.744,493	10.09
THIRD	2938-4146	3514	200,140,718	14.15
FOURTH	4147-6046	5002	284,856,818	20.14
HIGHEST	6047-	12941	737,029,044	52.10
			1,414,512,950	100.00

SOURCE: Table 1.

(3) In other words, the first quintile contains the lowest 56,952 income earners in the Cr$ 0-2100 per month group, the second quintile represents the remaining 11,517 income earners in this group plus the lowest 45,435 income earners in the Cr$ 2101-3300 group, and so forth.

Data for the distribution of family incomes in the United States are presented in Table 3.(4) As has been widely discussed, the distribution of income in the United States has tended to equalize since 1929, the earliest year for which reliable income estimates are available; however, almost all of this equalization took place between the 1930's and the end of World War II. The distribution of family pre-tax incomes in the United States has been remarkably stable since that time. The distribution of income in Espírito Santo in 1960 is certainly less equal than that for the United States in recent years, but not markedly so; in fact it is remarkably close to that of the U.S. in 1935-36 .

TABLE 3

PERCENTAGE DISTRIBUTION OF FAMILY INCOME IN THE UNITED STATES 1929 - 1962

QUINTILES	1929	1935-6	1947	1954	1962
LOWEST	3.5	4.1	5.0	4.8	4.6
SECOND	9.0	9.2	11.0	11.1	10.9
THIRD	13.8	14.1	16.0	16.4	16.3
FOURTH	19.3	20.9	22.0	22.5	22.7
HIGHEST	54.4	51.7	46.0	45.2	45.5
GINI CONCENTRATION RATIO	.49	.47	.40	.39	.40

SOURCES:1929: S. Goldsmith, "The Relation of Census Income Distribution Statistics to other Income Data," in National Bureau of Economic Research, Studies in Income and Wealth, vol.23,p.92.

1935-6: S. Goldsmith, et.al., "Size Distribution of Income Since the Mid-Thirties," Review of Economics and Statistics, February 1954,p.9.

1947-62: Office of Business Economics, U.S. Department of Commerce, Survey of Current Business, April 1964, p. 8.

The Gini concentration ratios were calculated by a method described in J.N. Morgan, "The Anatonomy of Income Distribution," Review of Economics and Statistics, August 1962, p. 281.

(4) Note that our comparison is to some degree invalid because we are comparing family incomes with individual incomes; this is the case for all of the international comparisons which follow. This problem is discussed in section 4.

Information on the distribution of personal incomes in certain western European countries in the post-war period is shown in Table 4; in general these countries exhibit distributions quite similar to that of the United States at a corresponding time and with slightly less inequality than the distribution for Espírito Santo.

TABLE 4

PERCENTAGE DISTRIBUTION OF INCOME BEFORE TAXES IN SELECTED COUNTRIES

QUINTILES	SWEDEN 1954	NETHERLANDS 1950	WEST GERMANY 1950	UNITED KINGDON 1949	UNITED KINGDON 1954
LOWEST	5.6	4.2	4.0	7.2	
SECOND	11.2	9.6	8.5	9.8	32.7
THIRD	17.1	15.7	16.5	15.0	
FOURTH	23.3	21.5	23.0	20.5	23.6
HIGHEST	42.8	49.0	48.0	47.5	43.7

SOURCE: United Nations, Economic Survey of Europe, 1956, Ch.IX p.6.

Another way to examine the above data is to calculate the ratios of the average incomes of each quintile to the average income of the population. The results of this calculation are shown in Table 5 where the relatives for Espírito Santo are compared with those for the United States. As would be expected from the above discussion of Tables 2 and 3, the ratios for Espírito Santo are quite similar to those for the U.S. in 1935-6; the correspondence is quite close in the upper three quintiles and the share of the lowest quintile is somewhat lower in Espírito Santo and that of the second somewhat higher. What these figures indicate is that approximately 70 percent of the income earners received incomes below the average for the state, that the highest 20 percent of income recipients received incomes averaging 2.6 times the average, that the lowest 20 percent received incomes averaging less than 1/5 of the mean, and that the incomes of the highest 20 percent were 15 times as large, on the average, as those of the lowest quintile.

The data in Tables 1 and 2 can be cumulated by percent of persons and percentages of income - the lowest 1/5 of the population received 3.52 percent of income, the lowest 2/5 received 13.61 percent, and so on. When shown graphically the resulting curve is called a Lorenz curve. If income

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TABLE 5

MEAN INCOME OF EACH QUINTILE EXPRESSED AS A PERCENTAGE OF THE MEAN INCOME FOR ALL INCOME UNITS

QUINTILE	ESPÍRITO SANTO	UNITED STATES			
		1929	1935-6	1947	1962
LOWEST	17.6	18	21	25	23
SECOND	50.5	45	46	55	55
THIRD	70.7	69	71	80	82
FOURTH	100.7	97	105	110	114
HIGHEST	260.5	272	259	230	228

SOURCE: Tables 2 and 3.

were distributed equally this curve would correspond to the 45º diagonal of Chart 1, called the line of equality; alternatively, if one person in the group had all the income the curve would correspond to the horizontal axis and right side of the graph. The most commonly used measure of inequality is the Gini or Lorenz concentration ratio or coefficient of inequality - the ratio of the area between the Lorenz curve and the line of equality (A) to the entire area lying beneath the line of equality (A + B). Obviously the Gini coefficient must take a value between 0.0 and 1.0 and higher values would indicate greater degrees of inequality. The shape of the Lorenz curve is also important, however, and there is no absolute significance that can be attached to a given Gini coefficient. This coefficient can be rigorously derived by taking the integral of the Lorenz curve from 0 to 1 in order to find B and to do this we must have an algebraic expression for the curve, but there is a simple method of approximating this area.(5) The Gini coefficient derived from the Lorenz

(5) Since A+B = 1/2 the area of the square encompassed by the cumulative distributions of persons and incomes:

$$\text{Gini coefficient} = G = \frac{A}{A+B} = \frac{1/2 - B}{A+B} = 1 - 2B$$

Using all available cumulative percentages of persons as X's and the corresponding cumulative percentages of incomes as Y's (i.e. the ooordinates of the points used in plotting the curve) we have the following relationship:

$$1 - 2B = 1 - 2\sum\left((X_1 - X_0)\,(Y_1 - Y_0/2) \right)$$

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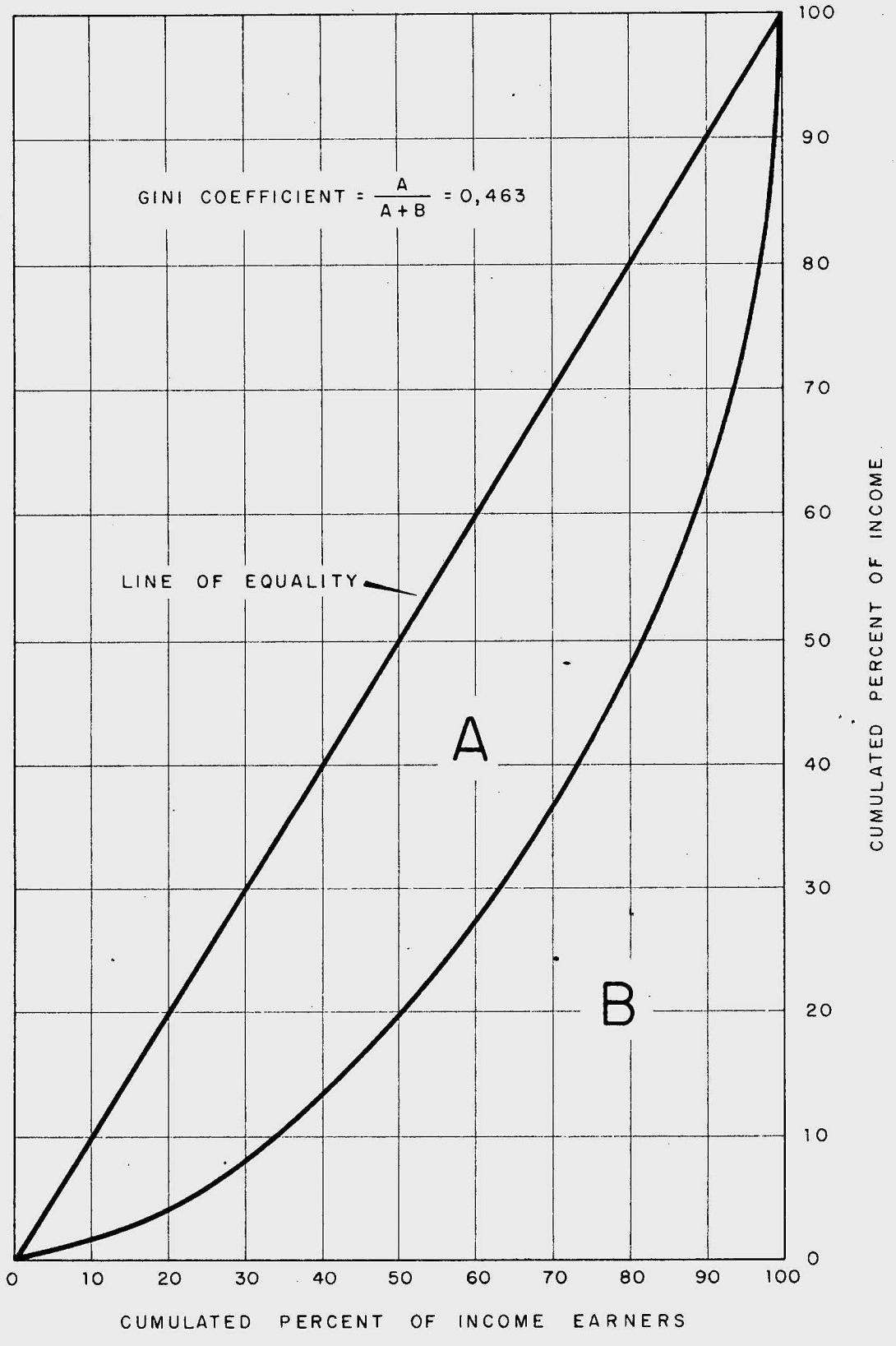
CHART 1

LORENZ CURVE FOR THE DISTRIBUTION OF PERSONAL INCOME IN ESPÍRITO SANTO

1960



curve for Espírito Santo shown in Chart 1 has a value of 0.463 which is, again, quite close to that for the United States in 1935-36 and about 15 percent higher than that for the United States in the post-war period.

Finally, we can compare, in Table 6, the income distributions for males and females in Espírito Santo, using the data from Table 1 and making the same assumptions that were made earlier in the derivation of Table 2. The distribution for women is significantly less equal than that for men, particularly at the lower end of the scale; the lower 2/5 of the female income recipients received only 9.37 percent of total income compared with 15.03 percent for males. Similarly, the mean income of the highest quintile of women was 23 times the mean income of the lowest while for men this ratio was only 13 times. This difference is probably attributable in large part to the higher incidence of part-time work and correspondingly lower pay among women workers.

TABLE 6

PERCENTAGE DISTRIBUTION OF INCOMES BY SEX IN ESPÍRITO SANTO

1960

QUINTILE	PERCENT OF TOTAL INCOME			
	MALES	FEMALES	MALES	FEMALES
LOWEST	4.06	2.34	20.3	11.7
SECOND	10.97	7.03	54.9	35.1
THIRD	13.72	12.50	68.6	62.5
FOURTH	19.59	23.87	98.0	119.3
HIGHEST	51.66	54.26	258.3	271.3

SOURCE: Table 1

(5) $= 1 - \{ (X_1 - X_0) (Y_1 + Y_0)$

which can be easily calculated from the original data. This method of calculation is explained in James Morgan, "The Anatomy of Income distribution," Review of Economics and Statistics, August 1962, pp. 281-2.

If it can be deemed appropriate to state any conclusions on the basis of this data for only one state I would argue that the Brazilian income distribution shown here, while it evidences a substantial degree of inequality, is not markedly different from those of other higher income countries. This evidence does not provide strong support to the claim that Brazil suffers from underconsumption because most of the income accrues to a small number of people at the top of the income distribution who, by saving, by spending outside the country, and by similar means, fail to contribute to the development of an internal mass market. This is a controversial subject and I fully recognize that much more work must be done before we can draw any links between the distribution of income and the level of spending.

3. Brasilian data on incomes.

The data on personal incomes which were examined in section 2 were taken from the Brasilian demographic census of 1960. In that census, for the first time, the following question was asked of a random sample of 25 percent of all individuals of ten years and more in age, "quanto ganha, em média, por mês?" The respondent was asked to signify the bracket in which his monthly income in Cr fell; the brackets were as follows: sem rendimento; 0 até 2,100; 2,101 - 3,300; 3,301 - 4,500; 4,501 - 6,000; 6,001 - 10,000; 10,001 - 20,000; 20,001 - 50,000; 50,001 e mais. The instructions to census enumerators specified that persons with fixed incomes, normally wages and salaries, should report the income of the last month, presumably August 1960 since the census was taken on 1 September 1960. Those with variable wage and salary income were to report the average income of the previous 12 months. Income was defined to include salaries, stipends, earnings, honoraria, pensions, tips, interest on securities, rents, profits, etc., received in the form of money. Not to be included were receipts from the sales of property, loans, inheritances, insurance claims, or lottery prizes. No mention was made of income received in kind - such items as food which is consumed by the producer without passing through the market. Also no mention was made of the transfer payments received in addition to income, principally the social services provided directly by the social security system or other social welfare programs. Hopefully, we can assume that the direct disability and retirement payments under the social security system were included in the income that was enumerated.

What the census reports, then, would seem to be a measure of income closest to personal income before payment of personal direct taxes but with the imputed value of income received in kind omitted. Income was reported by individual earners and it was assumed for the purposes of this report that those reporting no income were not members of the labor force, i.e., they were housewives, minor children without employment, retired persons, etc. Those reporting no income were not included in the distributions of part 2 and did not affect the measures of inequality derived.

Finally, we must remember that our measure is of incomes of individuals and not incomes of family units; the latter income concept is the one most frequently used in the analysis of income distributions. It would not be possible, on the basis of the published data, to convert these individual incomes to family incomes, but this should be possible with the original census data cards. It is not certain whether a family income distribution would exhibit more or less equality than a distribution of individual incomes for the same group. We would have to know considerably more than it is presently possible to know about the participation of women in the Brasilian labor force before we could even speculate about this question.

I next attempt to show that the income data from the demographic census are consistent with those provided by the national accounts. If we use the figures which were presented in Table 1 where the number of persons in each income class from the census was multiplied by the median income of the class (and a median income of Cr$ 62,500 was assumed for the Cr$ 50,001 and over per month class) we obtain a figure of Cr$ 16,974.2 million for the previous 12 month's income. If the median of the Cr$ 50,001 and over group is raised to Cr$ 75,000 (i.e., 150 percent of the bottom of the class) the total year's income is raised to Cr$ 17,084.8 million, an increase of only 0.7 percent. As was pointed out in part 2, this effect is minimal because of the small number of persons, less than 1/4 of 1 percent of income earners, in this group.

The national accounts report only Renda Interna for the individual states but we can calculate Renda Pessoal by states by applying the national ratio of Renda Pessoal to Renda Interna (RP/RI) to the state Renda Interna figures. This ratio for Brasil was 95.08 percent in 1959 and 94.32 percent in 1960. The reported Renda Interna for Espírito Santo was Cr$ 15,568.9 million in 1959 and Cr$ 20,546.2 million in 1960 (in current Cr$). When these figures are adjusted by the above percentages we obtain estimates of state Renda Pessoal of Cr$ 14,802.9 million for 1959 and Cr$ 19,379.2 million for 1960. If we then assume that what people were reporting in the census was their 12 month income for the period of

1 September 1959 to 31 August 1960 we could approximate this by combining 1/3 of the 1959 income and 2/3 of the 1960 income calculated above. The result (1/3 x Cr$ 14,802.9 + 2/3 x Cr$ 19,379.2) equals Cr$ 17,853.8 millions. This is, admittedly, only a crude attempt to approximate the personal income reported in the demographic census. However, the resulting agreement between the census and the national accounts is quite close - the relationships are shown to be Cr$ 17,853.8 million/ Cr$ 17,084.8 million = 104.5 percent or Cr$ 17,853.8 million/ Cr$ 16,974.2 million = 105.2 percent. In other words, the national accounts personal income estimate exceeds the census personal income estimate by only about 5 percent. Since income received in kind was excluded from the income survey in the demographic census we can easily reconcile a differential of this magnitude. Urban rents equalled Cr$ 360.3 million and agricultural income equalled Cr$ 9,987.0 million of the Renda Interna of Espírito Santo in 1960. If each of these items had been understated by only 10 percent in the census due to omission of income in kind it could account for the differential between the smaller of the two census estimates and the national accounts estimate above. I conclude that, on the basis of this limited information, the Censo Demográfico will provide information which is consistent in order of magnitude with the Contas Nacionais and which should, therefore, be investigated more fully when additional census volumes become available.

4. Problems encountered in measuring the distribution of income.

Among the many difficulties of data compilation and manipulation that are associated with the analysis of personal income distributions only a few have been selected for mention here; they are discussed in what is intended to be a diminishing order of relevance to the Brasilian data.

(A.) The basic data for this type of analysis in the United States come from individual income tax returns where presumably the degree of accuracy in reporting is quite high. The Brasilian data are based on a census enumeration of a sample of the population and are subject to all of the

distortions which can arise from this technique - sampling error, failure to understand the nature of the information desired, faulty memory, deliberate underreporting of income, etc. I have simply demonstrated that the census income figure should represent an approximation to personal income and that it does agree quite closely with the national accounts estimate of personal income.

(B.) Personal income should include cash income and income received in kind, whether in the form of non-marketed items (primarily food consumed by producers and the imputed rental value of owner-occupied housing) or transfer payments received in kind. The United States income tax data have been adjusted to reflect these additional items while the Brasilian data, which implicitly exclude them, have not been. It is usually assumed that the importance of income in kind is greater the lower the level of economic development; therefore these items should have greater relative weight in Brasil, and particularly in a relatively poor state such as Espírito Santo, than in the United States. The inclusion of income in kind should have an effect on the measure of inequality of the income distribution. If we can assume that most of the food consumed by producers was received by persons at the lower end of the income scale - tenant farmers, subsistence level family farms, hired agricultural labor - the addition of this item would make the distribution more equal, but if it also resulted in the inclusion in the lowest brackets of additional persons who had reported no money income this effect would be considerably lessened. On the other hand, much of the imputed value of rents from owner-occupied housing could accrue to persons in the higher income brackets, but this effect would presumably be small since rents, at least urban rents, were a small percentage of the total income of Espírito Santo in 1960.

If we accept both the national accounts data and the census data as reasonable approximations to real personal income and money personal income, respectively, we are forced to conclude that income in kind was a small share of 1960 personal income in Espírito Santo. This factor can be investigated more fully when data for more states are available and comparisons between high and low income states and between primarily urban and primarily rural states can be made.

(C) The U.S. income tax data include capital gains from sales of real and intangible property reported for the year when realized. The Brazilian data explicitly exclude all receipts (and therefore gains) from the sale of property. Also, all personal income data include corporate dividends paid but exclude retained corporate earnings (as well as the income taxes paid on these earnings) which would presumably be reflected in realized capital gains at some later date. I do not know how important this factor would be in Brazil but its inclusion would undoubtedly have the effect of increasing the degree of inequality since the income involved would go primarily to those already in the upper half of the income distribution.

(D) The Brazilian data are for a single year and comparison of changes in the income distribution over time are more meaningful than the analysis of a single year. Also, random factors such as illness cause individuals to have incomes above or below their "normal" level in a single year; thus a comparison of incomes over a longer period of time would show less inequality than the distribution for a single year. Additionally, people move through the income distribution during a lifetime; young inexperienced workers earn less than experienced workers in the same field but lifetime incomes of the two workers could be exactly the same. For these reasons many people have suggested the analysis of the distribution of lifetime incomes. However, the effect of these factors seems to be slight in comparison with the other forces which cause incomes to vary since preliminary studies for the United States indicate little variation in the degree of inequality of annual and lifetime incomes.(6)

(E) The use of income tax data for the United States offers additional advantages besides the one of reliability mentioned above. The data permit the comparison of personal income with disposable personal income (after payment of federal income taxes) to determine what equalizing effect, if any, the federal income tax has had. The data for the U.S. indicate that the federal income tax has had a slight equalizing effect, reducing the share of the highest quintile from 45.5 percent to 43.7 percent in 1962 and raising the

(6)- See Morgan, "The Anatomy of Income Distribution", op.cit., p. 272; and Morgan, et.al., Income and Welfare in the United States, pp.318-21.

share of all other groups by between 0,3 and 0,6 percentage points.(7) In addition the data from income tax returns can be grouped by family units and by individual income earners, permitting a comparison of these distributions of income for the same population. This distinction between individual and family incomes is important here because I have compared individual incomes from Brazil with family incomes for other countries and this point is discussed at greater length at the end of this section. However, the use of income tax returns creates the disadvantage of underreporting of income at the lower end of the income distribution by those who are not required to file a return. This would be one of the several serious problems that would confront any attempt to use income tax returns as the basis for an investigation of the income distribution of Brazil.

(F) It has been pointed out that, in the analysis of the changing distribution of real incomes over time one should recognize that people at different levels in the income scale are consuming different market-baskets of commodities. If the relative prices of these different consumption bundles change one should deflate the money incomes of different groups by different price indices. Even in a single year we know that different classes have different consumption patterns and that the ratio of real incomes and real expenditures may vary by groups. However, the above is only the first cracking of the seal on the Pandora's Box that hides the income/welfare secret. Once committed to the opening we must consider how intensely people must work to receive their incomes, how highly they value their leisure as a consumption good, how to compare the satisfaction different people obtain from the same goods, etc. Needles to say, these questions are somewhat beyond the scope of this paper. Perhaps this would be the proper point at which to insert the comment that no analysis and comparison of income distributions can tell how much inequality is "good" or "bad". All we have as evidence is the fact that few men argue in public for greater inequality.

I return now to the discussion of the effect on the analysis of the choice of the income unit. Family units are usually chosen because it is easier to measure family income

(7) - See data sources mentioned in Table 3.

than to allocate imputed items among the individual members of the unit. However, because family patterns differ between countries an international comparison of family incomes would be distorted. The adult unit is the most basic unit and the measure of inequality for adult units indicates what the distribution of incomes would be if no one lived with relatives. The effect of dividing family units into their individual adult units with incomes attributed entirely to the income recipients would not automatically increase the measure of inequality; it would depend on whether the incidence of multiple income-earning families were higher at the upper or lower end of the income scale. In the case of Espírito Santo, if we assume that the number of families is exactly equal to the number of income earners with exactly one income earner per family the distribution of family incomes would be identical to that of individuals. However, this is certainly not the case. In the United States it has been found that the distribution of family incomes is more equal than the distribution of individual incomes principally because low income families tend to have a greater number of income-earners than high income families-adult units tend to live with related units when the income of one or both is low. This is clearly indicated in Table 7. In light of these figures we would expect our distribution for

TABLE 7

GINI COEFFICIENTS OF INEQUALITY FOR VARIOUS UNITS OF ANALYSIS AND MEASURES OF INCOME - UNITED STATES

1960

INCOME CONCEPT	FAMILY UNITS	ADULT UNITS
Gross factor income	.346	.402
Money income	.385	.448
Disposable money income	.355	.422

Source: Morgan, et.al., Income and Welfare in the United States, p.315.

Espírito Santo to reflect a lesser degree of inequality if we could reorganize the data on a family unit basis. This would bring the Espírito Santo personal income distribution into even closer approximation to that of the United States at the present time.

5 - Additional sources of information on incomes in Brasil and possibilities for further research

Only three regional volumes of the 1960 Census of Population have been published to date, and the largest state in terms of population for which data is presently available is Pará. The other state volumes are to be published during 1968. The IBGE is presently undertaking a continuous sampling of households (Pesquisa Nacional por Amostra de Domicílios) which will be extended eventually to all regions of the country and will encompass a nationwide sample of some 30,000 households. Among the various population characteristic about which information will be gathered are employment status, hours of work, and income. The income data will include usual weekly earnings and type of earnings for non-agricultural wage and salary workers, and usual monthly earnings for self-employed non-agricultural workers. The information will be cross-classified by age, sex, marital status, relation to head of household, industry and occupation. Sampling was started in Guanabara in June 1967 and in São Paulo in September 1967 and is to be extended to the south and northeast during 1968. It is intended that data will initially be published on a quarterly basis. To my knowledge no results have been published as of the present time - mid February 1968.

The other principal source of information on the distribution of incomes in Brasil is a series of studies undertaken by the Fundação Getúlio Vargas in 1961 - 62 and 1962 - 63. These family budget studies (Pesquisa sôbre Orçamentos Familiares) were conducted in seven major cities and in numerous smaller municípios. They include information on annual family incomes by income class and the sources of income. The samples are small in size (762 families in Guanabara, 671 in São Paulo for example) and the coverage of the country is not complete, but the amount of detail provided is greater than that provided by the Censo Demográfico and these data should certainly be utilized in any larger study of Brasil's income distribution.

As an extension of the present study I am presently applying the analysis of section 2 to the states of Pará and Amazonas, the only two additional states for which census data have been published. As more volumes of the census are

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made available it should be worthwhile to compare results for different states. Various questions should be considered such as the following. Does the comparison of census and national accounts data indicate a greater importance of non-market income in poorer and more agricultural states ? Does the distribution of income become more or less equal as the average level of income rises ? Is income more equally distributed in predominantly urban or in predominantly rural states ? Does the reliability of the basic data seem to be better in the larger, more urban states ? Finally, when information for the entire country is available it may be much more relevant to analyze the distribution of incomes in Brasil in comparison with those of other developing countries than to compare it with those of more highly developed countries as has been done here.