Inequality in Brazil: The Contribution of Pensions[*]

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Summary: 1. Introduction; 2. The data; 3. Decomposition of the Gini index; 4. Distribution in 10 income classes; 5. Results of the decomposition of the Gini index; 6. Conclusions.

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This paper analyzes the contribution of components of *per capita* household income to total inequality of the income distribution in Brazil and its regions, using the corresponding decomposition of the Gini index. The income components considered are: income from the main job (activity), income from other jobs, pensions, donations, rent, interest, and other incomes. Only income from the main job and donations have a concentration ratio that is lower than the overall Gini index. One of the main results is that income from pensions contributes to increase overall inequality in Brazil, particularly in the metropolitan regions. Given the aging of the population, without change in the pension rules, the contribution of pensions in increasing inequality will be even stronger in the future.

Este artigo analisa a contribuição de parcelas do rendimento domiciliar *per capita* para a desigualdade da distribuição da renda no Brasil e nas suas regiões, usando a correspondente decomposição do índice de Gini. São consideradas as seguintes parcelas do rendimento: rendimento do trabalho principal, rendimento de outros trabalhos, aposentadorias e pensões, doações, rendimento de aluguel e juros e outros rendimentos. Apenas os rendimentos do trabalho principal e as doações têm razões de concentração menores do que o índice de Gini do rendimento domiciliar *per capita*. Verifica-se que aposentadorias e pensões contribuem para aumentar a desigualdade da distribuição da renda no Brasil, especialmente nas regiões metropolitanas. Devido ao crescimento da participação dos idosos na população, se não houver mudanças no sistema de previdência, a contribuição das aposentadorias e pensões para reforçar a desigualdade será ainda maior no futuro.

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1. Introduction

This paper analyzes how the components of household income contribute to the inequality of the distribution of *per capita* household income in Brazil, using data of 1999. The components analyzed are: income from the main occupation, income from other occupations, retirement pensions and other pensions, rents, and other incomes (interest, dividends, etc.).

A striking result is that retirement pensions contribute considerably to the inequality of income distribution in the majority of the metropolitan regions of the country.

Several authors noted already that expenditures with retirement pensions and other pensions are not well focused if they are to be considered as social expenditures with the aim of fighting poverty (Amsberg et al., 2000, Barros and Foguel, 2000). Other researches examined the relationship between pensions, age and poverty (Barros et al., 1999, 2000, Delgado and Cardoso Jr., 2000).

The next section presents the data; section 3 contains a summary of the methodology for decomposition of the Gini index; section 4 analyzes tables with the distribution of population, of family income, and of its components in 10 classes of *per capita* household income; section 5 presents the results of the decomposition of the Gini index for Brazil, in six Brazilian regions and in the metropolitan areas; and section 6 is a summary of the main conclusions.

2. The Data

The data used here are from the Brazilian National Sample Survey of Households of 1999, which will be referred to by the acronym Pnad (for its Brazilian title, *Pesquisa Nacional por Amostra de Domicílios*).

The Brazilian National Statistics Office, IBGE (for Instituto Brasileiro de Geografia e Estatística) informs that it "considers as monthly household income the sum of monthly incomes of those living in the same household, excluding those in pension (paid guests), domestic servants and family members of domestic servants". *Per capita* income was obtained by dividing the household income by the number of persons in the household (excluding those in pension, domestic servants and family members of servants). Only permanent private households that declared an income were considered, namely, a total of 91,574 households in the

sample, corresponding to 41,861,683 households in the population as a whole, or 155.6 million people in the category being examined.

One should bear in mind the limitations of the income data resulting from the Pnad questionnaire. Total declared income underestimates considerably the national income. The main reason for this is, probably, that families avoided declaring all their income, in particular those with the highest incomes. Another reason, however, is that the Pnad does not capture the value of production for self-consumption. The income of those producing agricultural goods is hard to measure precisely and a significant part of incomes derived from the ownership of capital is certainly not declared.

It should be noted that the category 'income from work' (*rendimento do trabalho*), for the Brazilian National Statistics Office, includes incomes obtained from any activity that an individual had (and declared), and is not limited to wages. 'Income from work' comprehends the income of self-employed and employers. We prefer thus to use here the expressions 'income from all occupations' (income from the main occupation and income from other occupations).

A final reminder on the data: Pnad does not collect data for the rural areas of the former North Region (states of Rondonia, Acre, Amazonas, Roraima, Pará and Amapá).

3. Decomposition of the Gini Index

Pyatt et al. (1980) have shown very clearly how the Gini index may be decomposed, when one wants to analyze incomes divided in their various components.[1]

Let y_i be the income of the ith person. This paper deals with the *per capita* household income, assuming that this income is the sum of k parts

$$y_i = \sum_{h=1}^{k} y_{hi} \tag{1}$$

Suppose those incomes y_i are ordered so that $y_1 \leq y_2 \leq \ldots \leq y_n$, where n is the size of the population. Thus, i is the rank of income y_i.

It can be shown that the Gini index (G) of the distribution of y_i is

$$G = \frac{2}{n\mu} \operatorname{cov}(y_i, i) \tag{2}$$

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[1]See also Shorrocks (1982, 1983). In Brazil this methodology was already used by Neder (2001) and Mariano and Lima (1998).

where μ is the average of y_i.

Pyatt et al. (1980) define the concentration ratio of the component y_{hi} as

$$C_h = \frac{2}{n\mu_h}\text{cov}(y_{hi}, i) \tag{3}$$

where μ_h is the average of y_{hi}. For non-negative incomes the Gini index varies from zero to $(n-1)/n$ and the concentration ratio varies from $-(n-1)/n$ to $(n-1)/n$ The participation of the hth component in the total income is

$$\phi_h = \frac{\mu_h}{\mu} \tag{4}$$

It can be deduced that

$$G = \sum_{h=1}^{k} \phi_h C_h \tag{5}$$

Let us indicate by i_h the ranks associated to the values of y_{hi} if they were in increasing order. The values of i_h, the same as i, vary from 1 to n. Note, however, that for a given y_{hi}, the respective value of i (the rank of the corresponding y_i) will not coincide, in general, with i_h (the rank of this y_{hi} in the ordering of the values of that component). Analogous to (2), the Gini index of y_{hi} is

$$G_h = \frac{2}{n\mu_h} \text{cov}(y_{hi}, i_h) \tag{6}$$

From (3) and (6), we obtain

$$R_h = \frac{C_h}{G_h} = \frac{\text{cov}(y_{hi}, i)}{\text{cov}(y_{hi}, i_h)} \tag{7}$$

Pyatt et al. (1980) call R_h 'rank correlation ratio', stressing that it is not a rank correlation coefficient. It can be shown that

$$-1 \leq R_h \leq 1$$

Hence $-G_h \leq C_h \leq G_h$

From (5) and (7), it follows that

$$G = \sum_{h=1}^{k} \phi_h R_h G_h \tag{8}$$

This expression shows how the Gini index of y_i is associated with the Gini indices of each component.

Note, in expression (5), that if all the concentration rations C_h had the same value, this would be also the value of G. Thus, it is reasonable to admit that a component y_{hi} contributes to increase inequality (measured by the Gini index) when $C_h > G$. When $C_h < G$, the component y_{hi} will be contributing to reduce inequality compared to that hypothetical situation in which all C_h are the same.

Obviously one item of the sum in the right-hand member of expression (8) will be negative only if the respective R_h is negative. This, on its turn, can only happen if $\operatorname{cov}(y_{hi}, i) < 0$, as shown in expression (7).

All calculations in this paper were made considering the weight or expansion factor for each household in the Pnad sample as supplied by IBGE.

4. Distribution in 10 Income Classes

In this section we analyze tables classifying households in 10 classes of *per capita* household income. Table 1 shows the distribution of permanent private households and of the corresponding people in these 10 classes. The first class includes those households that declared their income to be zero. It should be recalled that households where any person did not declare his/her income were excluded from this analysis.

Table 1 also presents the *per capita* income in each class and its share in the total income declared.

Table 2 presents the distribution, in these 10 classes, of four components of household income: income from the main occupation of the occupied persons in the household, income from other occupations, retirement pensions and other pensions, and other incomes. Here 'retirement' includes retirement caused by disability.

In table 3 the income from retirement pensions and other pensions is disaggregated in three parts: 'official' retirement pensions (paid by the federal government or by federal, state or municipal social security institutes), other 'official' pensions (widows etc.), and other retirement pensions and other pensions. The same table 3 presents the three components of 'other incomes' (the sum of which was in table 2): donations, rents, and a component that includes interest, dividends and other incomes.

Those households with *per capita* income up to R$150 represent 50.5% of the total number of households and 56.8% of all people, and absorb 16.5% of the total income. At the other end, the households with *per capita* incomes above R$500 constitute 14.6% of the total, comprising 11.3% of the people, and receive 49.7% of the total income. This group of the relatively rich absorbs 48.5% of the total income derived from an occupation, 51.6% of all the income that comes from retirement pensions and other pensions, and 53.2% of the income that results from 'official' retirement pensions. It is striking that the income derived from pensions is more concentrated among the relatively rich households than the income obtained from all sources altogether. Such concentration is even heavier for 'official' retirement pensions.

Table 1
Distribution of households and persons in 10 classes of *per capita* household income
(Brazil, 1999)

Class of per capita household income (R$)	Households		Persons		Average *per capita* income (R$)	% of total income
	No. (10^3)	%	No. (10^3)	%		
0	609.6	1.5	1,937	1.2	0	0
Over 0 to 50	5,500.3	13.1	28,009	18.0	32.2	2.3
Over 50 to 100	7,983.9	19.1	34,057	21.9	75.5	6.5
Over 100 to 150	7,041.1	16.8	24,387	15.7	126.5	7.8
Over 150 to 200	4,368.2	10.4	15,822	10.2	176.4	7.0
Over 200 to 300	5,421.4	13.0	18,270	11.7	248.4	11.4
Over 300 to 500	4,831.8	11.5	15,582	10.0	389.4	15.3
Over 500 to 1000	3,722.5	8.9	11,272	7.2	702.1	20.0
Over 1000 to 2000	1,659.3	4.0	4,597	3.0	1,393.4	16.1
Over 2000	723.6	1.7	1,640	1.1	3,283.7	13.6
Total	41,861.7	100.0	155,575	100.0	254.9	100.0

One way of assessing the degree of concentration of the various types of income in favor of the relatively rich is to calculate the ratio between the participation of the relatively rich (*per capita* household income above R$500) in the total of that type of income and the participation of the relatively poor (*per capita* household income up to R$150). This ratio is 3.0 for the income from all sources (pensions included), 2.8 for the income derived from the main occupation, 8.0 for the income from other occupations, 2.9 for the income from all occupations, 3.3 for 'official' retirement pensions, 2.1 for 'official' pensions that do not include the retirement pension, 3.4 for other retirement pensions and other pensions, 15.7 for rents, 1.0 for donations, 4.7 for interest and other incomes.

Table 2

Distribution of components of household income in classes of *per capita* household income (Brazil, 1999)

Class of *per capita* household income (R$)	Main occupation	Other occupations	All occupations	Retirement and other pensions	Other incomes*
0	0	0	0	0	0
Over 0 to 50	2.4	2.0	2.4	1.8	2.7
Over 50 to 100	6.8	3.4	6.6	6.1	4.8
Over 100 to 150	7.8	3.5	7.6	9.2	4.5
Over 150 to 200	7.6	3.2	7.4	6.0	4.3
Over 200 to 300	12.0	6.1	11.7	10.9	7.7
Over 300 to 500	15.9	10.7	15.7	14.5	11.1
Over 500 to 1000	19.8	21.2	19.9	20.6	18.9
Over 1000 to 2000	15.6	24.8	15.9	16.6	18.7
Over 2000	12.3	25.0	12.8	14.4	27.3
Total	100.0	100.0	100.0	100.0	100.0

* Including donations, rents, interest, dividends etc.

Table 3

Distribution of components of pensions and other incomes in classes of *per capita* household income (Brazil, 1999)

Class of *per capita* household income (R$)	'Official' retirement pensions	Other 'official' pensions	Other retirement and other pensions	Donations	Rents	Interest, dividends etc.
0	0	0	0	0	0	0
Over 0 to 50	1.6	2.5	2.2	9.9	0.3	2.8
Over 50 to 100	5.8	7.4	6.1	12.9	1.8	6.0
Over 100 to 150	8.9	11.0	7.7	9.0	2.6	6.0
Over 150 to 200	5.7	6.6	6.8	8.2	3.2	3.7
Over 200 to 300	10.5	13.0	9.8	11.1	7.3	6.0
Over 300 to 500	14.4	15.4	13.5	15.7	11.2	7.0
Over 500 to 1,000	20.6	20.0	22.9	18.8	20.7	14.0
Over 1,000 to 2,000	17.5	13.6	15.7	9.0	22.8	16.5
Over 2,000	15.2	10.6	15.3	5.4	30.2	38.2
Total	100.0	100.0	100.0	100.0	100.0	100.0

Instead of showing the shares in the columns, as in tables 1 to 3, table 4 presents the percentages in the lines, that is, it shows the share of each component in the total income of the given income class. The income of the main occupation always prevails (75.5% in the total of all classes), but it tends to diminish with the rise of the *per capita* household income. On the other hand, the participation of the income from other occupations tends to increase with *per capita* income, especially in the three highest income classes.

Table 4

Share of the components of household income according to classes of *per capita*
household income (Brazil, 1999)

Class of *per capita* household income (R$)	Share (%) of income						
	Main occupation	Other occupation	Retirement and other pensions	'Official' retirement pensions	Other 'official' pensions	Other incomes*	Rents
Over 0 to 50	79.1	2.7	13.9	9.0	3.6	4.4	0.3
Over 50 to 100	78.8	1.5	16.9	11.9	3.8	2.8	0.6
Over 100 to 150	75.5	1.3	21.0	15.1	4.7	2.2	0.7
Over 150 to 200	81.3	1.4	15.1	10.7	3.1	2.3	1.0
Over 200 to 300	79.0	1.6	17.0	12.1	3.8	2.5	1.4
Over 300 to 500	78.4	2.1	16.9	12.4	3.4	2.7	1.6
Over 500 to 1,000	74.9	3.2	18.4	13.6	3.4	3.5	2.3
Over 1,000 to 2,000	72.8	4.6	18.3	14.3	2.8	4.3	3.1
Over 2,000	68.2	5.5	18.8	14.8	2.6	7.4	4.8
Total	75.5	3.0	17.8	13.2	3.3	3.7	2.2

* Including donations, rents, interest, dividends etc.

Note, in table 4, that the participation of retirement and other pensions is relatively high in the income class 'over 100 to 150', because into this class comes the value of the minimum wage (R$136 in September 1999), which is a very common amount for retirement and other pensions. All the households that have only retirees, each receiving a minimum wage, appear in this income class.

Taken together, the income from all occupations, plus pensions, reaches 96.3% of the total income. All other incomes (including donations, rents, interest, and dividends) constitute only 3.7% of the total. To some extent such a small share is due to the fact that these incomes are particularly understated.

Tables 5 to 9 show the distribution, in the same classes, of the households, the persons, the total income and four of its components for the metropolitan areas of Brazil, the urban non-metropolitan areas, the rural non-metropolitan areas, the metropolitan areas of the Northeast region of Brazil, and the metropolitan area of São Paulo. Metropolitan areas include 47.2 million people, 30.4% of the population analyzed (155.6 million people).

Observe, in the metropolitan areas of Brazil (table 5), that households with *per capita* income above R$500 comprise 22.7% of the total number of households, shelter 17.9% of the people, take 59.9% of total income, 58.4% of the income of all occupations, 62.8% of the pensions and 64.5% of the 'official' retirement pensions. In this case the concentration of retirement incomes in favor of the relatively rich is very clear.

Table 5

Distribution of households, persons and various components of income in 10 classes of
per capita household income (metropolitan Brazil, 1999)

Class of *per capita* household income (R$)	Households (%)	Persons (%)	Total income (%)	Income from main occupation (%)	Income from all occupations (%)	Pensions (%)	'Official' retirement pensions (%)
0	1.7	1.4	0	0	0	0	0
Over 0 to 50	6.4	9.0	0.9	0.9	0.9	0.8	0.5
Over 50 to 100	13.9	16.8	3.6	4.0	3.9	2.7	2.2
Over 100 to 150	14.8	15.5	5.5	5.9	5.7	5.0	4.2
Over 150 to 200	11.0	11.6	5.7	6.3	6.1	4.6	4.2
200 to 300	15.0	14.5	10.0	10.5	10.3	9.8	9.7
Over 300 to 500	14.6	13.2	14.4	14.9	14.7	14.4	14.6
Over 500 to 1,000	13.0	11.0	21.4	21.3	21.3	22.6	22.7
Over 1,000 to 2,000	6.4	4.9	19.2	18.8	19.0	19.8	20.5
Over 2,000	3.3	2.1	19.3	17.5	18.1	20.4	21.3
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

The same concentration is present in the non-metropolitan urban areas (table
6). Households with *per capita* income above R$500 are 13.6% of the total, con-
stitute 10.8% of the people, take 45.6% of the total income, 44.5% of the income
of all occupations, 47.5% of the sum of pensions and 50.2% of 'official' retirement
pensions.

Table 6

Distribution of households, persons and various components of income in 10 classes of
per capita household income (urban non-metropolitan Brazil, 1999)

Class of *per capita* household income (R$)	Households (%)	Persons (%)	Total income (%)	Income from main occupation (%)	Income from all occupations (%)	Pensions (%)	'Official' retirement pensions (%)
0	1.3	1.2	0	0	0	0	0
Over 0 to 50	10.9	14.9	2.0	2.1	2.0	1.8	1.6
Over 50 to 100	19.3	22.4	6.8	7.1	6.9	6.7	6.1
Over 100 to 150	17.7	16.4	8.3	8.3	8.1	10.4	9.8
Over 150 to 200	11.0	10.9	7.8	8.4	8.2	6.4	6.1
Over 200 to 300	13.8	12.7	12.7	13.3	13.1	11.7	10.9
Over 300 to 500	12.3	10.8	16.8	17.4	17.2	15.6	15.3
Over 500 to 1,000	8.7	7.2	20.5	20.3	20.4	20.7	20.8
Over 1,000 to 2,000	3.6	2.7	15.2	14.3	14.8	15.9	17.3
Over 2,000	1.3	0.8	9.9	8.8	9.3	10.9	12.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

In the rural areas (table 7), the concentration of retirement pensions in favor of the rich is apparently not stronger than that for income taken as a whole. On the contrary, the participation of the richest households in the income from pensions is significantly lower than their participation in the income from all occupations. In these areas, households with *per capita* income above R$500 constitute 2.8% of the total, comprise 2.0% of the people, receive 20.1% of the total income, 21.0% of the income from all occupations and only 13.9% of the income coming from pensions.

Nevertheless, a higher concentration of pensions can be detected if a different aggregation of income classes is used. Households with *per capita* income above R$100 are 39.4% of the total, have 29.8% of all persons, take 68.9% of the total income, 68.3% of the income of all occupation, 70.6% of pensions and 71.1% of all 'official' retirement pensions. Note that in this aggregation of income classes the limit used to define the 'relatively rich' is lower than one minimum wage (R$136 in 1999). The apparent stronger concentration of pensions than of all income in all likelihood is due to the fact that incomes from farming are understated and that the value of production for self-consumption is omitted.[2]

Table 7

Distribution of households, persons and various components of income in 10 classes of *per capita* household income (rural non-metropolitan Brazil, 1999)

Class of *per capita* household income (R$)	Households (%)	Persons (%)	Total income (%)	Income from main occupation (%)	Income from all occupations (%)	Pensions (%)	'Official' retirement pensions (%)
0	1.4	1.2	0	0	0	0	0
Over 0 to 50	31.5	40.4	11.4	12.2	12.3	7.1	6.5
Over 50 to 100	27.7	28.6	19.8	19.6	19.4	22.3	22.4
Over 100 to 150	18.0	14.0	16.6	15.0	14.8	25.5	26.6
Over 150 to 200	7.7	5.9	9.7	9.6	9.5	11.1	11.2
Over 200 to 300	6.9	4.9	11.5	11.5	11.5	11.8	11.4
Over 300 to 500	3.9	3.0	10.9	11.4	11.5	8.2	8.0
Over 500 to 1,000	2.0	1.4	9.0	8.8	8.9	9.0	8.9
Over 1000 to 2,000	0.7	0.4	6.0	6.3	6.6	3.3	3.1
Over 2,000	0.2	0.1	5.1	5.6	5.5	1.6	2.0
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

[2]See Delgado and Cardoso Jr. (2000) for an analysis of the beneficial impact of rural social security on poverty and small farmers.

The evidence presented up to now reveals a stronger concentration of pensions in favor of the relatively rich in the urban areas. We will examine in particular the metropolitan areas of the Northeast (table 8) and the metropolitan area of São Paulo (table 9).

In the metropolitan areas of the Northeast that concentration is striking. Households with *per capita* income above R$500 are 13.1% of the total, shelter 9.9% of the people, and receive 51.9% of the total income, 50.2% of the income from all occupations, 56.9% of pensions, and 60.0 of 'official' retirement pensions.

Table 8

Distribution of households, persons and various components of income in 10 classes of *per capita* household income (metropolitan Northeast of Brazil, 1999)

Class of *per capita* household income (R$)	Households (%)	Persons (%)	Total income (%)	Income from main occupation (%)	Income from all occupations (%)	Pensions (%)	'Official' retirement pensions (%)
0	1.8	1.4	0	0	0	0	0
Over 0 to 50	16.2	21.2	3.1	3.3	3.2	2.3	1.8
Over 50 to 100	24.3	27.3	8.8	9.8	9.4	6.9	6.0
Over 100 to 150	16.7	15.6	8.4	9.0	8.7	7.7	7.2
Over 150 to 200	9.5	8.9	6.7	7.4	7.2	5.2	4.7
Over 200 to 300	10.0	8.6	9.2	9.5	9.3	9.1	8.9
Over 300 to 500	8.4	7.2	12.0	12.2	12.0	11.8	11.4
Over 500 to 1,000	7.1	5.7	17.3	16.5	16.5	20.4	20.0
Over 1,000 to 2,000	4.2	3.0	18.3	17.5	18.0	18.9	19.2
Over 2,000	1.8	1.2	16.3	14.7	15.6	17.6	20.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Table 9 shows that in the metropolitan region of São Paulo the concentration of pensions we have been examining is not present. Households with *per capita* income above R$500 are 26.6% of the total, include 21.5% of the people, 61.9% of the total income, 61.6% of the income from all occupations, 57.0% of pensions and 57.5% of 'official' retirement pensions.

Table 9

Distribution of households, persons and various components of income in 10 classes of
per capita household income (metropolitan region of São Paulo, 1999)

Class of *per capita* household income (R$)	Households (%)	Persons (%)	Total income (%)	Income from main occupation (%)	Income from all occupations (%)	Pensions (%)	'Official' retirement pensions (%)
0	2.3	2.0	0	0	0	0	0
Over 0 to 50	3.8	5.4	0.5	0.5	0.5	0.5	0.3
Over 50 to 100	10.5	13.1	2.6	2.7	2.6	2.3	1.9
Over 100 to 150	13.2	14.3	4.5	4.7	4.6	5.1	4.3
Over 150 to 200	10.7	11.7	5.2	5.4	5.3	5.3	5.0
Over 200 to 300	15.5	15.9	9.8	10.0	9.8	11.1	11.6
Over 300 to 500	17.3	16.2	15.6	15.8	15.6	18.6	19.5
Over 500 to 1,000	15.7	13.4	23.0	22.4	22.5	27.1	28.5
Over 1,000 to 2,000	7.2	5.7	19.7	20.2	20.3	16.5	17.7
Over 2,000	3.7	2.4	19.1	18.4	18.8	13.4	11.2
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

In the next section, we apply the methodology for the decomposition of the Gini index according to the different components of household income, in order to reach a more synthetic analysis of the contribution of pensions to income inequality in Brazil.

5. Results of the Decomposition of the Gini Index

Table 10 shows the results of the decomposition of the Gini index of the *per capita* household income in Brazil, considering six components: income from the main occupation of those persons who are occupied, income from other occupations, pensions, donations, rents, and an item that includes interest, dividends and other incomes. Of these components, only income from the main occupation and donations have a concentration ratio lower than the global Gini index. Although the concentration ratio of donations is the lowest, it is still positive, indicating that the value of *per capita* donations received tends to increase with the rise of the *per capita* household income.

Excluding the case of the income from the main occupation, the Gini indices of the components of income are all extremely high because a large proportion of people are in households where that component is zero; this proportion is 9.3% for income from the main occupation, 92.9% for income from other occupations, 67.7% for pensions, 97.0 for donations, 96.2 for rents, 95.9% for interest and other incomes. And 1.2% of people are in households that have no income at all.

Table 10
Decomposition of the Gini index for the *per capita* household income
(Brazil, 1999)

Components of income	Average value (R$)	Gini index (G_h)	Share % (ϕ_h)	Concentration ratio (C_h)	$\phi_h C_h$
Main occupation	192.4	0.628	75.5	0.579	0.437
Other occupations	7.6	0.978	3.0	0.745	0.022
Pensions	45.4	0.876	17.8	0.603	0.107
Donations	1.8	0.990	0.7	0.354	0.002
Rents	5.6	0.986	2.2	0.803	0.018
Interest etc.	2.1	0.991	0.8	0.695	0.006
Total	254.9	0.592	100.0	0.592	0.592

Table 10 shows that, due to its large share in the total income (75.5%), income from the main occupation is responsible for the highest part of the Gini index (almost 74% of the total).

Among the remaining components, pensions play an important role, as they are 17.8% of the total income and generate 18.1% of the Gini index.

The role of pensions is more striking in the metropolitan areas (table 11), where they represent 18.3% of the total income and are responsible for 19.3% of the Gini index.

Table 11
Decomposition of the Gini index for the *per capita* household income
(metropolitan Brazil, 1999)

Components of income	Average value (R$)	Gini index (G_h)	Share % (ϕ_h)	Concentration ratio (C_h)	$\phi_h C_h$
Main occupation	272.4	0.613	75.6	0.560	0.423
Other occupations	8.3	0.986	2.3	0.815	0.019
Pensions	65.8	0.875	18.3	0.613	0.112
Donations	2.4	0.992	0.7	0.445	0.003
Rents	7.7	0.985	2.1	0.762	0.016
Interest etc.	3.8	0.993	1.1	0.790	0.008
Total	360.5	0.581	100.0	0.581	0.581

In the urban non-metropolitan areas (table 12) the impact of pensions on the Gini index is 'neutral': those incomes represent 17.5% of the total income and originate 17.5% of the Gini index. This happens because the concentration ratio of pensions (0.562) is practically the same as the Gini index (0.560).

In the rural non-metropolitan areas (table 13) the concentration ratio of pensions (0.542) is somewhat higher that the Gini index of the aggregate (0.538), making the contribution of this item to the Gini index (17.5%) slightly higher than its share in the aggregate income (17.4%).

Table 12

Decomposition of the Gini index for the *per capita* household income

(urban non-metropolitan Brazil, 1999)

Components of income	Average value (R\$)	Gini index (G_h)	Share % (ϕ_h)	Concentration ratio (C_h)	$\phi_h C_h$
Main occupation	187.5	0.598	75.4	0.545	0.411
Other occupations	8.3	0.976	3.3	0.774	0.026
Pensions	43.5	0.868	17.5	0.562	0.098
Donations	1.8	0.986	0.7	0.242	0.002
Rents	5.9	0.983	2.4	0.796	0.019
Interest etc.	1.5	0.989	0.6	0.610	0.004
Total	248.5	0.560	100.0	0.560	0.560

Table 13

Decomposition of the Gini index for the *per capita* household income

(rural non-metropolitan Brazil, 1999)

Components of income	Average value (R\$)	Gini index (G_h)	Share % (ϕ_h)	Concentration ratio (C_h)	$\phi_h C_h$
Main occupation	79.3	0.595	75.4	0.535	0.403
Other occupations	4.5	0.952	4.3	0.543	0.023
Pensions	18.3	0.845	17.4	0.542	0.094
Donations	0.7	0.987	0.7	0.171	0.001
Rents	1.4	0.993	1.4	0.851	0.012
Interest etc.	1.0	0.986	1.0	0.507	0.005
Total	105.3	0.538	100.0	0.538	0.538

Tables 14a and 14b show summary results of the decomposition of the Gini index for the *per capita* household income for six Brazilian regions.

The portion of the Gini index associated to pensions is particularly large in the Northeast and in the grouping MG+ES+RJ (the three states - Minas Gerais, Espirito Santo and Rio de Janeiro), as in these regions one observes a high value of the concentration ratio (C_h) as well as a high share of these incomes in the total income (ϕ_h).

It is interesting to compare the structure of the Gini index in the different regions and verify whether the differences in inequality in the total income are related to specific components of that income. Comparing the Southern region with the state of São Paulo we can see that the lower inequality measure in the latter is, to a large extent, due to the lower value of the portion related to pensions.

Table 14a

Decomposition of the Gini index of the *per capita* household income in regions of Brazil, 1999: participation of the component in the total income (ϕ_h), concentration ratio (C_h) and share of the component in the general Gini index ($\phi_h C_h$)

Components of income	North			Northeast			MG + ES + RJ		
	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$
Main occupation	81.9	0.559	0.458	70.2	0.589	0.413	71.8	0.537	0.385
Other occupations	3.3	0.792	0.026	5.0	0.705	0.035	2.8	0.802	0.023
Pensions	12.2	0.541	0.066	21.4	0.630	0.135	22.4	0.628	0.140
Donations	0.9	0.338	0.003	1.3	0.335	0.004	0.6	0.406	0.002
Rents	1.3	0.735	0.010	1.4	0.856	0.012	1.8	0.770	0.014
Interest etc.	0.4	0.758	0.003	0.7	0.524	0.004	0.6	0.577	0.004
Total	100.0	0.566	0.566	100.0	0.604	0.604	100.0	0.568	0.568

Comparing the Northeast and the South, it is easy to observe that almost all the difference in the Gini index of the two regions is associated to the portion regarding pensions.

Table 14b

Decomposition of the Gini index of the *per capita* household income in regions of Brazil, 1999: participation of the component in the total income (ϕ_h), concentration ratio (C_h) and share of the component in the general Gini index ($\phi_h C_h$)

Components of income	São Paulo			South			Center-West		
	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$
Main occupation	79.0	0.525	0.415	75.6	0.539	0.407	79.5	0.566	0.450
Other occupations	1.8	0.791	0.014	3.5	0.793	0.027	2.9	0.777	0.022
Pensions	15.0	0.524	0.078	16.8	0.568	0.096	13.9	0.661	0.092
Donations	0.5	0.399	0.002	0.6	0.426	0.003	0.6	0.335	0.002
Rents	2.7	0.758	0.020	2.5	0.791	0.020	2.4	0.740	0.018
Interest etc.	1.0	0.789	0.008	1.0	0.683	0.007	0.7	0.676	0.004
Total	100.0	0.538	0.538	100.0	0.560	0.560	100.0	0.589	0.589

Tables 15a, 15b and 15c summarize the results of the decomposition of the Gini index in nine Brazilian metropolitan regions.

Regarding the portion of the Gini index associated to pensions, our attention is drawn to the higher values in Rio de Janeiro, Fortaleza and Recife. The share of pensions in the total income reaches 25.5% in Rio de Janeiro, 23.1% in the metropolitan region of Recife and is nearly 20% in Fortaleza, Salvador, Belo Horizonte and Porto Alegre, 18.6% in Brasilia, 14.3% in Curitiba and 13.1% in São Paulo.

Remarkable differences are exposed in the comparison between the largest metropolitan regions, São Paulo and Rio de Janeiro, which have almost the same Gini index. The portion $\phi_h C_h$ for pensions in Rio de Janeiro is far higher than the corresponding value for São Paulo. On the other hand, the portion for income

from the main occupation is higher in São Paulo than the corresponding value in Rio de Janeiro. Also the portions corresponding to rents, as well as to dividends, interest and other incomes are higher in S Paulo. There are also differences in the concentration ratios. However, the main difference between Rio and São Paulo lies in the composition of income: while in Rio the share of income from the main occupation and the share of pensions in the total income are respectively 70.4% and 25.5%, the corresponding shares in São Paulo are 80.6% and 13.1%.

Table 15a

Decomposition of the Gini index of the *per capita* household income in metropolitan areas of Brazil, 1999: participation of the component in the total income (ϕ_h), concentration ratio (C_h) and share of the component in the general Gini index ($\phi_h C_h$)

Components of income	Fortaleza			Recife			Salvador		
	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$
Main occupation	72.1	0.579	0.417	69.7	0.601	0.419	72.6	0.600	0.436
Other occupations	3.3	0.857	0.028	3.7	0.837	0.031	4.1	0.834	0.034
Pensions	20.5	0.702	0.144	23.1	0.655	0.151	19.3	0.650	0.125
Donations	1.6	0.396	0.006	1.2	0.349	0.004	1.2	0.552	0.007
Rents	1.4	0.828	0.012	1.7	0.764	0.013	2.3	0.793	0.018
Interest etc.	1.1	0.809	0.009	0.6	0.559	0.003	0.6	0.776	0.005
Total	100.0	0.616	0.616	100.0	0.622	0.622	100.0	0.624	0.624

Table 15b

Decomposition of the Gini index of the *per capita* household income in metropolitan areas of Brazil, 1999: participation of the component in the total income (ϕ_h), concentration ratio (C_h) and share of the component in the general Gini index ($\phi_h C_h$)

Components of income	Belo Horizonte			Rio de Janeiro			São Paulo		
	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$
Main occupation	73.6	0.543	0.400	70.4	0.516	0.363	80.6	0.547	0.441
Other occupations	2.8	0.842	0.024	1.9	0.842	0.016	1.8	0.795	0.014
Pensions	19.5	0.641	0.125	25.5	0.625	0.160	13.1	0.509	0.067
Donations	0.6	0.585	0.003	0.7	0.425	0.003	0.5	0.505	0.003
Rents	2.5	0.743	0.018	1.1	0.766	0.009	2.5	0.716	0.018
Interest etc.	1.1	0.783	0.008	0.4	0.769	0.003	1.5	0.831	0.012
Total	100.0	0.578	0.578	100.0	0.553	0.553	100.0	0.555	0.555

Table 15c
Decomposition of the Gini index of the per capita household income in metropolitan
areas of Brazil, 1999: participation of the component in the total income (ϕ_h),
concentration ratio (C_h) and share of the component in the general Gini index ($\phi_h C_h$)

Components of income	Curitiba			Porto Alegre			Brasilia (DF)		
	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$	ϕ_h	C_h	$\phi_h C_h$
Main occupation	77.2	0.530	0.410	71.4	0.528	0.377	76.6	0.595	0.456
Other occupations	3.0	0.834	0.025	3.2	0.801	0.025	2.2	0.836	0.018
Pensions	14.3	0.632	0.091	20.6	0.641	0.132	18.6	0.739	0.138
Donations	0.6	0.515	0.003	0.6	0.617	0.004	0.4	0.134	0.001
Rents	3.5	0.839	0.030	2.7	0.867	0.023	1.6	0.621	0.010
Interest etc.	1.3	0.809	0.010	1.5	0.759	0.011	0.6	0.234	0.001
Total	100.0	0.569	0.569	100.0	0.573	0.573	100.0	0.624	0.624

6.   Conclusions

The decomposition of the household income in its various components allows
us to examine how each of them contributes to the strong inequality observed in
Brazil.

According to the 1999 Pnad data, 75.5% of the average household income in
Brazil results from the main occupation and 78.5% come from all occupations
taken together (including own-account work and of employers' work). Pensions
represent the next important component (17.8%) of the total income.

The income from the main occupation is always less concentrated in favor
of the rich than the total income, when people are classified according to their
per capita household income. But this difference is small in rural areas. Income
from other occupations (that is, excluded the main occupation) is always more
concentrated than the total income. Once more, the difference is small in rural
areas.

Pensions are, in general, more concentrated than the total income. This con-
centration is present also in rural areas, although the distribution of pensions in
rural areas is in general very different from the one observed in urban areas.

In the metropolitan areas, pensions (and especially 'official' pensions) con-
tribute substantially to increase inequality in the distribution of the *per capita*
household income. This phenomenon is more accentuated in the cases of For-
taleza, Recife and Rio de Janeiro. The metropolitan area of São Paulo is the
exception here: pensions are less concentrated in favor of the relatively rich than
the total income.

It is very often said and written that Brazil is a country with strong inequality
and that such inequality should be reduced. It is relevant to recognize that pre-

cisely one component of income very much subject to laws and regulations, such as 'official' retirement pensions, is contributing to worsen inequality.

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