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DISCUSSION PAPER

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Federal Government of Brazil

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SIZE AND FUNCTIONAL INCOME DISTRIBUTION IN BRAZIL:
SOME PUZZLES

Benedict J. Clements*

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- II - THE MEASUREMENT OF SIZE INCOME DISTRIBUTION
- III - FUNCTIONAL INCOME DISTRIBUTION IN BRAZIL
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I. INTRODUCTION

Perhaps in no country of the world has the distribution of income been subject to more scrutiny than in Brazil. The seminal research of Fishlow (1972) on Brazilian size income distribution in 1960 and 1970 touched off a flurry of research on the causes of the widening gap between the rich and the poor in Brazil during the 1960s. These debates on the causes of Brazilian income inequality also called into question the interpretation of available income distribution data used by various participants in the debate. Some, for example, claimed that one could not cite any deterioration in distribution between 1960 and 1970 if income inequality was measured in terms of income distribution over the entire population, rather than just income earners (Morley and Williamson, 1975; cited in Bacha and Taylor, 1978). More recently, it has been argued that the small share of national income that is captured by the household surveys make income distribution comparisons with the census data of little value (Pfefferman and Webb, 1979).

This paper aims to add to the controversy regarding Brazilian income distribution by further bringing into question the adequacy of the data used to assess Brazilian size income distribution. Furthermore, I hope to show that there is great inconsistency between the Brazilian data on functional income distribution (showing the division of income between capital and labor) and the size income distribution figures that are derived from Brazilian household census data. This inconsistency, I argue, implies that either: 1) size income distribution in Brazil is substantially more unequal than is commonly thought; or 2) the functional distribution of income is not as heavily weighted in favor of capital as previous research has indicated.

This paper is organized in the following manner. First, previous research on measurement problems with Brazilian size income distribution data is reviewed. Second, the data on functional distribution and their incompatibility with existing size income distribution data are analyzed. Finally, the implications of this discrepancy between size and functional income distribution data are delineated.

II. THE MEASUREMENT OF SIZE INCOME DISTRIBUTION

Brazilian household census data have always been recognized an imperfect source of data in assessing the distribution of income. Two of the most widely acknowledged problems with the 1960 and 1970 data are the exclusion of non-cash income and the closure of open-ended income brackets. These problems, of course, make it necessary to perform certain adjustments to the data before the distribution of income can be computed.

These adjustments to the data made by authors like Fishlow (1972) and Langoni (1973) did not play center stage in the raging debate over income distribution in Brazil during the 1970s; most of the controversy revolved around the interpretation of the data. As pointed out by Pfefferman and Webb (1979), however, it is curious that scholars have accepted the census as a basis for debate on income distribution, given the great degree of income underreporting in both the 1960 and 1970 census. Pfefferman and Webb (1979) estimate that in these years the household census only captured 62% of their "adjusted" personal income they constructed from the national income accounts. Unadjusted data from the national accounts show an even larger discrepancy. Despite improvements in the coverage of non-cash income in the 1980 Census, the percentage of (unadjusted) private disposable income reported by the census was just 52%, as opposed to 51% in 1970 (Hoffmann 1982).

The income coverage of the household surveys in the Pesquisa Nacional por Amostra de Domicílios (PNAD) conducted in

the 1970s and the 1974-75 Estudo Nacional da Despesa Familiar (ENDEF) is generally better than that of the demographic census, as reported in Table 1. One of the reasons for their superior coverage, especially regarding the ENDEF, is the more comprehensive accounting of non-monetary incomes. Even with the better performance of the ENDEF on this front, Pfefferman and Webb (1979) report that the ENDEF could only account for 80% of their adjusted national income figure. This figure (80%) may in fact overstate the coverage of the ENDEF, given the arbitrary nature of some of the adjustments made by Pfefferman and Webb to the national accounts. Hence, while the better accounting for non-monetary incomes in the ENDEF and PNAD does lead to greater income coverage, a large portion of national income is still not accounted for in these studies. It is also interesting

TABLE 1
PFEFFERMAN AND WEBB'S COMPARISONS OF ANNUAL PERSONAL INCOME
(IN BILLIONS OF NOMINAL CRUZEIROS)

	Survey/Census	"Adjusted" National Accounts*	Discrepancy (%)
1960 Census	1.73	2.50	31
1970 Census	93.20	166.00	44
1972 PNAD	221.00	290.00	24
1974-75 ENDEF	483.00	600.00	20
1976 PNAD	916.00	1279.00	28

Source: Guy P. Pfeffermann and Richard Webb, "The Distribution of Income in Brazil", World Bank Staff Working Paper No. 356, September 1979, p. 16.

* Estimated as national income plus transfers and subsidies, less retained earnings (assumed to equal 10% of national income).

to note that, despite the better coverage of the ENDEF and the PNAD, the degree of income inequality they reveal is not markedly different from that culled from the census data (Table 2).

A large part of the discrepancy between the national income accounts and the household surveys must be attributed to the underreporting of incomes in the household survey. The degree to which this underreporting varies by income class has a large bearing on the degree of confidence one can place in the household surveys; if the degree of underreporting is similar among all income classes, then the household surveys, despite the fact they incorporate just a portion of total income, may still

TABLE 2
ESTIMATED FAMILY INCOME SHARES

Source	Percentile	
	Poorest 40%	Top 10%
1960 Census*	9.4	44.5
1970 Census	8.1	46.2
1972 PNAD (money income only)	7.4	50.5
1974/75 ENDEF	9.4	46.0
1976 PNAD	7.5	n/a

Source: Guy P. Pfeffermann and Richard Webb, "The Distribution of Income in Brazil", World Bank Staff Working Paper No. 356, September 1979, p. 10.

* Taken from Albert Fishlow and Astra Meesook, "Technical appendix, Brazilian size income distribution of income, 1960", May 1972, Table B.5.1, p. 54.

give an accurate assessment of personal income distribution. Unfortunately, there is strong evidence to suggest that the census figures are not an accurate guide to income distribution, for there is good reason to believe that the "missing income"

from the census accrues to upper income groups. Income tax information for 1970, for example, shows twice as many people claiming to be in the highest income bracket than the census for that year (Pfefferman and Webb, 1979). Perhaps the most persuasive study that argues that this missing income should be attributed to the rich is that of Lluch (1982). Using data on the regional distribution of net domestic product for 1970, Lluch compared the estimates of income from this national income source and the income computed from the 1970 census for 117 regions in Brazil. He found that the discrepancy between the national accounts estimate of income and the census systematically increased as the income level of the region increased. More importantly, Lluch found that the census was a fairly accurate measure of incomes of the poor; hence, the "missing income" should be attributed to higher income groups.

While the research of Lluch (1982) indicates that the missing income from the household surveys most likely accrues to upper income groups, it does not indicate whether this underreporting is due to an understatement of incomes from labor, capital, or both. As I will argue, an examination of the data on the functional distribution of income in Brazil suggests that much of the "missing income" is income accruing to capital. The following section examines this proposition in greater detail.

III. FUNCTIONAL INCOME DISTRIBUTION IN BRAZIL

Functional income distribution measures the share of the factors of production in output and income. One of the most comprehensive studies of functional distribution in Brazil and its evolution over time is that of Macedo (1980). Macedo's study, dealing with the share of labor earnings in manufacturing value added, shows labor's share declining from 23% to 15% from 1949 to 1973. More recent data also confirm that capital garners the lion's share of income; the 1980 industrial census, for example, shows that capital's share in

industrial value added is 82%. Functional distribution does differ from sector to sector of the economy; nevertheless, the high share of capital in almost all sectors of the economy is striking. For example, the 1975 input-output tables, which are based on the industrial, service, and agriculture censuses, show that capital's share of value added in services is 57%. Computations of functional distribution in agriculture are more complicated, given the large number of self-employed workers. Nevertheless, even when one counts all self-employed workers as labor, the share of capital in value added is 78%. Hence, capital's share of factor income is high throughout all sectors of the economy, even in those that are characterized as being "labor intensive".

The inconsistency between these data on capital's share of value added and the demographic census figures is evident if one compares the census declarations of income of those classified as employers and of the incomes that are declared from non-wage sources. Even the 1974-75 ENDEF, noted for its better coverage of non-monetary income sources than the census, shows that salaried income accounts for 47% of total income—much larger than labor's functional share of income from the input-output tables. Hence, even after one makes some reasonable conjectures about retained profits and taxes, it is hard to reconcile the census declarations on income from capital with the figures derived from input-output and industrial census data.

Given the methodology used to construct value added to capital in the industrial census and the input-output table, one should not expect all this income to find its way to a household survey. Beyond the obvious discrepancies caused by retained earnings and taxes, it is well to note that the industrial census and input-output table merely compute the gross amount of value added to capital per unit of production, without any deduction for indirect overhead expenses. These indirect costs are calculated by IBGE, however, so we have knowledge of the size of these costs. IBGE's measure of

overhead costs, "despesas gerais", actually incorporates expenditures that measure returns to gross capital, such as rents and interest payments. Hence, subtracting the sum total of these "despesas gerais" from value added allows us to isolate the share of profit in factor income.

The careful and extensive study of Considera (1980) on the share of profits in value added adjusts the IBGE data on value added in light of these "despesas gerais". As Table 3 evinces, the profit share of income is still quite high, even when these adjustments are made. In 1974, for example, the profit share of manufacturing value added was 71%.

TABLE 3
PROFIT SHARE OF FACTOR INCOME
(PERCENTAGE)

Sector	1959	1970*	1974*
Manufacturing (Average)	57.2	69.7	71.4
Non-metallic minerals	54.0	67.8	69.5
Metallurgy	56.1	69.4	74.1
Machinery, electrical and communication equipment	46.8	60.6	59.3
Transportation	54.9	65.0	69.4
Lumber	58.8	62.9	73.6
Furniture	39.0	57.4	57.5
Paper and Cardboard	61.6	63.8	78.4
Rubber	78.9	78.4	73.2
Leather	52.8	64.0	62.3
Chemicals, Pharmaceuticals, Cosmetics	69.4	81.6	82.1
Plastics	63.2	75.0	75.6
Textiles	45.2	64.0	70.1
Clothing, Footwear	44.6	61.8	62.8
Food products	67.3	78.5	76.1
Beverages	58.7	68.4	76.3
Tobacco	79.5	86.1	89.1
Printing and Publishing	38.9	56.0	64.7
Miscellaneous industrial products	43.9	65.9	51.1

Source: Cláudio M. Considera, "Estrutura e evolução dos lucros e dos salários na indústria de transformação", Pesquisa e Planejamento Econômico, 10(1), April 1980, p. 78.

*Data covers firms with five or more employees and/or a value of production greater than 640 times the minimum wage.

The IBGE data on capital's share of value added imply that Brazilian firms are far more profitable than firm balance sheets would imply. Data from the large sample used by Calabi, Reiss, and Levy (1981) from 1975 business income tax data indicate that the gross returns to capital per unit of sales (profits, depreciation, financial costs, and royalties) to be just 14.2% (Table 4). This stands in marked contrast to the numbers derived from the 1975 input-output table: the gross returns to capital per unit of output vary from 25% in metallurgy and machinery to a whopping 53% in commerce and transportation (Table 5). Even when one adjusts the input-output data for the small amount of overhead costs ("despesas diversas") not captured in the table, and the role of self-employed workers ("autônomos"), the large discrepancy persists. Hence, we are forced to decide that either: 1) firm balance sheet data greatly understate the gross returns to capital, or 2) the IBGE data overstate capital's share in value added.

TABLE 4
DECOMPOSITION OF COSTS AND PROFIT MARGINS BY SECTOR, 1975
(% OF OPERATIONAL REVENUE)

Cost-Category	Economy-wide average	Manufacturing
Direct (inputs, non-administrative salaries)	65.4%	64.9%
Fixed capital	4.1%	3.8%
Administrative	10.9%	9.5%
Commercialization	2.9%	3.2%
Financial	5.5%	5.7%
Input taxes	6.6%	8.2%
Royalties	.1%	.2%
Profits	4.5%	4.6%
Total	100.0%	100.0%

Source: Andrea Calabi, Gerald Reiss, and Paulo Levy, Geração de Poupanças e Estrutura de Capital das Empresas no Brasil (São Paulo: Instituto de Pesquisas Econômicas, 1981), p. 66.

TABLE 5
INPUT STRUCTURE BY SECTOR, 1975

Inputs	Sectors	Agricul- ture	Mining	Metals and Machinery	Chemicals	Other Manu- factur- ing	Construc- tion	Commerce Margins	Services
		1	2	3	4	5	6	7	8
1. Imports		.0054	.0013	.0532	.2694	.0252	.0231	.0232	.0053
2. Indirect Taxes		-.0220	.0152	.0087	.0116	-.0101	.1087	.0306	.0276
3. Total Inputs		.2797	.3168	.6149	.7037	.6016	.6915	.2116	.2177
4. Wages & Labor Taxes		.1242	.1309	.1322	.0348	.0978	.1581	.1895	.3215
5. Self-Employed		.0315	-	-	-	.0003	.0330	.0647	.0394
6. Capital Surplus		.5645	.5524	.2529	.2615	.3003	.1178	.5342	.4214
7. Total Value Added		.7203	.6831	.3852	.2963	.3984	.3085	.7884	.7823
8. Sectoral Production		1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

Source: IBGE

One might argue that the IBGE input-output tables and the industrial census tend to undercount inputs, leading to a bias in overstating capital's share. With capital's share calculated as a residual, any understatement of inputs would lead to an overstatement of the income from capital. Indeed, IBGE industrial survey data regarding the percentage of direct costs in total output do not square with information from balance sheet data used for income tax returns. Data from the large sample used by Calabi, Reiss and Levy (1981) from 1975 business income tax data indicate that direct and administrative costs account for 74.4% of the cost of output in manufacturing (Table 4). Industrial survey data from IBGE for 1980 reveal that input costs, salaries, and overhead expenses ("despesas gerais") equal 62.1% of output. IBGE estimates that commercialization costs are practically nil (Table 6), while business tax information claims they equaled 3.2% of operational receipts (Table 3). IBGE's unrealistically low assessment of overhead business costs (Table 6) do not impart a great deal of confidence in IBGE's ability to accurately measure business costs. Especially suspect is IBGE's accounting for financial costs, assessing them at less than one-one hundredth of a percent of the value of manufactured output. Data from Rodrigues (1984) for 1980 show that financial costs equalled 7.5% of the value of sales by nationally owned firms in that year; data from earlier years in Rodrigues and Calabi, Reiss, and Levy (1981) depict a similar situation. Given the amount of debt owned by Brazilian firms, one is hard put to believe IBGE's claim that financial costs are negligible. Great care must be taken in comparing input-output data and firm balance sheet figures, given the different methodologies used in constructing the data. Nevertheless, it appears that the assessment of costs of production by IBGE differs markedly from the costs reported by firms in income tax returns.

In spite of the questions raised about IBGE's accounting for costs, there are several good reasons for believing we should place more confidence in the IBGE assessment of firm profitability than the assessment offered by firms themselves. First, when firms complete IBGE's industrial survey there is



TABLE 6
 "DESPESAS GERAIS", 1980 INDUSTRIAL CENSUS
 (MANUFACTURING SECTORS)

	Share of Manufacturing Output	Share of Manufacturing Value Added
Rents	.0019	.0047
Transportation Costs	.0061	.0147
Property Taxes	.0003	.0008
Financial Costs	.0000	.0000
Advertising, Publicity	.0000	.0000
Technical Assistance	.0018	.0043
Other Overhead Expenses	.0057	.0138
Total	.0158	.0383

no incentive to overstate input costs; with the business income tax, there obviously is an incentive to overstate one's costs, so as to reduce tax liabilities. Second, the construction of the input-output table requires consistency in the accounting for the destination and uses of sectoral output; further, the value added generated by the input-output tables is constrained to equal GDP from the national income accounts (plus indirect taxes). Hence, any chance of significant overstatement or understatement of inputs is limited. The great care needed in constructing the input-output tables leads one to believe that the estimates of sectoral production and value-added shares are not inaccurate.

Despite the care with which the input-output table is constructed, it is difficult to be completely comfortable with the large discrepancy that exists between IBGE's assessment of firm profitability and those reported by firms. Beyond the earlier doubts raised regarding IBGE's assessment of indirect costs, it stretches the imagination to accept that firms are as lucrative as the input-output table data indicates, especially

in those sectors in which state enterprises are prominent. It seems unlikely that firms residing in sectors subject to government price controls, such as metallurgy, can achieve the profitability levels indicated by the input-output data.

It should be noted that our comments regarding IBGE's data refer to the input-output table from 1975 and other data available before the recent release of the new system of national accounts (IBGE, 1988). The new system of national accounts, which describes both the generation and appropriation of income, may be able to reconcile these apparent inconsistencies in IBGE's data.

Returning to the problem of reconciling Brazilian functional income distribution data with the information size distribution from income surveys, it should be mentioned that one should always expect the surveys to undercount income, given that retained profits are not reported by households as income. This should especially be our expectation in the case of Brazil, where the share of profits distributed as dividends is under 10%. Nevertheless, if we are to reconcile the input-output data on functional shares and the national income account data on savings and investment, we must assume that a large portion of these capital incomes are being consumed. In 1975, for example, the capital share of value added was 67.6—more than twice the share of investment in GDP. The income undercounting in the census also implies that a great deal of income destined for consumption purposes is deleted from the census; in 1970, for example, while the census reported total income of \$99.1 billion, personal consumption from the national accounts totaled \$137 billion (Lluch 1982).

IV. SUMMARY AND IMPLICATIONS

I have argued in this paper that there are some troubling inconsistencies between Brazilian data on functional and size

income distribution. The inconsistencies appear to be too large to reduce to differences in the methodology used to collect the data. Rather, they imply that one or both of the data sources is inaccurate. Whether or not one believes the input-output data or the household survey data has a critical bearing on one's assessment of Brazilian income distribution. If one believes that Brazilian household survey data correctly portray the distribution of income, this implies that IBGE's assessment of capital's share of value added and indirect business costs is off the mark. On the other hand, if IBGE's functional distribution income can be believed, one can infer that the distribution of income generated by the household survey data greatly understates Brazilian income inequality. This position also implies that firm income tax data grossly underreports firm profitability. Either of these conclusions is of great concern of researchers who use Brazilian income distribution data.

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