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DISCUSSION PAPER

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DISCUSSION PAPER

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SUMMARY

POVERTY AMONG FEMALE-HEADED HOUSEHOLDS IN BRAZIL

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INTRODUCTION

Female-headed households (**FHHs**) have been of increasing concerned around the world and in particular in Brazil. This increasing concern stems from five preconceptions about **FHHs**. First, the prevalence of **FHHs** has been increasing at an increasing rate since 1950 [Barros and Fox (1989), and Goldani (1989)]. Secondly, **FHHs** tend to be over-represented among the poor [Merrick and Schmink (1983)]. Thirdly, the degree of over-representation of **FHHs** among the poor tends to increase as the level of poverty declines; indicating that poverty among **FHHs** may be harder to eradicate. Fourthly, the well-being and development of children tend to be adverse affected by living in **FHHs**. Finally, the consequences of poverty on child development and human capital accumulation seem to be more severe among those living in **FHHs**.

This study has three parts. In the first part we document the extent to which **FHHs** are in fact over-represented among the poor. Second part investigates the proximate determinants of the relative greater poverty among **FHHs**. Finally, we investigate the consequences of living in **FHHs** upon children's labor force participation and school attendance. The study is conducted separately for three Brazilian metropolitan areas using the 1984 version of the Brazilian annual household survey called PNAD (Pesquisa Nacional por Amostra de Domicílios).

PART 1

THE EXTENT OF POVERTY AMONG FEMALE-HEADED HOUSEHOLDS

1. INTRODUCTION

Most studies concerned with **FHHs** and poverty agreed that **FHHs** are over-represented among the poor. Studies for Brazil about this relationship [Merrick and Schmink (1983) and Pastore, Zylberstajn and Pagotto (1983)] are not exceptions. They have all confirmed that in Brazil, as in most other countries, **FHHs** are over-represented among the poor.[1]

This part of the study describes the extent to which **FHHs** and children living in **FHHs** are over-represented among the poor in Brazil. The limited results available in the literature are reviewed and new findings are presented. The prevalence of poverty among

[1]Surprisingly, the study by Dvorak (1989) does not reveal **FHHs** as being over-represented among the poor.

children living in **FHHs** and their age structure, which is investigated at length, has have never been analyzed before for Brazil.

In the next section some basic concepts and methodological issues, which will be used throughout the study, are introduced.

2. PRELIMINARIES

2.1. Data Set

This study is conducted separately for three Brazilian metropolitan areas using the 1984 version of PNAD (Pesquisa Nacional por Amostra de Domicílios). This 1984 version of PNAD has a series of special question for women aged 15 to 54 [see Goldani (1989), and Simões and Oliveira (1986, 1988) for extensive analyses of the special questions on women contained in this data/set]. The PNAD-84 is a very large data set. It contais information on almost 150 thousand Brazilian households (see Table 1). Due to large regional disparities in the cost-of-living and since **FHHs** are expected to be quite distinct with respect to their composition, structure, and forms of economic suport depending of their regional location, we decided to analyze only three metropolitan areas: São Paulo, Recife and Porto Alegre. Basic differences among these three areas are briefly described in Subsection 2.4 below. Table 1 presents the sample screening process as well as the final sample size for each metropolitan area.

Table 1
Brazil: Sample Screening, PNAD-84

Strata	Screening	Sample Size
Brazil		142,227
Urban Brazil	sampled	110,625
	interviewed	92,397
	private households	91,990
	report household income	91,361
Metropolitan		51,637
Recife		4,839
São Paulo		8,506
Porto Alegre		6,361

Source: PNAD-84 Public tapes - Authors' own Tabulations.

2.2. The Concept of Household Resources

To investigate the extent to which **FHHs** and children in **FHHs** are over-represented among the poor, it is necessary to specify a notion of household resources in order to rank households. In this study households are ranked according to a slight modification of the traditional concept of household per capita income. Specifically, we use the income from all sources of all **adult** members of the household[2] divided by the total number of persons in the household, which is referred to as the **household per capita adult income.**[3]

Removing from the household income that part contributed by non-adult members prevents households from upgrading their ranking by using their children in the labor market.[4] One of the goals of this study is to assess how outcomes for children, like their labor-force participation and school attendance, depend on the rank of their households (see part 3). Hence, it is absolutely essential to measure to the household resources without the contribution of non-adult

[2]We considered as adult members: the head of the household, his/her spouse, and all other members at least 18 years old.

[3]A similar concept has been used by Masters (1969).

[4]To what extent does the exclusion of the income of non-adult members have an impact on the ranking of households? To answer this question we rank and classify households first by their per capita adult income and secondly by their per capita total income (we constrain this analysis to São Paulo metropolitan area. Then, we investigate the concordance between these two rankings. The results reveals that 94% of all households are classified in the same relative income group whether they are ranked by per capita adult income or per capita total income. Among those classified as extremely poor based on the ranking by per capita adult income only **88.3%** are also extremely poor according to the rank by per capita total income, whereas among those classified as non-poor according to the per capita adult income **98.6%** are also classified as non-poor according to per capita total income. This proportionally larger number of changes in classification among poor households is a consequence of: **a**) non-adult income being more important for relatively poorer households; and **b**) the income classes being more disaggregated among the poor, and so more sensitive to how income is defined.

members. It would confound the analysis to permit children's time allocation (i.e., their labor-force participation and school attendance) to affect the ranking of households.[5] Ideally, households would be ranked based on the resouces they would have if all children were attending school and out of the labor force. The income measure used in this study, the adult total income, will equal this ideal measure whenever the labor supply of the household adult members is not influenced by how non-adult members allocate their time.

2.3. The Income Classes

We investigate whether **FHHs** are over-represented among the poor by verifying whether the prevalence of **FHHs** declines as one moves from poor households to non-poor households. To operationalize this movement from poor to non-poor households, households are grouped into five income classes according to their per capita adult income.

Given our interest on poverty, the grouping scheme was chosen to be more disaggregated among poor households. To define the classes precisely, let Q_α be the α-percentile of the distribution of households according to the household per capita adult income. In other words, Q_α is defined as the smallest number such that at least α% of all households have per capita adult income lower than Q_α. Five income classes are constructed based on Q_5, Q_{10}, Q_{25}, and Q_{50}. Specifically, households are grouped according to their per capita adult income into five groups as follows: **a**) below Q_5 -- the extreme poor; **b**) between Q_5 and Q_{10} -- the very poor; **c**) between Q_{10} and Q_{25} -- the poor; **d**) between Q_{25} and Q_{50} -- the quasi-poor; and **e**) above Q_{50} -- the non-poor. By construction the first and second groups each have 5% of all households each; the third, 15%; the fourth, 25%; and finally the last group has 50%.

2.4. Regional Disaggregation

Given the large regional variations in the cost-of-living that exist across Brazil, it would be unwise to conduct a detailed investigation of poverty without a concomitant regional disaggregation. Accordingly, we decided to conduct the analysis separately for three Brazilian metropolitan areas: Recife, São Paulo, and Porto Alegre. São Paulo is the largest metropolitan area in the country, it has the highest average per capita income, and it is also the most industrialized

[5]See Barros and Mendonça (1990) for further discussion and evidence on this issue.

area. Recife and Porto Alegre are similar in size, both being considerably smaller than São Paulo. Recife is the largest metropolitan area in Northeast Brazil, which is a poor and densely populated region. Porto Alegre is the largest metropolitan area in South Brazil; it has a relatively homogeneous population and an average level of income close to that of São Paulo.

Since the overall income levels vary significantly across these regions, so do the percentiles of the distribution of households according to their per capita adult income and consequently the income brackets used to group households. To clarify the analysis that follows, Table 2 presents, for each metropolitan area, the values for the selected percentiles which we use for defining our five income groups. As Table 2 reveals there exists virtually no difference between São Paulo and Porto Alegre with respect to these percentiles. The percentiles for Recife, however, tend to be considerably lower; close to one half of those for São Paulo and Porto Alegre. Notice that all these comparisons are in nominal terms; no attempt has been made to adjust for differences in cost-of-living between metropolitan areas. Hence, although it is likely that households in the same income class are poorer in Recife than in São Paulo and Porto alegre, there are no guarantees that this is in fact the case.

Table 2
Brazil: Selected Percentiles of the Distribution of Households According to their Per Capita Adult Income[a] by Metropolitan Area - 1984

Percentile[b]	Recife	São Paulo	Porto Alegre
Q_5	0.12	0.28	0.29
Q_{10}	0.18	0.42	0.41
Q_{25}	0.32	0.75	0.72
Q_{50}	0.60	1.36	1.35

Source: PNAD-84 Public Tapes - Authors' own tabulations.

Notes: [a]Income refers to the sum of the income from all sources of all **adult** members of the household. Members considered as adults are the household head, his/her spouse, and all other members aged 18 or more.

[b]Q_α denotes the α percentile. So, for instance, Q_{25} is the first quartile and Q_{50} is the median.

3. POVERTY AMONG FHHs

3.1. Previous Studies

The strong relationship between poverty and **FHHs** in Brazil was first formally documented by Merrick and Schmink (1983) (see Table 1 in Appendix 1). They divided the universe of households into three income classes: poor (bottom 30%), low (middle 46%), and middle/high (top 24%). The prevalence of **FHHs** in these classes were estimated as varying from 11% for the middle high class households to 25% among poor households. Overall, the prevalence of **FHHs** was estimated as 17%.[6]

Both Pastore, Zylberstajn, and Pagotto (1983), and Dvorak (1989) studied the evolution of poverty in Brazil from 1970 to 1980 by dividing the universe of **families** into two income classes according to their per capita income: a family was considered poor if the per capita income was lower than 1/4 of the minimum wage and non-poor if otherwise. Their findings reveal, perhaps surprisingly, only a slightly higher prevalence of **FHHs** among poor than non-poor (see Table 2 in Appendix). Even more surprisingly is Dvorak's (1989) finding that in 1980 the prevalence of **FHHs** was higher among non-poor than poor households. The fact that these two studies encountered a weaker sensitivity of the prevalence of FHHs to income levels than both the one estimated by Merrick and Schmink (1983) and the one estimated in this study (see Table 3) should be related to the fact that they include urban and rural areas in their studies, whereas Merrick and Schmink's study as well as ours only consider metropolitan areas. Nevertheless, these discrepancies certainly deserve further investigation.

3.2. Basic Results

Table 3 presents our estimates for the prevalence of **FHHs** by income class. We consider three categories of **FHHs a**) All **FHHs**;[7] **b**) **FHHs** with children; and **c**) **FHHs** with children and no other adults besides the head. The

[6]In their study, single-person households were excluded. As we noted elsewhere in Barros and Mendonça (1990, part 3, Table 10) this exclusion tends to bias the estimates for the prevalence of **FHHs** downward by approximately 3%.

[7]Whenever we refer to **FHHs** in this study, we will be refering to households which **report** a female, **without a husband present**, as the head.

results agree perfectly with those obtained by Merrick and Schmink (1983). Independent of the category of **FHH** or of metropolitan area, the prevalence of **FHHs** diminishes drastically as one moves from low income to high income classes. This strong sensitivity of the prevalence of **FHHs** to income levels demonstrates the existence of a close connection between metropolitan poverty and female-headship.

Table 3

Brazil: Proportion of Female-Headed Households by Metropolitan Area and Per Capita Income[a] Class - 1984

Income Class[b]	Recife			São Paulo			Porto Alegre		
	Categories			Categories			Categories		
	(a)	(b)	(c)	(a)	(b)	(c)	(a)	(b)	(c)
$<Q_5$	40.9	35.5	21.0	27.0	19.3	11.2	26.7	19.9	13.2
Q_5 - Q_{10}	32.2	27.7	9.9	19.7	16.7	9.7	21.6	15.9	8.4
Q_{10} - Q_{25}	24.1	15.8	5.9	19.5	11.2	4.1	21.8	11.3	4.5
Q_{25} - Q_{50}	21.8	12.1	2.7	14.0	5.3	1.6	16.3	6.0	1.7
$>Q_{50}$	18.1	6.0	1.2	15.6	2.8	1.1	17.5	3.5	1.9
All	21.8	11.6	3.7	16.5	6.2	2.6	18.5	6.7	3.1

Source: PNAD-84 Public Tapes - Authors' own tabulations.

Notes: [a]Income refers to the sum of the income from all sources of all adult members of the household. Members considered as adults are the household head, his/her spouse, and all other members aged 18 or more.

[b]Q_α denotes the α percentile. So, for instance, Q_{25} is the first quartile and Q_{50} is the median.

(a) All FHHs; (b) FHHs with children; (c) FHHs with children and no other adults besides the head.

3.3. Sensitivity by Metropolitan Area and Category of FHH

In addition to revealing the sensitivity of the prevalence of **FHHs** to income levels, Table 3 also indicate how this sensitivity varies across metropolitan areas and categories of **FHH**. To investigate these variations in sensitivity we compute, based on Table 3, for each metropolitan area and category of **FHH**, two types of summary statistics: **a)** the Logit variation, Δ_L, between the extremely poor and non-poor; and **b)** the proportion of **FHHs** which are extremely poor, Δ_P. These statistics are reported in Table 4 and are obtained as follows:

$$\Delta_L = Ln(p_5/(1-p_5)) - Ln(p_{50}/(1-p_{50}))$$

$$\Delta_p = 5.p_5/p$$

where p_5, p_{50}, and p are the prevalence **FHHs** among extremely poor households, non-poor households, and all households, respectively.

Table 4
Brazil: Income Sensitivity of the Prevalence of FHHs and Proportion of Extremely Poor by Type of FHH and Metropolitan Area - 1984

Type of Household	Recife		São Paulo		Porto Alegre	
	Δ_L	Δ_p	Δ_L	Δ_p	Δ_L	Δ_p
Female-Headed	1.1	9	0.7	8	0.5	7
Female-Headed with Children	2.2	15	2.1	16	1.9	15
Female-Headed with Children and no Adult besides the Head	3.1	28	2.4	21	2.1	20

Source: PNAD-84 Public Tapes - Authors' own Tabulations.

The reason to introduce statistics like Δ_L and Δ_P instead of simply computing P_5-P_{50} derives from the fact that p_5 and p_{50} are proportions and therefore bounded between zero and one.[8] Boundedness turns comparison of variations into a difficult problem.[9]

Table 4 also presents an alternative way of looking at the sensitivity issue. This table presents the proportion of **FHHs** for each category and metropolitan area which are extremely poor, Δ_p. Recall that, by construction 5% of all households are extremely poor. Hence, proportions above 5% would indicate that **FHHs**

[8]If p_5 is close to zero or p_{50} is close to one then p_5-p_{50} would be necessarily small.

[9]When does a proportion vary more, when it varies (a) from 0.1 to 0.2, (b) from 0.4 to 0.5, or (c) from 0.8 to 0.9? A reasonable answer would to consider that variations (a) and (c) are of the same magnitude and that they are larger than (b). That is exactly the answer obtained by using Logit variations, Δ_L. The Logit-transformation eliminates boundedness. Due to this property it is commonly use to compare the sensitivity of proportions. The differences in Logit Δ_L are presented in Table 4.

are over-represented among poor. The higher the proportion the stronger the association between female-headship and poverty. The results are somehow easier to interpret than those for Δ_L.

These tables reveal the same patterns. With respect to regional variations, the sensitivity is higher in Recife and lower in Porto Alegre, with São Paulo occupying an intermediate position. While 9% of the **FHHs** in Recife are extremely poor, in Porto Alegre only 7% of the **FHHs** are extremely poor. With respect to variations by category of **FHH**, **FHHs** with children and no other adult besides the head are more likely to be poor than the average **FHH** with children which in turn is more likely to be poor than the average **FHH**. For instance, in Recife 28% of the **FHHs** with children and no other adult besides the head are extremely poor while the corresponding percentage for **FHHs** children and for all **FHHs** are 15% and 9%, respectively.

The fact that the category of **FHH** with the strongest association with poverty is the class of **FHHs** with children and no other adults besides the head confirms the generalized belief that this is the class of **FHH** which deserves the greatest attention in fighting poverty.

However, it is surprising to find the poorest of the three areas, Recife, with the strongest association between poverty and **FHHs**. This finding directly challenges the widespread belief that poverty among **FHHs** is one of the most difficult form of poverty to be eradicated. If this were true, then as the average income of an area increases the proportion of **FHHs** which would be classified as extremely poor[10] would also increase. Hence, this hypothesis would predict a higher proportion of **FHHs** wich are extremely poor in São Paulo and Porto Alegre than in Recife; the actual findings are exactly the opposite.

[10]Recall that our concept of poverty is of **relative** poverty and not of **absolute** poverty. According to this concept, any area, independent of its average income level, will have 5% of its households classified as extremely poor.

4. POVERTY AMONG CHILDREN

4.1. All Children

To study poverty among households we divided households into five income classes. The class assigned to each household was a function of the household rank according to its per capita adult income. To keep the analysis about children consistent with the analysis of households, we also divided the universe of children into five income classes which are determined by the corresponding household income classes. In other words, children inherit the income class of their respective households.

This procedure has important implications for the analysis that follows. While the proportion of households in each of the five income classes were constructed to be 5, 5, 15, 25 and 50%, respectively. The procedure used leads the proportion of children in each income class to be variable and unknown a priori. The proportion of children in each income class will depend on how the average number of children per household varies across income classes. For example, while by construction the proportion of households classified as extremely poor would always be 5%, the proportion of children classified as extremely poor is well above 5%, since among poor households the number of children per household is above average.

Table 5 presents the distribution of children across income classes for each metropolitan area. This table reveals that while the distribution of households by income class was constructed to be 5, 5, 15, 25, and 50%, the distribution of children by income class varies across metropolitan areas being, however, approximately 10, 10, 23, 27, and 30%. Hence, the proportion of children classified as extremely poor, 10%, is twice as large as the proportion of households classified as extremely poor, 5%. The results of Table 5 indicate that the number of children per household should be strongly and inversely related to the household income level. This hypothesis is confirmed in Table 6 which shows that the number of children per household among extremely and very poor households is close to twice the average number of children per household among all households.

This inverse relationship between the number of children per household and the level of income is clearly sensitive to which income concept is being used. If instead of income per capita we were using income per adult equivalent and if children were equivalent to less than one adult, then the inverse

relationship revealed by Table 5 would be much weaker and consequently the proportion of children classified as extremely poor would be much smaller.

Table 5
Brazil: Distribution and Average Number of Children by Per Capita Income[a] Class and Metropolitan Area - 1984

Income Class[b]	Recife		São Paulo		Porto Alegre	
	Dist.	Average Number	Dist.	Average Number	Dist.	Average Number
$<Q_5$	9	2.9	10	2.5	11	2.4
Q_5 - Q_{10}	10	3.5	10	2.6	10	2.2
Q_{10} - Q_{25}	23	2.6	23	2.0	22	1.6
Q_{25} - Q_{50}	28	1.9	27	1.4	26	1.1
$>Q_{50}$	30	1.0	30	0.8	32	0.7
All	100	1.7	100	1.3	100	1.1

Source: PNAD-84 Public Tapes - Authors'own Tabulations.
Notes: [a]Income refers to the sum of the income from all sources of all adult members of the household. Members cosidered as adults are the household head, his/her spouse, and all other members aged 18 or more.

[b]Q_α denotes the α percentile. So, for instance, Q_{25} is the first quartile and Q_{50} is the median.

4.2. Children in FHHs

Since one of the main concerns about poverty is its consequences on the welfare of children, perhaps the extent to which **children** living in **FHHs** are over-represented among poor **children** should be more important than in the extent to which female-headed **households** are over-represented among poor **households.**

Table 6 presents our estimates for the prevalence of children in **FHHs** by metropolitan area. The prevalence of children in **FHHs** will be higher or lower than the prevalence of **FHHs** depending on whether the average number of children per household is larger or smaller in **FHHs** than among all households. Table 5 reveals that in **FHHs** the average number of children per household is considerably below the overall average. Consequently, the proportion of children living in **FHHs** (Table 6) is considerably smaller than the proportion of households which are female-headed (Table 3). In fact, the prevalence of **FHHs** over-estimates the prevalence of children in **FHHs** in approximately seven percentage points. The prevalence of children living in **FHHs** is

slightly higher than the prevalence of **FHHs** with children (see Tables 3 and 6).

Table 6
Proportion of Children in Female-Headed Households by Metropolitan Area and Relative Per Capita Income[a] - 1984

Relative Income[b]	Recife	São Paulo	Porto Alegre
Lower than Q05	37.2	18.6	22.1
Between Q05 and Q10	23.2	15.2	14.5
Between Q10 and Q25	14.4	12.5	12.2
Between Q25 and Q50	12.1	6.3	8.6
Above Q50	9.0	5.0	6.6
All	15.0	9.5	10.8

Source: PNAD-84 Public Tapes - Authors' own Tabulations.
Notes: [a]Income refers to the sum of the income from all sources of all adult members of the household. Members considered as adults are the household head, his/her spouse, and all other members aged 18 or more.

[b]Q_α denotes the α percentile. So, for instance, Q_{25} is the first quartile and Q_{50} is the median.

The extent to which the average number of children per household is smaller in **FHHs** than among all households is quite sensitive to which income class is considered. Among the poor (extremely poor, very poor, and poor) the average number of children per household in **FHHs** is relatively close to the overall average. Whereas among the quasi-poor and non-poor the average number of children per household in **FHHs** is considerably below the overall average (Table 5). Consequently, among the poor the prevalence of children in **FHHs** is more similar to the prevalence of **FHHs** than among the quasi-poor and non-poor.

This fact has a important implication. It implies that the prevalence of minors in **FHHs** is much more sensitive to income than the prevalence of children, i.e., children in **FHHs** tend to be more over-represented among the poor than are **FHHs**. This can be observed in Table 7a. This present the Logit differences for the prevalence of **FHHs** and for the prevalence of children in **FHHs** between the extremely poor and non-poor. This table reveals differences in Logit which are much higher for the prevalence of children in **FHHs** than for the prevalence of **FHHs**.

Table 7a
Brazil: Income Sensitivity of the Prevalence of FHHs and of the Prevalence of Minors in FHHs by Age Group and Metropolitan Area, 1984 - Difference in Logits

Type of Unit	Recife	São Paulo	Porto Alegre
FHH	1.1	0.7	0.5
Children in FHHs	1.8	1.5	1.4
. Children Aged 0-6 in FHHs	1.9	1.7	1.2
. Children Aged 7-9 in FHHs	1.7	1.4	1.1
. Children Aged 10-14 in FHHs	1.6	1.3	1.7

Source: PNAD-84 Public Tapes - Authors' own Tabulations.

Table 7**b** presents the proportion of children in **FHHs** which are classified as extremely poor. This table reveals that from nine to 11% of all children are classified as extremely poor, while the proportion of minors in **FHHs** which are classified as extremely poor varies from 19 to 22%. However, by construction 5% of all households are classified as extremely poor while as shown in Table 7**b** only 7 to 9% of the **FHHs** are extremely poor. Consequently, together these tables reveal that minors in **FHHs** are more over-represented among the extremely poor than are **FHHs** themselves.

Table 7b
Brazil: Proportion of Extremely Poor Children by Type of Household and Metropolitan Area - 1984

Type of Household	Recife	São Paulo	Porto Alegre
All Households	9	10	11
Female-Headed with children	21	19	22
Female-Headed with Children and no other adult	33	26	32

Source: PNAD-84 Public Tapes - Authors' own Tabulations.

4.3. Children in FHH by Age Group

The age structure of children in **FHHs** is very different from that of all children. Minors in **FHHs** tend to be much older. Consequently, the age-profile of the prevalence of minors in **FHHs** is increasing in age (Table 8). The sensitivity of the prevalence of children in **FHHs** to household income levels also varies by age. This sensitivity is decreasing in age (Table 7**a**). Hence, children aged 0-6 in **FHHs** tend to be more over-represented among the poor than tend to be children aged 7-14.

Table 8
Proportion of Children in Female-Headed Households by Metropolitan Area and Relative Per Capita Income[a] - 1984

Relative Income[b]	Recife			São Paulo			Porto Alegre		
	0-6	7-9	10-14	0-6	7-9	10-14	0-6	7-9	10-14
Lower than Q05	35.3	38.3	39.3	14.6	20.5	24.6	16.6	20.1	31.8
Between Q05 and Q10	21.9	25.1	23.8	10.8	19.6	19.8	12.3	15.7	17.6
Between Q10 and Q25	10.9	14.1	19.7	10,3	10.9	17.5	9.3	12.2	17.5
Between Q25 and Q50	11.1	11.6	13.7	4.8	5.9	9.5	6.4	9.9	11.9
Above Q50	7.3	10.5	11.1	3.0	6.2	8.2	5.4	7.9	8.1
All	12.9	15.6	17.6	7.0	10.2	13.6	8.8	11.5	15.0

Source: PNAD-84 Public Tapes - Authors' own Tabulations.
Notes: [a]Income refers to the sum of the income from all sources of all adult members of the household. Members considered as adults are the household head, his/her spouse, and all other members age 18 or more.

[b]Q_α denotes the α percentile. So, for instance, Q_{25} is the first quartile and Q_{50} is the median.

5. SUMMARY

In this first part of the study we demonstrated that **FHHs** are indeed over-represented among the poor. We also showed that **FHHs** with children are more over-represented among the poor than all **FHHs**. **FHHs** with children and no other adults besides the head were shown to be even more over-represented among the poor than all **FHHs** with children.

We also showed that the degree of over-representation of **FHHs** among the poor is higher in Recife, the poorest of the three areas. This finding raises doubts about the validity of the hypothesis that poverty in FHHs is a form of poverty particularly difficult to eradicate.

Finally, we showed that **children** in **FHHs** are more over-represented among poor **children** than female-headed **households** are among poor **households.** We also demonstrated that this degree of over-representation tend to be decreasing with age.

PART 2

THE DETERMINANTS OF POVERTY AMONG FEMALE-HEADED HOUSEHOLDS

1. INTRODUCTION

In this second part we investigate the proximate determinants of poverty among all **FHHs** and among **FHHs** with children. Specifically, we investigate the extent to which the relative poverty of **FHHs** is a consequence of: **a**) smaller earnings capacity among **FHHs** than among non-**FHHs**; **b**) less intensive use of the available earnings capacity by **FHHs** compare to other households; or **c**) higher dependency ratios among **FHHs**. We also investigate the determinants of earnings capacity. The objective is to identify whether smaller earnings capacity among **FHHs** is due to demographic composition (for instance, sex, age and education) of earners in **FHHs** or because the earnings capacity of each demographic composition of earners in **FHHs** than in non-**FHHs**.

2. METHODOLOGY

2.1. Measuring Relative Poverty

Our objective is to investigate why **FHHs** are **relatively** poorer than other households; hence our interest in a measure of relative poverty. To define this measure, let **z** denote per capita adult total household income, $\mathcal{F}$ a class of households, $\mathcal{H}$ the set of all households, and $\mathcal{C}=\mathcal{H}-\mathcal{F}$ the class of all households which are not in $\mathcal{F}$. Let $\mathbf{F}_F$ be the comulative distribution of **z** in the class $\mathcal{F}$, $\mathbf{F}_H$ be the cumulative distribution of **z** among all households, and $\mathbf{F}_C$ the comulative distribution of **z** in the class $\mathcal{C}$. The poverty measure G can be obtained from the triplet $(\mathbf{F}_F,\mathbf{F}_H,\mathbf{F}_C)$. To specify how it can be obtained, let $E_F[\mathbf{z}]$ be the expected value of **z** in $\mathcal{F}$, with $E_H[\mathbf{z}]$ and $E_C[\mathbf{z}]$ being defined similarly.

The average poverty gap, G, is defined as the relative difference between the average per capita adult income among households in $\mathcal{C}$ and the average per capita adult income among households in $\mathcal{F}$, i.e.,

$$G = f(F_F,F_C) = \frac{E_C[z] - E_F[z]}{E_C[z]} \qquad (1)$$

Hence, positive values for G imply that households in $\mathcal{F}$ are poorer than other households.

2.2. Basic Results

Table 1 present the average per capita adult income, E[**z**], and estimates for the average poverty gap, **G**, for **FHHs** and **FHHs** with children for the same three Brazilian metropolitan areas as in part 1 of the study: Recife, São Paulo, and Porto Alegre.

Table 1
Brazil: Selected Metropolitan Areas
Average per capita Adult Income (E[z]) and Average Poverty Gap (G) by Class of Household and Metropolitan Area - 1984

Metropolitan Area	Class of Household	Average Per Capita Adult Income (E[z])	Average Poverty Gap (G)
Recife	All	1.27	-
	FHHs	1.04	0.22
	FHHs w/children	0.58	0.57
São Paulo	All	2.52	-
	FHHs	2.39	0.06
	FHHs w/children	1.14	0.56
Porto Alegre	All	2.54	-
	FHHs	2.56	-0.01
	FHHs w/children	1.26	0.52

Source: PNAD-84. Authors' own tabulation.

This table is the basis for the analysis in this study and the principal results are:

Poverty in **FHHs**: Relative poverty among **FHHs** varies considerably across regions. In Recife **FHHs** are much poorer than other households; in São Paulo, they are only slightly poorer; finally, in Porto Alegre, **FHHs** exhibit similar levels of poverty to other households.

Poverty in **FHHs** with children: These **FHHs** with children are considerably poorer than other **FHHs**. Indeed, the average, per capita total income in **FHHs** with children is less than half of the average for all **FHHs**. Consequently, **FHHs** with children are much poorer than the average household in the population.

2.3. Earnings Capacity, Capacity Utilization and Dependency Ratio

To investigate the determinants of relative poverty among **FHHs** and **FHHs** with children we proceed in two stages. First, we investigate its three proximate determinants: earnings capacity, capacity utilization, and dependency ratio. Then we consider the determinants of earnings capacity. This section defines these concepts whereas Subsection 2.4 and 2.5 describe how their impacts on poverty can be evaluated.

First, we explore the fact that **z** can be written as

$$z = \varphi(y,p,d) = y.p/(1+d) \qquad (2)$$

where **y** is the average income among adults in the household with positive labor or non-labor income;[11] **p** is the proportion of adults in the household who have positive income; and **d** is the ratio of the number of non-adult members (members who are less than 18 years old) to the number of adult members in the household.

Holding constant household adult-child composition and the labor supply of adults, increments in the earnings capacity of a household will increase **y** but keep **p** and **d** constant. In this sense, **y** is a measure of the earnings capacity of households. It should be emphasized, however, that differences across households in **y** may not be due to differences in earnings capacity among these households, but rather it could be due to differences in the number of hours worked by their members. In the analysis that follows, we ignore this possibility and take **y** as a measure of the earnings capacity of households.

Under the assumption that the earnings capacity of members who currently have positive income is similar to the earnings capacity of those who currently have no income, **p** measures the extent to which the household is actually using its earnings capacity. In general, the earnings capacity of members who do not currently receive any income is smaller than that of members with possitive income. In this case, **p** would under-estimate the extent to which the household is currently using its earnings capacity. Finally, **d** is the dependency ratio; it measures how many non-adult members each adult has to support.

[11]Notice that **y** is defined taking averages **within** households.

Expression 2 illustrates the three proximate reasons why a class of households would be over-represented among the poor. These three factors are: **a**) smaller earnings capacity; **b**) less intensive use of the available earnings capacity; and **c**) higher dependency ratio.

2.4. Determinants of Earnings Capacity

The second step is to investigate the proximate determinants of earnings capacity, **y**. With this objective in mind and assuming that earnings capacity among males tend to be higher than among females and that earnings capacity among heads tend to be higher than among non-heads we decide to devide household earners into two groups: **a**) males **versus** females; and **b**) head versus non-heads. Relative to any grouping of household earners, the earnings capacity of a household can be written as a weighted average of the group-specific earnings capacities; the weights reflecting the composition of earners in the household.

Let y_m, y_f, y_h, y_a denote the average earnings capacity in the household of males earners, females earners, the head, and non-head earners (all adults earners except the head),[12] respectively. Further, let α and β denote, respectively, the proportion of earners who are females and the proportion of earners who are non-heads. Hence the overall household earnings capacity can be written as

$$y = \psi_1(y_m, y_f, \alpha) \equiv (1-\alpha)\cdot y_m + \alpha\cdot y_f = y_m - \alpha\cdot(y_m - y_f) \qquad (3)$$

or, alternatively, as

$$y \equiv \psi_2(y_h, y_a, \beta) \equiv (1-\beta).y_h + \beta.y_a = y_h - \beta(y_h - y_a) \qquad (4)$$

Expressions (3) and (4) indicate six reasons why earnings capacity can be smaller in a given class of households. The reasons being: **a**) smaller earnings capacity among males; **b**) smaller earnings capacity among female earners; **c**) larger fraction of earners who are female; **d**) smaller earnings capacity of the head; **e**) smaller earnings capacity among other adult earners; and **f**) larger fraction of earners who are non-heads.

[12]Notice that like **y** all these group-averages (y_m, y_f, y_h, y_a) are averages **within** households. If the household has nobody in a given group, the average for the group is set equal to zero.

2.5. Contrasting Means

Expression (2) indicates that **z** is an increasing function of earnings capacity, **y**, and capacity utilization, **p**. Moreover, **z** is a decreasing function of the dependency ratio, **d**.

Expressions (3) and (4) indicate that **y**, and therefore **z**, is an increasing function of each group earnings capacity -- y_m, y_f, y_h, and y_a -- and a decreasing function of the fraction of female earners, α, and of the fraction of non-head earners, ß.

Hence, a natural first step in investigating the causes of relative poverty in a given class of households is to compare the mean value of these proximate determinants of per capita adult total income in this class to the mean of these determinants in the overall population. For the classes of **FHHs** and **FHHs** with children these means are reported in Tables 2, 4 and 6. These tables will be analyzed in Subsections 3.1, 4.1 and 4.2.

It should be noticed, however, that expressions (2), (3), and (4) are non-liner. Hence, the extent of relative poverty, measured by **G** will depend not only on the means but also on higher moments and the correlation among the several variables involved in these expressions.

Even if the expressions were linear, contrasting the means would be, at most, informative about the signs but not conclusive about the relative strength of the effects of the variables. To obtain a clearer view of the direction and magnitude of the contribution of each of the determinants we performed a series of counter-factual simulations.

2.6. Counter-Factual Simulations

Let us, without any loss of generality, introduce our simulation procedure by considering the impact of higher dependency ratios on poverty. The objective is to estimate how the average poverty gap would change if the average dependency ratio in a household class $\mathcal{F}$ were equalized to the average in its complement, $\mathcal{C}$. To accomplish this goal we proceed as follows: first we proportionally change the dependency ratio for each household in $\mathcal{F}$ such that, after the transformation, the average dependency ratio in $\mathcal{F}$ and $\mathcal{C}$ are equal. This can be acomplished by changing, for each household in $\mathcal{F}$, **d** to **d*** where

$$d^* = \frac{E_C[d]}{E_F[d]} \cdot d \qquad (5)$$

Notice that $E_F[\mathbf{d}^*] = E_C[\mathbf{d}]$. Based on these new values of the dependency ratio, d^*, for households in $\mathcal{F}$ we can compute the corresponding new values for the per capita adult total income for these households, $\mathbf{z}^d$. This can be done using expression (2), i.e.,

$$\mathbf{z}^d = \chi(\mathbf{y},\mathbf{p},\mathbf{d}^*) = \mathbf{y}.\mathbf{p}/(1+\mathbf{d}^*) \qquad (6)$$

The value for $\mathbf{z}^d$ generate a new distribution of per capita adult income in **F** which we denote by F_F^d. Next, we compute a new average poverty gap, $\mathbf{G}^d$, based on the pair (F_F^d, F_C), i.e.,

$$G^d = f(F_F^d, F_C) = \frac{E_C[z] - E_F[z^d]}{E_C[z]} \qquad (7)$$

This new average poverty gap, $\mathbf{G}^d$, is the gap that would be obtained if the average dependency ratio in $\mathcal{F}$ and in $\mathcal{C}$ were the same. Hence,

$$\Delta^d = G - G^d \qquad (8)$$

measures the reduction in the average poverty gap that would be obtained if the average dependency ratios in $\mathcal{F}$ and $\mathcal{C}$ were equalized.

Following identical procedures we can estimate the reduction in the average poverty gap that would be obtained if either the average earnings capacity or the average capacity utilization in $\mathcal{F}$ and $\mathcal{C}$ were made equal.[13] We denote the reduction in **G** that would be obtained by equalizing earnings capacity in $\mathcal{F}$ and $\mathcal{C}$ by Δ^Y. The result of equalizing capacity utilization is denoted by Δ^P. Values for Δ^Y, Δ^P and Δ^d relative to the classes of all **FHHs** and **FHHs** with children are reported in Table 3. This table is analyzed in Subsection 3.2.

The contribution of the determinants of earnings capacity (y_m, y_f, y_h, y_a, α, β) to the relative poverty of a given class of households, $\mathcal{F}$, can also be investigated via a similar simulation procedure (see Appendix 2). Values for $R\Delta^m$, $R\Delta^f$, $R\Delta^h$, $R\Delta^a$, $R\Delta^\alpha$, and , relative to the classes of a... and **FHHs** with minors, are reported in Tables 5 and 7. These tables are analyzed in Subsections 4.1 and 4.2.

3. PROXIMATE DETERMINANTS OF RELATIVE POVERTY

In this section we first contrast the means and then we discuss the results of the counter-factual simulations.

[13]The complete simulation procedure is described in detail in Appendix 2.

3.1. Contrasting the Means

Table 2 presents for all households, for all **FHHs**, and for **FHHs** with children average values for earnings capacity, **y**, capacity utilization, **p**, and dependency ratio, **d**.

All **FHHs**: This table reveals that smaller earnings capacity is, actually, the only reason why **FHHs** are relatively poorer than other households. In fact, on average, households in this class use their earnings capacity more intensively and have smaller average dependency ratios than other households. Their average earnings capacity is 30-40% smaller than the average for all households, whereas their average capacity utilization is 20% higher and their dependency ratio is 10% lower.

FHHs with children: Table 2 reveals two reasons why **FHHs** are relatively poorer than all **FHHs** and consequently much poorer than non-**FHHs**. First, they have smaller earnings capacity and higher dependency ratios. In fact, their average earnings capacity is around half of the average for all households and 10-

Table 2
Brazil: Selected Metropolitan Areas
Proximate Determinants of Relative Poverty Among FHHs by Class of Household and Metropolitan Area, 1984
(Average Values)

Metropolitan Area	Class of Household	Earnings Capacity (y)	Capacity Utilization (p)	Dependency Ratio (d)
Recife	All	3.02	0.67	0.90
	FHHs	1.85 (0.61)	0.79 (1.18)	0.87 (0.97)
	FHHs w/children	1.66 (0.55)	0.75 (1.12)	1.53 (1.70)
São Paulo	All	5.08	0.73	0.67
	FHHs	3.26 (0.64)	0.88 (1.21)	0.58 (0.87)
	FHHs w/children	2.81 (0.55)	0.86 (1.18)	1.42 (2.12)
Recife	All	4.78	0.76	0.61
	FHHs	3.42 (0.72)	0.91 (1.20)	0.57 (0.93)
	FHHs w/children	2.96 (0.62)	0.89 (1.17)	1.42 (2.33)

Source: PNAD-84. Authors' own tabulation.
Note: Values in parentheses are the ratio between the average value for a given class of households and the corresponding average value for all households.

15% smaller than the average for all **FHHs**. Second, their average dependency ratio is twice the average for all households. Since the average dependency ratio for all **FHHs** is very similar to the overall average, the average dependency ratio for **FHHs** with children is also twice as higher as the average for all **FHHs**. Similarly to all **FHHs**, **FHHs** with children have an average capacity utilization 10-20% higher than the average for all households. Hence, poverty among **FHHs** with children is partially offset by their more intensive use of their earnings capacity.

The analysis in this section permits us to investigate only the sign of each effect. The counter-factual simulations described in Subsection 2.6, which results are analyzed in the next section, provide estimates of the magnitude of each effect.

3.2. Counter-Factual Simulations

The results of these simulations for the three factors which determine the per capita adult income (earnings capacity, capacity utilization, and dependency ratio) are presented in Table 3. This table confirms previous findings and reveals several new ones.

Table 3
Brazil: Selected Metropolitan Areas
Proximate Determinants of Relative Poverty by Class of Household and Metropolitan Area, 1984 - Variations in G $(\Delta^y, \Delta^p, \Delta^d)$

Metropolitan Area	Class of Household	Earnings Capacity (Δ^y)	Capacity Utilization (Δ^p)	Dependency Ratio (Δ^d)
Recife	FHHs	0.62	-0.14	-0.01
	FHHs w/children	0.39	-0.06	0.12
São Paulo	FHHs	0.63	-0.20	-0.01
	FHHs w/children	0.37	-0.08	0.16
Porto Alegre	FHHs	0.49	-0.20	-0.01
	FHHs w/children	0.32	-0.07	0.21

Source: PNAD-84. Authors' own tabulation.

Earnings Capacity: The simulations for earnings capacity are the ones that lead to the highest reduction of the average poverty gap. This confirms that lack of earnings capacity is the main reason **FHHs** and **FHHs** with children are over-represented among the poor. The simulations results in Table 3 indicate that smaller earnings capacity is so important in explaining poverty among **FHHs** that if the average earnings capacity for **FHHs** were equalized to the average for all

households, **FHHs** would not be over-represented among the poor anymore but would become **under-represented** among them. For **FHHs** with children, the same equalizing procedure would eliminate 2/3 of the average poverty gap. The poverty gap would change from 0.6 to 0.2.

Capacity Utilization: The simulations relative to capacity utilization indicate that the poverty gap for both **FHHs** and **FHHs** with children would be increased if by a proportional change we equate their capacity utilization with that of all other households. Because **FHHs** and **FHHs** with children use their earning capacity more intensively than other households, their poverty gap is actually smaller than it would be if they used their earning capacity as intensively as other households. In sum, **FHHs** and **FHHs** with children alleviate their poverty by using their relatively smaller earnings capacity more intensively. The average poverty gap would be 0.15 to 0.20 higher for **FHHs** and 0.05 to 0.10 higher for **FHHs** with children if they decided to use their earnings capacity as intensively as non-**FHHs** do.

Dependency Ratio: The simulations relative to depencency ratio reveal the heterogeneity among **FHHs.** The class of **FHHs** as a whole have an average dependency ratio slightly below the overall average. Hence, proportionally increasing their dependency ratios to equate their average with the average for other types of households actually leads to a small incrase, 0.01, on the average poverty gap relative to this class of households. **FHHs** tend to alleviate their poverty slightly by having smaller dependency ratios. The results for **FHHs** with children are very different. Since this class of **FHHs** tends to have dependency ratios well above average, by proportionally reducing their dependency ratio to equate it with the average among all other types of households, we dramatically reduce the average poverty gap associated with this class of households. This reduction, although large, between 0.1 and 0.2, is still only half of one obtained by equating their average earnings capacity to that of all other households. In sum, among **FHHs** with children, higher dependency ratios is the second main reason why this class is over-represented among the poor; the main reason being their smaller earning capacity.

Since smaller earnings capacity is the main reason **FHHs** and **FHHs** with children are over-represented among the poor, it is important to investigate the determinants of earnings capacity. We then turn next to the investigation of these determinants using again our two

complementary approaches. First we contrast the means and then we perform counter-factual simulations.

4. DETERMINANTS OF EARNINGS' CAPACITY

In this section we investigate why average earnings capacity for **FHHs** is lower than for other types of households and its consequences on the relative poverty of **FHHs**. Earnings capacity can be smaller in **FHHs** due to either smaller group-specific earnings capacities or due to a composition of earners which gives more weight to groups with smaller earnings capacity. We consider sequentially two grouping of earners, males versus females and heads versus non-heads and investigate the six reasons presented in Subsection 2.4 of why earnings capacity can be smaller in a given class of households.

4.1. Grouping by Gender

Table 4 presents, by metropolitan area, averages for male earnings capacity, y_m, female earnings capacity, y_f, and the fraction of earners who are female, α. These averages are computed for all households, **FHHs**, and **FHHs** with children. This table reveals three important facts which hold for all metropolitan areas. First, the average earnings capacity among male earners in **FHHs** and **FHHs** with children represents 35 to 50% of the average earnings capacity of males earners in all households. Secondly, the earnings capacity of female earners in **FHHs** and **FHHs** with children is very similar to the overall earnings capacity of female earners. Thirdly, as expected the fraction of earners who are females is more than twice as high in **FHHs** and **FHHs** with children than among all households.

In summary, the smaller earnings capacity of **FFHs** and **FHHs** with children is related to: **a**) the smaller proportion of earners who are males, and **b**) the smaller earnings capacity of their male earners. It is important to emphasize that it is incorrect to associate the smaller earnings capacity of **FHHs** and **FHHs** with children to a smaller earnings capacity of female earners in these types of households. As Table 5 shows the earnings capacity of female earners in **FHHs** and **FHHs** with children is a high as the earnings capacity of female earners in non-**FHHs**.

To investigate the magnitude of each of these effects we perform the simulations described in Subsection 2.6.

The results of these simulations[14] reveals that 20 to 30% of the poverty gap generated by smaller earnings capacity among **FHHs** could be eliminated by equating the earnings capacity of male earners in this class of households to that among all households. Also, although **FHHs** have a higher proportion of female earner then other households, reducing this proportion would have no impact on their poverty levels. The reason being that in **FHHs** male earners and female earners have approximately the same earnings capacity. Finally, equating female earnings in **FHHs** to that in the overall population may have no impact or may even increase poverty in **FHHs**. This is a consequence of female earners in **FHHs** having earnings capacity in most cases as high and in some cases even higher than in the overall population.

Table 4
Brazil: Selected Metropolitan Areas
Proximate Determinants of Earnings Capacity by Class of Household and Metropolitan Area, 1984 - Average Values

Metropolitan Area	Class of Household	Male Earnings Capacity (Ym)	Female earnings Capacity (Yf)	Fraction of Earners who are Female (α)
Recife	All	3.66	1.87	0.34
	FHHs	1.89 (0.52)	1.81 (0.97)	0.83 (2.44)
	FHHs w/children	1.64 (0.45)	1.63 (0.87)	0.81 (2.38)
São Paulo	All	6.00	2.90	0.32
	FHHs	2.89 (0.48)	3.22 (1.11)	0.83 (2.59)
	FHHs w/children	2.07 (0.35)	2.84 (0.98)	0.83 (2.59)
Porto Alegre	All	5.87	2.87	0.36
	FHHs	2.67 (0.45)	3.37 (1.17)	0.88 (2.44)
	FHHs w/children	2.27 (0.39)	2.92 (1.02)	0.86 (2.39)

Source: PNAD-84. Authors' own tabulation.
Note: Values in parentheses are the ratio between the average value for a given class of households and the corresponding average value for all households.

In summary, poverty among **FHHs** is not due to smaller earnings capacity among female earners. Poverty is due to smaller earnings capacity of male earners and smaller fraction of earners who are males. But an increase in the fraction of male earner per se will bring no reduction in poverty if the earnings capacity of male earners in **FHHs** is not simultaneously

[14]The results of these simulations are presented in Table 1 in Appendix 2.

increased. These results are very similar for all metropolitan areas we investigate and for the two classes of **FHHs**.

4.2. Heads Versus Non-Heads

In this subsection we investigate the extent to which heads and non-heads earnings capacity are smaller in **FHHs** and the extent to which the fraction of earnings that comes from non-head earners is larger in **FHHs**.

Table 6 presents, for all households, **FHHs**, and **FHHs with children**, the average earnings capacity of heads and non-heads and the fraction of earners who are not heads. This table reveals that earnings capacity of heads in **FHHs** is around half of the earnings capacity of heads in other households. Non-heads earnings capacity is approximately the same, being although a little smaller (80%) in **FHHs with children**. The proportion of earners who are not the head is also very similar in **FHHs** as well as among all households.

In summary this table reveals that **FHHs** have smaller earnings capacity because their heads have smaller earnings capacity. Non-heads in **FHHs** have similar earnings capacity than elsewhere and **FHHs** do not rely more on non-head earners than other households.

Table 5
Brazil: Selected Metropolitan Areas
Proximate Determinants of Earnings Capacity by Class of Household and Metropolitan Area, 1984 - Average Values

Metropolitan Area	Class of Household	Head Earnings Capacity (y_h)	Other Adults Earnings Capacity (y_a)	Fraction of Earners who are not the Head (β)
Recife	All	3.34	1.86	0.71
	FHHs	1.65 (0.49)	1.75 (0.94)	0.67 (0.94)
	FHHs w/children	1.42 (0.43)	1.49 (0.80)	0.63 (0.89)
São Paulo	All	5.72	2.91	0.69
	FHHs	3.00 (0.52)	2.76 (0.95)	0.66 (0.96)
	FHHs w/children	2.62 (0.46)	2.12 (0.73)	0.66 (0.96)
Porto Alegre	All	5.65	2.63	0.69
	FHHs	3.45 (0.61)	2.44 (0.93)	0.75 (1.09)
	FHHs w/children	2.96 (0.52)	2.08 (0.79)	0.72 (1.04)

Source: PNAD-84. Authors' own tabulation.
Note: Values in parentheses are the ratio between the average value for a given class of households and the corresponding average value for all households.

We also perform the same counter-factual simulation described in Subsection 2.6.[15] The results corroborates our previous findings. Equating the earnings capacity of heads in **FHHs** to that of other heads will fully explain the lack of earnings capacity among **FHHs**. Equating earnings capacity of non-heads or the fraction of earners who are non-heads has no impact.

5. SUMMARY

In summary **FHHs** are over-represented among the poor because they are headed by female and female earners who have lower earning capacity than male earners. Female earners in **FHHs** do not have smaller earning capacity than female earners elsewhere. **FHHs** do not use their adult members less intensively and **FHHs** also do not have higher dependency ratios.

The results for **FHHs** with children are identical except that because they have children they have a higher dependency ratio that explains most of their additional poverty.

PART 3

CONSEQUENCES OF LIVING IN FEMALE-HEADED HOUSEHOLDS ON CHILDREN

1. INTRODUCTION

One of the main reasons for concerning about the rapid growth of female-headed households is the potential consequence on the welfare of children. In this part of the study, we present evidence related to three aspects of the relationship between children's welfare and female headship.

The first and fundamental question is whether or not the welfare of children in **FHHs** tends to be below the average among all children. In Section 2 we will investigate this question by comparing the school attendance and the labor force participation rates for children in **FHHs** with the corresponding levels for all children.

A second important question, which is the object of Section 3, is to what extent lower outcomes for children in **FHHs** can be explained by **FHHs** being over-represented among the poor. The answer to this question

[15]The results are in Table 2 in Appendix 2.

depends on two factors: **a**) How much poorer are children in **FHHs** compared to all children; and **b**) how sensitive is these outcomes for children to their family resources.

The first factor is investigated, at lenght, in the first part of this study. In Subsection 3.1 we reconsider this question very briefly. The last factor is a crucial parameter to any society. It is a measure of how much society deviates from the ideal of equal opportunity. It entails, however, the estimation of a causal relationship, and hence is an estimation from non-experimental data which is always based on non-testable assumptions and also always surrounded by controversy. In Subsection 3.2 we present some simple estimates of this type of relationship. In Subsection 3.3, we combine the estimates of the extent of poverty among children in **FHHs** obtained in Subsection 3.1 with the relationships we estimate in Subsection 3.2 between the welfare of children and their family resources in order to produce estimates of the extent to which lower outcomes for children in **FHHs** can be explained by their being over-represented among the poor.

The third major question considered in this part of the study is whether or not the consequences of poverty on children are particularly more severe among those living in **FHHs**. To shed some light on this question, in Section 4, we compare the sensitivity of the school attendance and labor force participation rate of children to family resources for **FHHs** with that of all households. Finding greater sensitivity for **FHHs** would be evidence in favor of the hypothesis that the consequences of poverty are more severe for children in **FHHs** than for all children.

2. CHILDREN'S OUTCOMES

2.1. Outcomes and Universes Investigated

We consider two types of outcomes for children: school attendance and labor force participation. We investigate separately three subpopulations: children aged seven to nine years, children aged 10 to 14 years, and children aged 10 to 14 years who are in the labor force.

We investigate four of the six possible outcome-universe combinations. One was excluded because it is trivial, and the other was disregarded because it is empirically infeasible since the household survey we use only asks labor market related questions to persons who are 10 years or older. Diagram 1 indicates the four outcome-universe combinations which are considered in

this study. We plan to use the school attendance rate of children in the labor force as an indicator of the extent of the conflict between study and work activities.

Diagram 1
Outcome-Universe Combinations Investigated in this Study

Universe: Children Aged	Outcomes: School Attendance	Outcomes: Labor Force Participation
7 to 9	Yes	No
10 to 14	Yes	Yes
10 to 14 in the labor force	Yes	No

2.2. Are Children in FHHs Worse-off?

Table 1 presents estimates of the average outcome for all children and for children living in **FHHs**, for three selected metropolitan areas and for all the four outocome-universes we chose to investigate (see Diagram 1). The main findings are the following:

School Attendance: The results for school attendance differ by age group and metropolitan area. On the one hand, among seven to nine years old in São Paulo and Porto Alegre, children living in **FHHs** have school attendance rates very **similar** to that of all children in the same metropolitan area and age group. On the other hand, for both age groups in Recife and for 10 to 14 years old in São Paulo and Porto Alegre, children living in **FHHs** have **lower** school attendance rates than all children in the same age group and metropolitan area.

These differences across age groups in São Paulo and Porto Alegre are derived from the fact that only for children in **FHHs** in these areas do school attendance rates decrease significantly with age. Overall attendance rates do not vary with age and are higher in São Pualo and lower in Recife.

Labor-Force Participation: In each metropolitan area, the labor-force participation rate of children 10 to 14 years old living in **FHHs** is **higher** than that of all children in the same area. The surprising fact about labor-force participation in Table 1 is that higher participation rates are found in São Paulo and Porto

Alegre than in Recife. This fact is further investigated in Barros and Mendonça (1990**a**,**b**) and Levison (1991).

Conflict Between Study and Work Activities: Table 1 reveals that, among children in the labor-force, the proportion not attending school is **higher** among those living in **FHHs.** The magnitude of the difference in attendance rate by type of household varies by metropolitan area. The difference is more than 10 percentage points and statistically significant in Recife but very small and statistically insignificant in Porto Alegre. Hence, at least in Recife, it seems more difficult for children in **FHHs** to combine work and study activities than for those living in other types of households.

Table 1
Brazil: Outcomes for Children by Tipe of Household, Metropolitan Area - 1984

Outcome	Recife			São Paulo			Porto Alegre		
	FHH	All	T-st[a]	FHH	All	T-st	FHH	All	T-st
Children Aged 7-9									
- not in School	23	14	3.6	8	8	0.0	12	10	1.1
Children Aged 10-14									
- not in School	22	14	5.1	12	8	2.9	18	12	3.1
- in the Labor Force	10	7	2.9	13	8	3.1	16	9	3.9
Children Aged 10-14 in the Labor Force									
- not in School	69	56	2.2	42	36	0.9	69	67	0.2

Source: PNAD-84 Public Tapes - Authors'own Tabulations.

Notes: [a]T-st refers to the T-statistics for testing whether the difference between FHHs and all households is zero.

3. ISOLATING THE POVERTY EFFECT

As was demonstrated in Part 1 of this study, children in **FHHs** are much poorer than children living in non-**FHHs.** Moreover, there exist a large literature supporting the notion that the level of household resources is an important determinant of children's outcomes in Brazil. [See Calsing and Schmidt (1986), Ribeiro da Silva, Saboia and Castello Branco (1989), Barros and Mendonça (1990**a**,**b**), and Levison (1991)]. Given these two facts, it can be argued that differences in outcomes between children in **FHHs** and all children, as those reported in the previous

section, are simply a consequence of the greater poverty among children in **FHHs**. As a matter of fact, there is a great debate about whether or not the pure absence of the father really has any independent impact on children's school attendance and labor force participation. More generally, it is still very debatable whether variations in children's outcomes across households with different structures is really due to differences in the structures of the household per se or is entirely due to other differences across households along dimensions such as household income, which just happens to be correlated with differences in household structure.

In this section we decompose differences in outcomes between children in **FHHs** and all children into two parts: one due to the gap in outcomes between children in **FHHs** and all children within income classes; and a second component due to the fact that children in **FHHs** are over-represented in poorer income classes. This second component is referred to as the **poverty effect.** The first component would account for the impact of differences between **FHHs** and all other households in all other dimensions besides income.

The magnitude of the poverty effect depends on two factors: **a**) how over-represented are children in **FHHs** among the poor; and **b**) how sensitive is each outcome to household resources. Hence, before estimating the poverty effect itself, we briefly present some evidence about the size of each of these two factors.

3.1. Poverty Among Children in FHHs

To investigate the poverty of children in **FHHs** relative to all children, we use some of the concepts introduced in Part 1. Let **q** be the first quartile and m the median of the distribution of households according the per capita adult total income. We divide each given population of children into three income classes. The first class consists of all children in this given population who are living in households with per capita adult total income smaller than **q**. A child belongs to the second class if and only if he/she lives in a household with per capita adult total income between **q** and **m**. All children in the population who are living in households with per capita adult total income above the median form the third class. We investigate the relative poverty of three categories of children in **FHHs**, namely: **a**) children aged seven to nine years old; **b**) children aged 10 to 14 years old; and **c**) children aged 10 to 14 years old who are in the labor market.

Let f_i^F and f_i denote, respectively, the fraction of children in **FHHs** in income class i and the fraction of all children in income class i, i=1,2,3. We have particular interest in the ratios

$$r_i = \frac{f_i^F}{f_i} \qquad i = 1,2,3.$$

If children in **FHHs** are over-represented among the poor, the sequence r_1, r_2, r_3 will be decreasing with $r_1 > 1$ and $r_3 < 1$. Table 2 reports values for r_1, r_2, r_3 for each subpopulation and metropolitan area. In all but one case, r_1, r_2, r_3 is a decreasing sequence with $r_1 > 1$ and $r_3 < 1$. Hence, this table confirms that children in **FHHs** are indeed over-represented among the poor.

Table 2
Brazil: Relative Poverty of Children in FHHs by Age-Group, Labor-Force Participation Status and Metropolitan Area, 1984

Subpopulation	Recife			São Paulo			Porto Alegre		
	r1	r2	r3	r1	r2	r3	r1	r2	r3
Children Aged 7-9	1.4	0.7	0.7	1.5	0.6	0.6	1.3	0.9	0.7
Children Aged 10-14	1.4	0.8	0.6	1.4	0.7	0.6	1.4	0.8	0.5
Children Aged 10-14 in the Labor Force	1.3	0.5	0.2	1.1	1.1	0.5	1.1	0.6	1.0

Source: PNAD-84 Public Tapes - Authors' own Tabulations.

3.2. Sensitivity to Household Resources

The second factor, which influences the magnitude of the poverty effect, indicates how sensitive each outcome is to household resources. In order to evaluate the sensitivity of each outcome, we estimate them by income class. To summarize the steepness of the relationship we compute the index of dissimilarity, **ID**. To define the index of dissimilarity, let O_i denote the average outcomes for children in income class i. Hence, the overall outcome among all children, O, can be written as

$$O = \sum_i O_i \cdot f_i$$

and the index of dissimilarity be defined as

$$ID = \frac{\sum_i |O_i - O| \cdot f_i}{2 \cdot O} \cdot 100$$

The dissimilarity index has a simple and intuitive interpretation. If **O** represents the proportion of children not currently in school. Then **ID** represents the minimum proportion of children not in school which must to be reassigned to different income classes to make the proportion of children not in school in every income class equal to **O**. Table 3 presents estimates of the average outcome by income class (O_i) and the corresponding indices of dissimilarity, **ID**.[16]

Table 3
Brazil: Outcomes for Children by Income Class and Metropolitan Area, 1984

Outcome	Recife				São Paulo				Porto Alegre			
	Income Class				Income Class				Income Class			
	<q	q-m	>m	ID	<q	q-m	>m	ID	<q	q-m	>m	ID
Children Aged 7-9												
- not in School	22	12	4	24	14	6	2	31	17	6	3	31
Children Aged 10-14												
- not in School	21	14	4	22	12	7	3	21	18	10	4	23
- in the Labor Force	10	6	2	23	11	8	4	17	13	8	3	24
Children Aged 10-14 in the Labor Force												
- not in School	61	47	42	7	40	32	23	13	69	65	56	4

Source: PNAD-84 Public Taps - Authors' own Tabulations.

School Attendance: Table 3 confirms the well-established fact that school attendance increases with household resources. Specifically, this table reveals that school attendance rates among children in poor households (bottom 25%) are 10 to 18 percentage points lower than those among children in non-poor households (top 50%). The index of dissimilarity indicates that between 20 and 30% of all children not in school need to be reallocated to higher income classes in order that the percentage of children not in school be uniform across all income classes.

[16]The estimates of **ID** in Table 3 as weel as in Table 5 are computed using a division of the population in five income classes instead of the division in three presented in Table 3. The disaggregation into five classes is the one introduced in Part 1, Subsection 2.3. It entails a disaggregation of the poor class (bottom 25%) in Table 3 into three classes.

Labor-Force Participation: Perhaps surprisingly, all estimates available for Brazil of the relationship between the labor-force participation of children and their per capita family income are systematically non-monotonic.[17] All these estimates have a inverted-**U** shape. As demonstrated in Barros and Mendonça (1990), previous studies have found a non-monotonic relationship because they have included in the income of the household the income of children. Barros and Mendonça (1990) also showed that, once the income of children are excluded, the relationship becomes monotonically decreasing.

Since we use only the income of adults as measure of household resources, we obtain labor-force participation rates which are monotonically decreasing with household resources (see Table 3). Specifically, this table reveals that children in poor households have labor force participation rates from seven to 10 percentage points higher than those living in non-poor households. The dissimilarity index indicates that from 15 to 25% of working children must be reallocated to higher income classes to equalize the labor force participation rates across income classes.

Conflict Between Study and Work Activities: Finally, Table 3 reveals that the proportion of children in the labor force who are not attending school is 10 to 20 percentage points higher among children in poor households than among children in non-poor households. The index of dissimilarity indicates a lower degree of steepness, since at most 13% of children not in school need to be reallocated to ensure identical school attendance rates across income classes.

3.3. The Poverty Effect

In order to obtain the poverty effect, the first step is to estimate what the outcome for children would have been if the distribution of household resources among children in **FHHs** were the same as the distribution among all children. This standardized outcome is denoted by O^*.

To describe how O^* is actually estimated, f_i^F and f_i are as before defined, and let O_i^F and O_i denote the average outcome for children in **FHHs** in income class i and the average outcome for all children in income class i, respectively. Hence, the overall average outcome among all children, O, and the overall average

[17]See Calsing and Schmidt (1986), Ribeiro da Silva, Saboia and Castello Branco (1989).

outcome among all children in **FHHs**, O^F, can be written as

$$O = \sum_i O_i \cdot f_i$$

and

$$O^F = \sum_i O_i^F \cdot f_i^F$$

The income standardized outcome for children in **FHHs**, O^*, is therefore defined via

$$O^* \equiv \sum_i O_i^F \cdot f_i$$

and the poverty effect, **PE**, via

$$PE \equiv \frac{O^* - O^F}{O - O^F} .$$

Alternatively, **PE** can be written as

$$PE = \frac{1}{O - O^F} \cdot \sum_i O_i^F \cdot (f_i - f_i^F)$$

Table 4 presents, for each metropolitan area, population, and outcome considered in this study, estimates for: the outcome among all children, **O**; the outcome among children in **FHHs**, O^F; the outcome among children in **FHHs** that would be observed if the distribution of household resources among children in **FHHs** were the same as that among all children, O^*, and the poverty effect, **PE**.

Table 4

Brazil: Poverty Effects and Outcomes for Children by Household Types and Metropolitan Area, 1984

Outcome	Recife				São Paulo				Porto Alegre			
	O	O^F	O^*	PE	O	O^F	O^*	PE	O	O^F	O^*	PE
Children Aged 7-9												
- not in School	14	23	19	0.5	8	8	7	*	10	12	11	0.6
Children Aged 10-14												
- not in School	14	22	17	0.7	8	12	11	0.2	12	18	16	0.4
- in the Labor-Force	7	10	7	0.8	8	12	11	0.3	9	16	14	0.2
Children Aged 10-14 in the Labor-Force												
- not in School	56	69	65	0.3	36	42	40	0.2	66	67	70	*

Source: PNAD-84 Public Tapes - Authors' own Tabulations.

School Attendance: The results for school attendance vary substantially by metropolitan area and age group. Among children seven to nine years old in São Paulo and in Porto Alegre there are no differences to be explained in school attendance between children in **FHHs** and all children. Still however in São Paulo and Porto Alegre, by now considering children 10 to 14 years old, Table 4 reveals a significant difference in school attendance between children in **FHHs** and all children. However, only 20 to 40% of these differences can be explained by children in **FHHs** being over-represented among the poor. Recife is, among all the three areas, the one with the largest gap between the school attendance rate of children in **FHHs** and all children. In addition, Recife is also the area in which poverty has the largest explanatory power. The poverty effect in Recife varies from 0.4 to 0.7.

Labor-Force Participation: Table 4 reveals that in São Paulo and in Porto Alegre the contribution of poverty to the higher labor-force participation rates of children in **FHHs** is very small. The poverty effect is between 20 and 30%. In these metropolitan areas, poverty among **FHHs** could explain at most a gap of two percentage point in the labor force participation rate, whereas the participation rate among children in **FHHs** is from five to seven percentage points above average. Consequently, in these two metropolitan areas the income standardized labor-force participation rate for children in **FHHs** is still between three and five percentage points above average. For Recife the findings are quite distinct. First, the non-

Table 5
Brazil: Dissimilarity Index for Children's Outcomes by Type of Household, Metropolitan Area, 1984

Outcome	Recife		São Paulo		Porto Alegre	
	FHH	All	FHH	All	FHH	All
Children Aged 7-9						
- not in School	19	24	30	31	30	31
Children Aged 10-14						
- not in School	26	22	14	21	15	23
- in the Labor-Force	32	23	20	17	17	24
Children Aged 10-14 in the Labor-Force						
- not in School	11	7	9	13	12	4

Source: PNAD-84 Public Tapes - Authors' own Tabulations.

standardized difference is already smaller, three percentage points. Secondly, the fact that children in **FHHs** are over-represented among the poor can explain the majority of this difference, PE=0.8.

4. ARE THE CONSEQUENCES OF POVERTY MORE SEVERE AMONG CHILDREN IN FHHs?

If the consequences of poverty were more severe among children in **FHHs**, then not only the proportion of these children in the labor force and out of school would be larger but also these proportions would be more sensitive to family resources (see Figure 1).

Therefore, to evaluate this hypothesis we must to show that the steepness of the relationships between labor force participation (or school attendance) and per capita adult income is greater for children in **FHHs** than for all children. To measure the steepness of these relationships we estimate their corresponding indices of dissimilarity. Our estimates of these indices are presented in Table 5. The results in this table present no evidence whatsoever the relationships for children in **FHHs** are steeper as portrayed in Figure 1.

5. SUMMARY

In this part of the study we showed that children in **FHHs** are more likely to: **a**) be out of school; **b**) be in the labor force; and **c**) have difficulties in solving the conflict between work and study activities.

Moreover, we have shown that in São Paulo and Porto Alegre only a small fraction of this gap can be explained by children in **FHHs** being over-represented among the poor. In Recife, however, the fact that children in **FHHs** are poorer explains more than half of the gap in outcomes.

Finally, we encountered no evidence which would support the view that the consequences of poverty are more severe among children in **FHHs** than among all children.

APPENDIX 1

Table 1
Brazil: Belo Horizonte
Prevalence of FHHs by Income Class - 1972

Income Class	Proportion of Households in the Income Class	Prevalence of FHHs in the Income Class
Poor	30.3	24.6
Low	46.2	14.2
Middle/High	23.5	11.0
All	100.0	16.6

Source: Merrick and Schmink (1983, Table 12.3).

Table 2
Brazil: Prevalence of Female-Headed Families by Income Class - 1970/80

Year	Income Class	Proportion of Households in the Income Class		Prevalence of FHHs in the Income Class	
		Pastore	Dvorak	Pastore	Dvorak
1970	All	100	100	10	13
	Poor	44	42	12	14
	Non-Poor	56	58	9	12
1980	All	100	100	12	14
	Poor	18	17	16	13
	Non-Poor	72	73	11	14

Sources: Pastore, Zylberstajn and Pagotto (1983, Tables I.8, I.14, and II.7), and Dvorak (1989, Table 1).

APPENDIX 2

Following identical procedures as the example in Subsection 2.6, we can estimate the reduction in the average poverty gap that would be obtained if either the average ernings capacity or the average capacity utilization in $\mathcal{F}$ and $\mathcal{C}$ were made equal. We denote the reduction in **G** that would be obtained by equalizing earnings capacity in $\mathcal{F}$ and $\mathcal{C}$ by Δ^{Y}. The result of equalizing capacity utilization is denoted by Δ^{P}. For instance, Δ^{Y} can be obtained as follows: Let

$$y^{*} = \frac{E_C[y]}{E_F[y]} \cdot y. \qquad (1)$$

Notice that $E_F[\mathbf{y}^{*}] = \mathbf{E}_C[\mathbf{Y}]$. Next, obtain $\mathbf{z}^{Y}$ via

$$z^{y} = \psi(y^{*}, p, d) = y^{*}.p/(1+d) \qquad (2)$$

$\mathbf{z}^{Y}$ generates a new distribution of per capita adult income in $\mathcal{F}$ which we denote by F_F^{y}. Next, compute a new average poverty gap, $\mathbf{G}^{Y}$, based on the pair (F_F^{y}, F_C), i.e.,

$$G^{y} = \frac{E_C[z] - E_F[z^{y}]}{E_C[z]} \qquad (3)$$

This new average gap, $\mathbf{G}^{Y}$, is the gap that would be obtained if the average earnings capacity were the same in $\mathcal{F}$ and in $\mathcal{C}$. Therefore,[18]

$$\Delta^{y} = G - G^{y} \qquad (4)$$

The contribution of the determinants of earnings capacity, ($\mathbf{y}_m$, $\mathbf{y}_f$, $\mathbf{y}_h$, $\mathbf{y}_a$, α, β), to the relative poverty of a given class of households, $\mathcal{F}$, can also be investigated via a similar simulation procedure. Let us consider the case of accessing the contribution of smaller earnings capacity among male earners, $\mathbf{y}_m$, to relative poverty. The analysis of all other determinants can be done using exactly the same procedure. First, we proportionally change the earnings capacity of male earners in **FHHs** such that, after the change, the average among **FHHs** is identical to the

[18]Actually, in this case Δ^{Y} can be rewritten as

$$\Delta^{y} = \frac{E_C[\mathbf{y}] - E_F[\mathbf{y}]}{E_F[\mathbf{y}]} \cdot \frac{E_F[z]}{E_C[z]}.$$

This expression reveals the connection between contrasting means ($E_C[\mathbf{y}]$ versus $E_F[\mathbf{y}]$) and performing counter-factual simulations, i.e., estimating Δ^{Y}.

average among all households, i.e., we substitute $\mathbf{y}_m$ for y^*_m for households in $\mathcal{F}$, where

$$y^*_m = \frac{E_C[y_m]}{E_F[y_m]} \cdot y_m. \qquad (5)$$

Notice that $E_F[\mathbf{y}^*_m] = E_C[\mathbf{y}_m]$. Next, we compute, using expression (3), the earnings capacity of households in $\mathcal{F}$ using y^*_m instead of $\mathbf{y}_m$, i.e., we compute

$$y^m \equiv \psi_1(y^*_m, y_f, \alpha) = (1-\alpha)\cdot y^*_m + \alpha \cdot y_f \qquad (6)$$

Finally, we compute the per capita adult total income for all households in $\mathcal{F}$ using $\mathbf{y}^m$ instead of $\mathbf{y}$, i.e., we compute

$$z^m = \chi(y^m, p, d) = y^m \cdot p/(1+d) \qquad (7)$$

$\mathbf{z}^m$ generates a new distribution in $\mathcal{F}$ which we denote by F^m_F. We then compute the average poverty gap based on the pair (F^m_F, F_C) $\mathbf{G}^m$.

$$G^m = \frac{E_C[z] - E_F[z^m]}{E_C[z]}. \qquad (8)$$

$\mathbf{G}^m$ is the relative poverty gap that would be obtained if the average earnings capacity of male earners in $\mathcal{F}$ were identical to the average in $\mathcal{C}$. Hence,

$$\Delta^m = G - G^m \qquad (9)$$

is the contribution of smaller earnings capacity among male earners to relative poverty among households in $\mathcal{F}$. Since, we are actually more interested in the contribution of smaller earnings capacity among male earners **relative** to the overall contribution of smaller earnings capacity, we compute

$$R\Delta^m \equiv \frac{\Delta^m}{\Delta^y} = \frac{G - G^m}{G - G^y} \qquad (10)$$

Identical simulations can be done for $\mathbf{y}_f$, $\mathbf{y}_h$, $_\beta\mathbf{y}_a$, α, and β to obtain values for $R\Delta^f$, $R\Delta^h$, $R\Delta^a$, $R\Delta^\alpha$, $_\alpha$and $R\Delta^\beta$.

Section 4.1: Grouping by Gender

Table 1
Brazil: Selected Metropolitan Areas
Proximate Determinants of Earnings Capacity by Class of Household and Metropolitan Area, 1984 - Relative Variations in $G\ (R\Delta^m, R\Delta^f, R\Delta^\alpha)$

Fraction of Metropolitan Area	Class of Household	Male Earnings Capacity $(R\Delta^m)$	Female Earnings Capacity $(R\Delta^f)$	Earners who are Female $(R\Delta^\alpha)$
Recife	FHHs	0.21	0.05	0.03
	FHHs w/children	0.26	0.15	0.03
São Paulo	FHHs	0.25	-0.17	0.03
	FHHs w/children	0.32	0,00	-0.03
Porto Alegre	FHHs	0.22	-0.41	0.02
	FHHs w/children	0.31	-0.03	0.03

Source: PNAD-84. Authors' own tabulation.

Section 4.2: Heads Versus Now-heads

Table 2
Brazil: Selected Metropolitan Areas
Proximate Determinants of Earnings Capacity by Class of Household and Metropolitan Area, 1984 - Relative Variations in $G\ (R\Delta^h, R\Delta^a, R\Delta^\beta)$

Metropolitan Area	Class of Household	Head Earnings Capacity $(R\Delta^h)$	Male Earnings Capacity $(R\Delta^a)$	Fraction of Earners who are not the $(R\Delta^\beta)$
Recife	FHHs	11.1	0.03	0.00
	FHHs w/children	1.00	0.13	-0.03
São Paulo	FHHs	1.17	0.03	0.00
	FHHs w/children	1.03	0.14	0.00
Porto Alegre	FHHs	1.33	0.04	0.00
	FHHs w/children	1.09	0.09	0.00

Source: PNAD-84. Authors' own tabulation.
Note: Values in parentheses are the ratio between the average value for a given class of households and the corresponding average value for all households.

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