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Working Paper Minimum wage, income distribution, and poverty in Brazil

Discussion Paper, No. 55

Provided in Cooperation with: Institute of Applied Economic Research (ipea), Brasília

Suggested Citation: Ramos, Lauro R. A.; Almeida dos Reis, Jose Guilherme (2015) : Minimum wage, income distribution, and poverty in Brazil, Discussion Paper, No. 55, Institute for Applied Economic Research (ipea), Brasília

This Version is available at: https://hdl.handle.net/10419/220144

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Originally published by Ipea in December 1994 as number 359 of the series Texto para Discussão.

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Brasília, January 2015

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Federal Government of Brazil

Secretariat of Strategic Affairs of the Presidency of the Republic Minister Roberto Mangabeira Unger



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DISCUSSION PAPER

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Discussion paper / Institute for Applied Economic

Research.- Brasília : Rio de Janeiro : Ipea, 1990-

ISSN 1415-4765

1. Brazil. 2. Economic Aspects. 3. Social Aspects. I. Institute for Applied Economic Research.

CDD 330.908

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MINIMUM WAGE, INCOME DISTRIBUTION, AND POVERTY IN BRAZIL

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1 - INTRODUCTION

The Brazilian society is characterized by a high degree of income concentration. Given the relatively low level of income per capita, this inequality is directly translated into an expressive contingent of poor. Needless to say, the virtual economic stagnation over more than a decade has contributed to enlarge this group, and the increase in the social tension is already a threat to the political and economic stability of the country.

Even though the reversal of this bleak picture calls for structural changes in the workings of the economy that take time to produce concrete results, the adoption of urgent measures to improve the distribution and reduce the incidence of poverty, even at the expenses of long lasting results, takes a prominent place in the political agenda of several segments of the Brazilian society.

As the change of relative prices in the economy is a form of producing modifications in the profile of income distribution, minimum wage policies aimed at increasing its real value are one of the most emphasized short-term mechanisms usually considered.

The main goal of this study is the empirical evaluation of the impacts of minimum wage policies in the amelioration of poverty and reduction of inequality in Brazil. For achieving this goal we first portray the minimum wage earners in terms of personal attributes, labor market aspects, and position in the income distribution. Next we implement a series of simulation exercises that evaluate empirically the effects of increases in the minimum wage on poverty and inequality reduction, under a set of hypotheses about the workings of the labor market.

2 - MINIMUM WAGE, INCOME DISTRIBUTION, AND POVERTY

Hammermesch (1993) argues that minimum wage policies can be regarded as a tax levied on the firms, its value being equal to the difference between the minimum wage and the wage that would be otherwise paid to the workers who benefit from it. Contrary to what usually happens, this tax is not collected by the government, but directly transferred to the beneficiaries instead. From this standpoint, the minimum wage policies can also be regarded as subsidies that favor an specific group of otherwise low paid workers.

Therefore, when the government creates or changes the real value of the minimum wage, it is also creating or

changing a tax or a subsidy. This approach to minimum wage policies is helpful to clarify the allocative and distributive implications associated to these policies. The former are related to the their social costs, in particular their effects on the employment of unskilled labor. The distributive implications are intimately related to the ultimate goal of these policies, which is the promotion of social and economic equity, via the legal assurance of a satisfactory level of earnings and consumptions to the workers and their families.

Our interest in this study is focused upon the impacts of minimum wage policies on the income distribution and poverty. In some sense this is in line with the tradition of the Brazilian literature on the subject, that tends to think the minimum wage mainly as a subsidy. The opposite takes place in the Northern hemisphere, where the literature emphasizes the allocative effects underlying minimum wage policies. At least in part, an explanation for this contrast is the low value of the minimum wage in Brazil, and even more important, it has been decreasing over the last three decades: in this context, it is likely that the employment effects associated with a raise in its real value are not as important as there, though not negligible by any means.

The important message behind Hammermesch's approach is that the distributive effects of a minimum wage policy depend on their allocative effects, which cannot be put aside in a meaningful analysis of this policy. The higher the demand elasticity for unskilled workers, the larger will be the costs to be paid by them in the case of an increase of the minimum wage, either in the form of unemployment or in the form of lower wages received in the unprotected sector of the economy.

This last point, the effects of changes in the minimum wage on the informal or unprotected segment, has been intensively debated in the Brazilian literature. This segment, that includes the self-employers and employees without work card, who are not protected by the legislation, shelters a large contingent of workers in Brazil. Hence, the distributive effects of a minimum wage policy will be heavily dependent upon the indirect impacts on the informal sector.¹

¹As it will be seen in the next section, 20% of the urban EAP received the equivalent to the minimum wage in 1989. Among them just 54% had work card, with 14% working as self-employers and 32% not having it. The proportion of employees without work card increases considerably when we consider the group of workers receiving even lower wages.

The issue of how the minimum wage impacts over the unprotected sector is subject to different interpretations. The partial coverage models show that the imposition of a minimum wage may induce a fall or raise in the wages in the unprotected sector. The basic model demonstrates that, in the absence of unemployment, a raise in the minimum wage induces a migration from those who lost their jobs in the protected sector to the unprotected one, causing a fall in the equilibrium wage in this last sector. A different result is produced by models that admit the existence of search. There, the individual may prefer to stay unemployed and look for a new job in the protected sector, as far as the expected value of his/her wage is higher than the current wage in the unprotected sector, making it possible an increase in wages in the informal sector.²

There is another hypothesis in the Brazilian literature that supports the idea of a positive relation between the minimum wage and the earnings in the informal sector. According to its followers, the minimum wage would work as a reference for the wage determination of those who work in the informal sector (the so-called "efeito farol").³ Besides its weakness on theoretical grounds, as it assumes that prices are not competitively set in the informal sector, there is no empirical evidence supporting this view. As a matter of fact, the more complete empirical work on this issue [Velloso (1988)] does not validate this hypothesis.

If we assume that the effects of increases in the minimum wage over the employment are small, we can approach the issue of how it affects the distribution and poverty as if it were a subsidy. It then becomes trivial to show that the distributive impact will be larger the poorer the individuals who benefit from it, i.e., the more progressive the policy is. This issue has been stressed in the recent literature. The key question here is to know the correlation between being a wmin earner and belonging to a poor family. If this correlation is high, the minimum wage policy may be

 2 The model with no employment effect is discussed in Welch (1974) and Gramlich (1976). The model with unemployment, and the derivation of the conditions for a wage increase in the informal sector, can also be found in Gramlich (1976) and in Mincer (1976).

 $^3 \text{See}$ Souza and Baltar (1979) and Wells and Drobny (1982) for details.

very effective as an instrument to reduce poverty and inequality.

Several studies developed from the second half of the 70s on [Gramlich (1976), Bell (1981), Kniesner (1981), and Johnson and Browning (1983), among others] examined who are the potential beneficiaries of this policy. All of them suggest a modest effect of minimum wage increases on income distribution and poverty, just as a consequence of a low correlation between receiving it and being in a poor family. In other words, the minimum wage legislation may be successful at helping workers with low wages, but not necessarily low income families. The reasons for this are related to the great presence of secondary workers, particularly women and youth, among the wmin earners, who not necessarily are in families whose per capita incomes are low.

Given the importance of this issue, the empirical evidence for the Brazilian economy will be inspected in the next section. Before doing that, however, we will take a look at the temporal evolution of the real value of the minimum wage in Brazil over the last decade.

2.1 - Temporal Evolution of the Minimum Wage

The graph that follows shows the evolution of the real value of the minimum wage along the 80s, based on the nominal value in August of each year, deflated by the respective consumption price index (INPC).

After a period of relative stability in the beginning of the decade, the minimum wage fell sharply in 1983, as a consequence of the acceleration in the inflation rates that year.⁴ When the new government took power in 1985, there was a recovery of its real value, that was strengthened by the general price freeze that happened in 1986 (the so-called "Plano Cruzado").

The renewed inflationary pressures that followed the price freeze caused another fall in the real value of the minimum wage, who went down by around 30% in 1987. From August of that year on it was created the "Piso Nacional de Salários", that was basically an instrument designed for freeing the minimum wage from its role as a reference for the wage formation of some skilled labor categories, thus giving more degrees of freedom in the formulation of the minimum wage policy. That generated a new period of recovery that, despite the boost in inflation, lasted until 1989. The real increase in these two years reached close to 25%, but

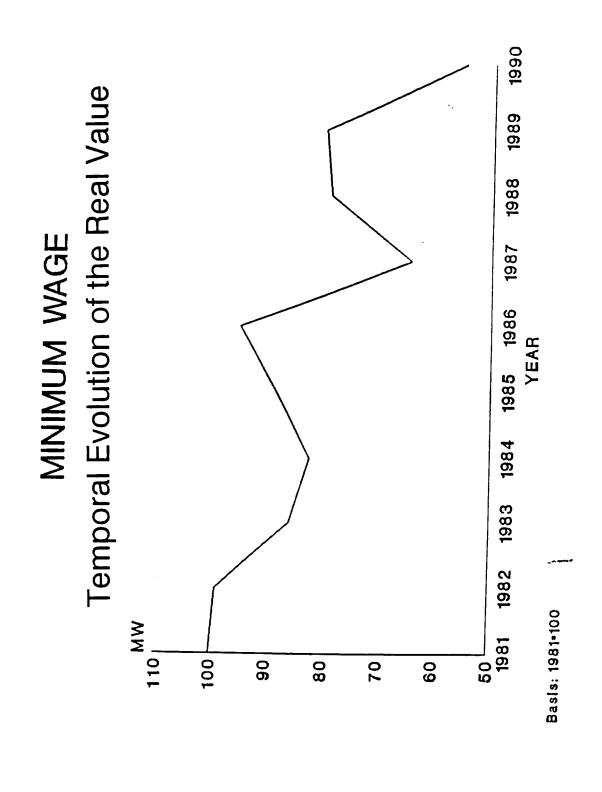
 4 The annual inflation rate jumped from 100% to 200% that year.

was not large enough to bring its real value to the level observed in 1986. Finally, the government transition in 1989, which brought about a new stabilization plan, caused another sharp fall in the minimum wage, who reached its minimum value throughout the decade in 1990.

Despite the indisputable fall over the decade, there are some qualifications to be made about the evolution of the minimum wage, especially when we want to associate this fall to a deterioration of the living standards of the poor. First, the value of the minimum wage was unified nationally in 1985, taking its highest regional value (prevailing in the South and in the Southeast) as the new national value. Therefore, the other regions experienced an increase, and not a decline, in the period.⁵ Second, the degeneration of close to 10% between 1985 and 1989 is, at least partially, offset by the changes introduced by the new Constitution in 1988: among other things, the number of hour worked per week was reduced from 48 to 44, and a vacation bonus was created.

Finally, it is important to keep in mind the importance of the real value of the minimum wage. Caeteris paribus, the higher it is, the larger will be its distributive and poverty reduction impact, as the number of workers piled up around it increases. Also, the higher it is, the more responsive will be the demand to unskilled labor to increases in its value, and, on the other hand, the participation of secondary workers in the labor force may be affected, though the direction can not be predicted: if the income effect prevails, this participation will decrease and the minimum wage policy will become more progressive; the opposite takes place if the substitution effect is dominant.

 $^{^{5}}$ It is true that we still observe a fall if we evaluated the weighted average, the weights being the number of wmin earners in each region, but it is not as pronounced as when we take the highest national value.



3 - THE MINIMUM WAGE EARNERS

In this section we will identify the profile of the potential beneficiaries of the minimum wage legislation in terms of personal attributes and the characteristics of the segments of the labor market where they work. This task will be carried out for the Brazilian urban areas, based on the information made available by the househol survey - PNAD - of 1989.

The access to the PNAD data allows a rich characterization of wmin workers, as well as the comparison with other groups of interest. In this study we consider as minimum wage earners the employees with work card, and also the public servants, whose hourly wage falls in the 0.75-1.25 minimum wage/hour bracket. For comparison purposes, we define a group of low income earners, formed by all workers, including those who do not have access to the work card and the self employers, whose incomes are in that interval. We also inspected the characteristics of the EAP as a whole, and the subset formed by the employees with work card (and public servants). This way we can compare not only the profile of wmin earners to that of low income earners, but also to the class of workers protected by the legislation and universe of all workers.

The graphs that follow help us to get an understanding on the structure of earnings in 1989 and, therefore, on the relevance of low wage earners. They represent 19.4% of the EAP, and there is a contingent that is equivalent to 12.6% of the EAP that make less than the minimum wage.

The composition by income strata according to position in occupation⁶ makes clear that the employees without work card are the ones in the worst position: they are well over-represented among the low income earners (27.9% against 19.4% for the EAP), and also among those that make less than the equivalent to the minimum wage (36.2% and 12.6%, respectively). The self employers are under-represented in the minimum wage group (13.9%), though slightly over-represent in the very low income strata (14.9%). At last, the protected workers, i.e., those with work card, are slightly under-represented among the minimum wage earners (17.9%) and display an

⁶The employees without work card represent 22.2% of the sample in 1989, those with work card account for 58.7%, and the self employers constitute 19.1% of EAP.

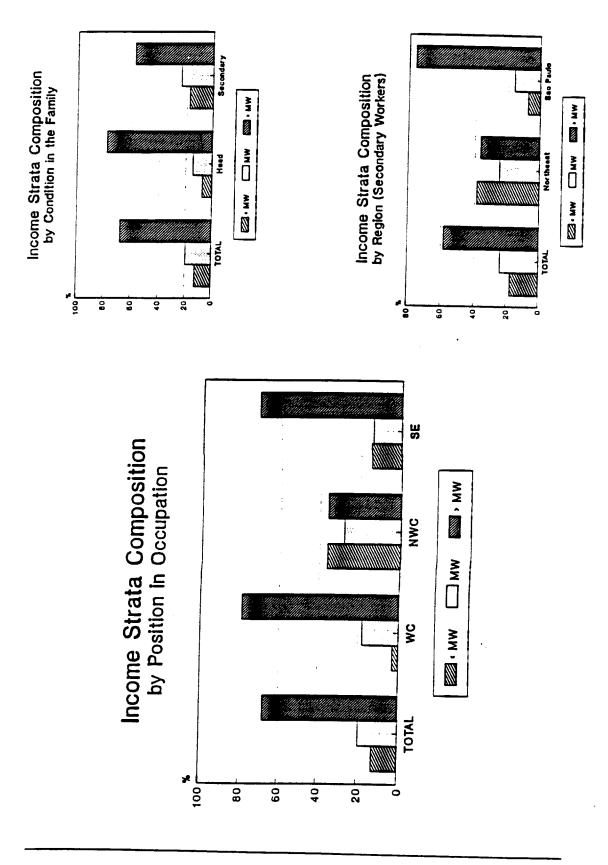
almost negligible representation in the very low income group (close to 3%).⁷ Almost 80% of these workers make more than the minimum wage, the largest percentage among all categories (the average for the EAP is 68%).

These distributions convey an important information, as they indicate that the minimum wage coverage is very limited, both in terms of protected workers that receive it (employees with work card earning in the minimum wage range represented close to 10% in 1989, i.e., around 4 million individuals), as in terms of the percentage of the EAP (particularly the unprotected employees) making less than that amount - 12.6%.

We can also see in the graphs that the largest part of the wmin earners group, plus those making less than the minimum, are formed by secondary workers (not heads of the family). The fact that secondary workers tend to be over-represented in this group is much more apparent for the Northeast, where 60% of them are low or very low income earners, which compares to just 20% in São Paulo.

We next investigate the personal attributes and job characteristics of low income earners. In order to simplify the analysis, we considered only four groups: the EAP as a whole, the EAP with work card (the "formal" or "protected" sector), the low income earners, and the minimum wage earners.

⁷In fact we shouldn't expect any protected worker receiving less than the minimum wage, as it is illegal. The small percentage found in this condition is likely to be due to misreporting in earnings and/or hours worked, or even to lags in the process of updating wages by the firms.



3.1 - Personal Attributes

The composition of the four groups according to personal attributes is shown in Table 1. There we can identify important differences among workers in these groups, especially between wmin earners and the EAP as a whole.

While in the EAP and in the formal sector the percentage of women is under 37%, it goes up to 42% among the low income workers, and reaches 45% for the universe of individuals that make the minimum wage. These figures make it clear that women are over-represented among low income earners, and particularly so among wmin earners.

Another point that emerges from Table 1 is the overrepresentation of the youth among low income earners: the 10-19 age group has constitutes 23.9% of them and just 14.9% of the EAP, while the 20-29 group is the more intensively represented among wmin workers. Another way of approaching this aspect is via the evaluation of the percentage of prime-age workers (25-50 years old) in each group: they are approximately 57% of the EAP, but no more than 45% of the wmin workers. If we look at the age composition by gender, we find that, even though wmin earners are predominantly young individuals for both sex, their over-representation is sharper among males.

Taken together, the wmin workers' profile by gender and age has important implications for the evaluation of minimum wages policies. As stressed by Reis (1989), the fact that those who receive the minimum wage are primarily young and female, who are likely to be secondary workers, tends to undermine the potential distributive and poverty reduction effects of these policies. This inference is reinforced by the distribution of wmin earners by their family condition. While 50% of these workers are heads of the family in EAP, the proportions falls to just above 1/3 in the case of low income and wmin earners, confirming the idea that secondary workers constitute the majority of this group.

It is worth pointing out that the family condition by gender is rather different: while 2/3 of males are heads of their families, this proportion goes down 1/5 for females. Male-heads, however, are under-represented among wmin earners, what is not the case for female-

heads.⁸ This is an additional indication that usually women are secondary workers in the labor force. All in all, the important result to be emphasized here is that almost 2/3 of the workers that make the minimum wage are not the heads of their families.

Regarding education, we can easily see that the average level of schooling of wmin workers is well below that for the EAP. Besides, the access to work card among the low income workers makes an even stronger difference: the proportion of workers with at most some elementary schooling is 32.4% in the formal sector, 43.7% in the EAP, 49.5% for the wmin earners, and 57.5% for the low income workers. These percentage for individuals with at least some high school education are, respectively, 39.6%, 29.1%, 16.4%, and 12.4%.

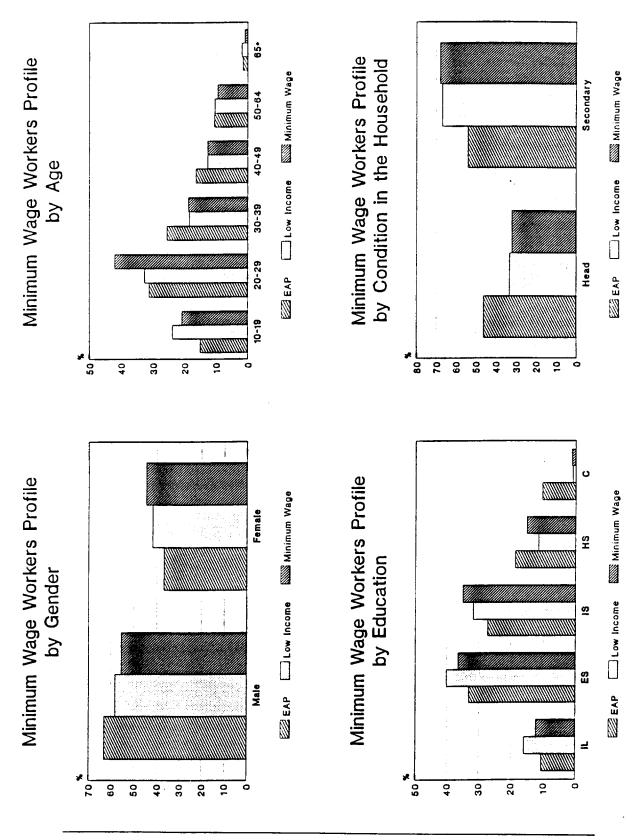
Regarding ethnics, there is an obvious overrepresentation of blacks and mulattoes in the midst of low income earners. The access to the work card does not produce significative differences, and their percentages among low income and wmin workers are very similar (even though they are under-represented in the formal sector of the economy).

In summary, regarding personal attributes, the wmin worker profile reveals a large presence of women, youth, secondary members of the family, poorly educated, and black or mulattoes individuals.

⁸In other words, women are over-represented among wmin workers, but not in the subset of female-heads. Regarding the men, they are under-represented among wmin earners, but male-heads are even more under-represented.

Table 1 Minimum Wage Workers Profile in Brazil Personal Attributes - 1989

		EAP (%)	For	mal Sector (%)
	ALL	Low Income	ALL	Minimum Wag
GENDER			••••••	
Male	47 1	50.1		
Female	63.1	58.1	63.3	55.4
AGE	36.9	41.9	36.7	44.6
10-19	1/ 0			
20-29	14.9	23.9	10.3	20.9
30 -39	31.2	32.6	35.7	37.6
40-49	25.6	18.5	28.1	18.8
50-64	16 .3	12.6	16.5	12.6
65+	10.5	10.4	8.8	9.4
EDUCATION	1.6	1.9	0.7	0.9
Illiterates	10 (
	10.6	15.9	5.9	12.3
Elementary	33.1	40.1	26.5	36.5
Intermediate High School	27.2	31.7	28.0	34.9
•	18.7	11.5	24.8	15.1
College	10.4	0.9	14.8	1.3
HOUSEHOLD				
Head	46.0	66.9	52.6	68.0
Secondary	54.0	66.9	52.6	68.0
FAMILY				
Head	49.1	37.1	50.5	36.5
Secondary	50.9	62.9	49.5	63.5
Ethnics				
White	58.9	47.4	63.8	44.8
Black	5.9	8.6	5.5	8.7
Mulatto	34.6	43.4	30.1	42.4
Asian	0.6	0.1	0.6	0.1
IALE				
- Age				
10-19	14.4	26.9	10.1	23.6
20-29	30.2	32.3	34.4	37.7
30-39	25.4	15.8	26.0	16.2
40-49	16.3	10.9	16.7	10.6
50-64	11.6	11.3	9.9	10.6
65+	2.1	2.7	0.9	1.4
- Family				
Head	66.2	49.0	6 8.6	49.0
Secondary	33.8	51.0	31.4	51.0
EMALE				
- Age				
10-19	15.7	19.7	10.7	17.5
20-29	32.7	32.9	38.1	37.4
30- 3 9	25.8	22.4	28.1	22.1
40-49	16.2	15.0	16.1	15.2
50-64	8.7	9.3	6.9	7.7
65+	0.9	0.8	0.3	0.2
- Family			~. -	0.2
Head	20.0	20.7	19.4	21 0
Secondary	80.0	79.3	80.7	21.0 79.0



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3.2 - Characteristics of the Jobs

Table 2 makes it possible to analyze the wmin earners' profile in terms of some characteristics of the labor market, as geographic region, area of residence (metropolitan or not), position in occupation and sector of activity. The main results are discussed below.

Concerning the geographic regions, included here in order to capture differences in the workings of the regional labor markets, there is a clear dichotomy between São Paulo and the other states of the Southeast (from now on called East, for simplifying matters), plus the Northeast. The last two respond for around 2/3 of the low income and wmin earners, against only 44% of the EAP and 40% of the formal sector. On the other hand, there is an evident under-representation of these workers in São Paulo: the largest Brazilian labor market (30% of the EAP and 35% of the formal EAP) accounts for no more than 18% of low income and wmin earners. In the cases of the South and Frontier (North plus the Mid-West) regions there is no indication of neither over nor under-representation.

An interesting byproduct of Table 4 is the result that, while the average "degree of formalization" is equal to 0.59, it reaches 0.68 in São Paulo. It should be mentioned that, though admittedly weak, this constitutes an evidence in favor of the thesis that the imposition of a legal minimum wage becomes less restrictive the more dynamic the market is. Therefore, the adoption of a nationally unified minimum wage has distinct effects in each region, as the nature of their labor markets are not the same. Thus, the adoption of the so-called "regional minimum wages", i.e., different values for the minimum wage by region, could be a superior strategy, as it would allow a better adherence between the legal value and the characteristics of each market.

The information related to position in occupation reveal that the workers without work card represent almost 1/3 (32%) of low income earners, and no more than 22.2% of the EAP. At the same time the wmin workers account for just over half of the low income earners. These results confirm the caveat put forward by Reis (1989), who stated that the knowledge of the impact of changes in the minimum wage on the earnings of the workers without work card is vital for an evaluation of this policy as an instrument for reducing poverty and inequality.

It is interesting to notice that low income earners are under-represented in the metropolitan areas, but this does not happen for the wmin workers vis-a-vis the EAP. Of course this is due to an sharp over-representation of self-employers, and particularly of employees without work card, in the non-metropolitan areas.

Finally, the distribution by sector of activity indicates, with no surprise, an over-representation of low income workers in the light industry, construction, trade, services, and agriculture segments of the economy. These sectors employ a much higher proportion of wmin workers than that of employees with work cards that are found in there.⁹ In absolute terms, we have that services (30.6%), trade (17.8%), light industry (15.9%), and public administration (13.7%) are the activities that employ most of the wmin workers.

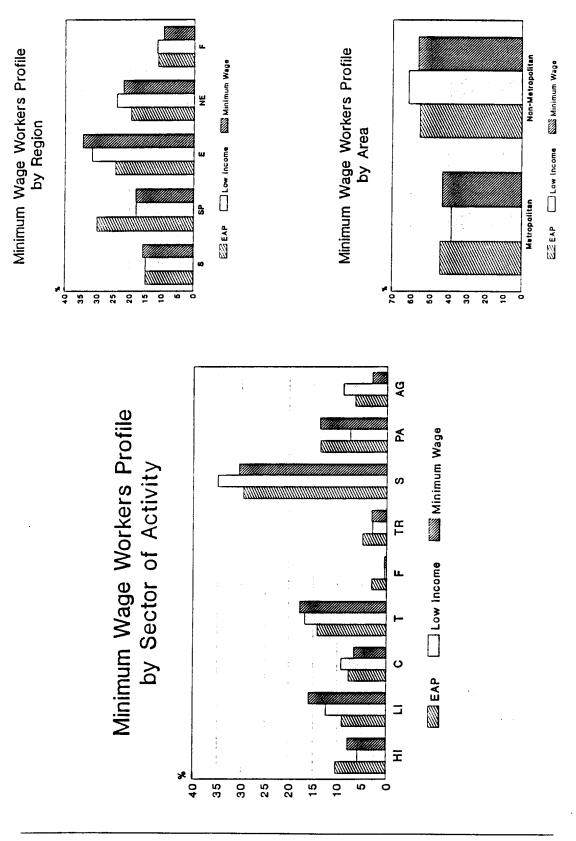
In summary, we can say that the low paying jobs are more common in the East and Northeast regions, in the non-metropolitan areas, and in the sectors of services and trade, besides those who do not offer access to the work card. Regarding specifically to the minimum wage, the same remarks hold (with the obvious exception of the latter), though in a more conservative fashion.

 9 As the segments of services, construction, and agriculture have a low "degree of formalization" (0.39, 0.39, and 0.20, respectively) we end up with no over-representation of wmin workers, *vis-à-vis* the EAP, in these segments.

Table 2

Minimum Wage Workers Profile in Brazil Characteristics of the Jobs - 1989

	1	EAP (%)	Form	al Sector (%)
		Low Income	ALL	and hay
REGION				
South	14.9	14.9	16.1	15.8
São Paulo	29 .9	17.9	34.6	18.0
East	24.4	31.6	24.8	34.5
Northeast	19.6	24.1	14.8	22.1
Frontier	11.2	11.5	9.6	9.6
AREA				
Metropolitan	44.5	38.4	50.9	43.4
Non-Metropolitan	55.5	61.6	49.1	56.6
POSITION IN OCCUPATION				
Employee(work card)	58.7	54.2	100.0	100.0
Employee(no card)	22.2	32.0	-	-
Self-Employer	19.1	13.7		•
ECTOR OF ACTIVITY				
Heavy Industry	10.3	5.8	15 .5	7.9
Light industry	9.0	12.3	11.1	15.9
Construction	7. 7	9.2	5.1	6 .6
Trade	14.1	16.7	12.1	17.8
Financial	3.0	0.4	4.8	0.5
Transports	4.9	2.9	5.5	3.1
Services	29.7	34.9	19.6	30.6
Public Adm.	13.6	7.5	23.2	13.7
Agriculture	6.5	8.9	2.2	3.0
Others	1.1	1.4	0.8	0.7



4 - INCOME DISTRIBUTION AND MINIMUM WAGE EARNERS

In this section we will investigate the position of the wmin earners in the income distribution, in order to make it possible to develop a feeling about the potential distributive impact of minimum wage policies, as for the more concentrated in the lowest strata the highest will be the distributive effects of this policy, as well its in terms of poverty reduction.

We will first examine the size distribution of income, using disaggregations according to position in occupation and condition in the in the household. Though interesting per se, this is not the most adequate distribution if we are concerned with individuals' welfare.¹⁰ That happens because when we take the individual as unit of analysis we are disregarding the household structure, which is relevant for distributive matters, given that the household constitutes a common unit of earnings and consumption, of a eminently distributive nature. Thus, it follows that the appropriate concept of income for assessing aspects relate to poverty, inequality, and welfare is that of per capita household income. An evaluation in these lines will constitute the second part of this section.

4.1 - The Size Distribution of Income

When we consider the EAP with work card, as well as the subset of household heads in the EAP, we find that wmin earners (and low income workers) are in fact confined to the lowest strata of the distribution: 90% of them, in both cases, are locate in the lowest quintile, and the percentage above the median is very small¹¹ (see Table 3).

When we consider the EAP as a whole, we observe that low income earners are positioned slightly above than before: now close to 90% of them are in the second, third, and fourth deciles, with less than 5% in the first one. Possible reasons for these differences are:

 $^{^{10}\}mathrm{This}$ is true even assuming that income is a good proxy for the level of welfare.

¹¹The variability in the position of wmin earners in the distribution is due to two factors: a) their remuneration varies between 0.75 wmin/hour and 1.25 wmin/hour, and b) there are differences in the number of hours worked in a week/month.

Table 3 Wmin Workers and the Size Distribution of Income - 1989 -----------EAP (total)EAP (WC)EAPDecileWCNWCSELIHHMW EAP (total) EAP (WC) EAP (HH) LI ------____. _____. 1.96.315.05.02.937.121.726.638.131.030.127.645.251.951.634.018.041.438.014.620.116.618.024.818.123.02.55.52.72.97.73.46.40.50.70.50.53.61.02.00.1-0.0--0.00.0--_____ 1 2 3 4 5 6 7 ___ _____

WC: Employees with work card; NWC: Employees with no work card; SE: Self-employers;

MW: Minimum wage earners;

LI: Low income earners;

HH: Heads of household.

a) there are several workers, especially among the self-employers and the employees with no work card, making less than the minimum wage, as previously indicated;

b) the low income workers, particularly among the employees, work more hours than the average.

Finally, it should be pointed out that the distribution of low income self employer workers is rather distinct from the global pattern, displaying much higher concentration in the first and fourth to sixth deciles. Once again, a high variability in the work journey may be the explanation for this peculiarity.

4.2 - The Household Per Capita Income Distribution

We can see in Table 4 that, regarding the household per capita income distribution, while close to 1/3 of wmin and low income workers are above the median, less than 15% of them are in the first quintile of the distribution, and around 4% is in the top quintile. It becomes clear that, as far as the household per capita income is the variable considered, the distributive

impact of the minimum wage, assuming it restricted to work card holders or not, is severely undermined by the leakages to higher income strata.¹²

If we restrict ourselves to the group of workers that are household heads, we find a rather distinct picture: almost 27% of them are located in the lowest quintile of the distribution, only 20% are above the median and less than 1% are in the top two deciles. This point confirms the inference that low income earners that belong to households better situated in the income distribution are, in fact, secondary workers: accounting for the fact that around 1/3 of low income earners are household heads (see previous section), it is immediate to see that close to 85% of the individuals whose income are in the wmin range and are above the median of the household per capita income distribution are not heads of the household.¹³

It is worth noticing that the remarks above do not change when we consider the income from all sources, instead of just labor earnings. The only exception that deserves to be mentioned is the increase in the concentration of low income household heads in the bottom quintile, from 27% to 41%, indicating that these units constitute an important nucleus of poverty.

One point that has to be stressed relates to great similarity between the way low income earners are distributed when they have work card and when they don't. This evidence is important, and to some extent surprising, as it allow us to infer that even in the case where workers in the informal sector were to benefit from raises in the wmin, the increase in the distributive effects of such policy may not be so high as we could expect: besides constituting a much smaller contingent of workers, they have similar characteristics regarding their position in the income spectrum.

 13 When the head of the household is a low income worker, almost for sure this household is poor, indicating that the other members of the household are not likely to be in a better position in the labor market, at least as far as one is concerned with remuneration.

 $^{^{12}}$ In other words, contrary to what is the usual belief, it is not the poor households who profit the most, nor are they the vast majority of those who are benefitted by increases in the minimum wage, as there is a significant number of non-poor households who take advantage of it.

As it has been observed in the analysis of the size distribution of income, the low income workers that are self employers are more concentrated in the lower income strata than the rest of the EAP (without a higher concentration in the upper strata, as it had been previously the case).

In summary, the fact that around 35% of the potential beneficiaries of increases in the minimum wage belong to the richest half of Brazilian households has meaningful consequences for the evaluation of a minimum wage policy, as it may reduce substantially its favorable impact on the income distribution through two distinct ways: a) it diminishes the number of poor that will effectively profit from them, and b) it ends up helping households which don't need, and shouldn't, receive this kind of aid.

Table 4

÷

Wmin Workers	and the Household Per Capita Income Distribution	n -	19 89

		Labor Earnings						Income from All Source					
	LIM ⁺	WC		. –		нк			WC NWI	S SE	EAP	нн	
1	0.13	0.44			1.00	1.66	0.25		7.13				
2	0.30	13.3	12.8	20.4	14.2	25.3	0.41		13.9				
3	0.46	16.6	17.1	19.0	17.1	23.2	0.58	15.5			15.9		
4	0.64	18.4	18.4	18 .6	18.5	20 .7	0 .79	16.0			16.2		
5		15 .3					= === == 1.01		======= 15.7			-	
,													
6	1.17		15.2			10.6	1.35	13.5	12.5	10.1	12.6	7.15	
7	1.60	9.54				4.60	1.86	8.77	9.08	7.60	8.68	3.99	
8	2.41	5.97	6.58	5.48	6.16	2.20	2.74	5.41	4.88	4.26	5.13	2.33	
9	4.21	3.0 3	2.98	1.83	2.83	0.96	4.93	2.95	3.13	2.13	2.92	1.10	
10	271	1.41	1.18	0.71	1.24	0 .30	1649	1.17	0.84	0.68	1.02	0.30	
20-	0.30	13.7	14.0	23.0	15.2	26 .9	0.41	20.3	21.1	 28 Q	 21 8	 / 1 0	
50*	271		35.3			18.7	1649		30.4			14.9	
20*	271	4.44				1.26			3.97				

WC: Employees with work card;

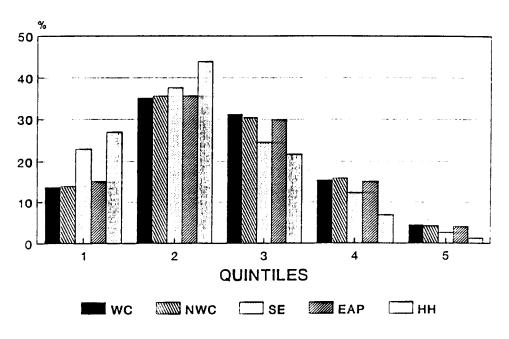
NWC: Employees with no work card;

SE: Self-employers;

HH: Heads of household;

LIM⁺: Upper bound (as a multiple of the minimum wage);

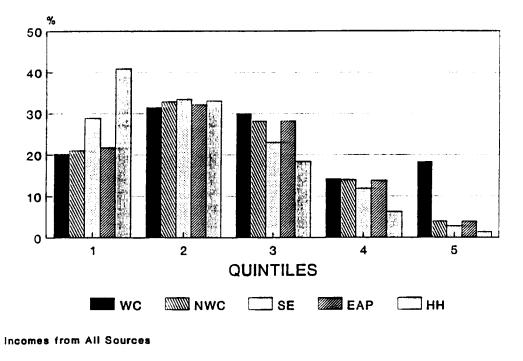
=== : Poverty line.



MINIMUM WAGE AND LOW INCOME WORKERS AND THE HOUSEHOLD PER CAPITA INCOME DISTRIB.

Labor Earnings





5 - SIMULATION EXERCISES

In the previous sections we identified the main attributes of wmin workers, as well as the characteristics of their jobs and their position in the income distribution. The main results indicate that a good deal of the potential distributive impact of policies geared to increase the real value of the minimum wage could be undermined by the fact that a substantial part of wmin workers are secondary workers, and belong to families that are not poor (about 1/3 of them are found in families whose per capita income is above the median).

The task at hand in this section is to simulate the actual impact of increases in the wmin on the income distribution and poverty measures. Needless to say, this is the typical exercise where one needs a lot of strong and simplifying hypotheses, most of times of a controversial nature. Thus, it is worth pointing out at this point that this is no more than an accounting exercise that aims at giving one a general idea on how increases in the wmin may percolate the labor market structure, under distinct settings, to produce alterations in inequality and poverty. It is not meant to provide definite and/or precise answers to these points, but just to serve as a first evaluation that may work as a reference point for the discussion on the efficiency of such policies.

With this caveat in mind, we now list the main hypotheses underlying the simulations:

a) in all simulations we assumed a real increase of 25% in the real value of the minimum wage, in such a way that every worker in the formal sector making less than 1.25 minimum wages would now earn exactly that wage. Additionally, we considered that no one above that mark would have her/his wage increased as a consequence of the change in wmin, as well as that workers in the informal sector of the economy would no benefit from it either, i.e, the minimum wage is not use as indexator by the economy;

b) an extremely important parameter for the evaluation of the distributive impacts of increases in the minimum wage is the "elasticity" of the demand for labor in the protect sector. There is no study available in the Brazilian literature that could give us a clue for this matter. Therefore we opted for choosing an ample range of possible values -0, 0.2, 0.5 and 1.0 -- for the response of the demand for unskilled labor (understood here as the kind of labor provided by workers with less

than complete primary, or elementary, schooling)¹⁴, always assuming no unemployment effect for the skilled labor in the formal sector (i.e., for those workers with at least complete elementary schooling);

c) in the case were there was an employment effect in the protect sector, we worked with the expected value of the "new" wage of those that were initially making the minimum wage. The adoption of this neutral procedure was done in order to avoid the problem of determining those who would loose their jobs and those who would keep them. Thus, the expected wage of wmin earners after the increase in its value is given by:

 $E[w_f] = \pi * 1.25 + (1-\pi) * w_i^{after},$

where:

 $E[w_f]$: expected value of the wage of wmin earners in formal sector after the increase in its value;

r: probability of keeping the job in the formal sector;

wi^{after}: mean wage of unskilled labor in the unprotected sector after the increase in the minimum wage.

d) the determination of the new average wage for unskilled labor in the informal sector was done under the assumption of a unit price elasticity of labor demand, in such a way that the total amount of income would remain the same. Therefore, the new average wage for these workers is given by:

 $Wi^{after} = Wi^{initial} * [Niu^{initial}/(Niu^{initial}+(1-\pi)Nif^{initial})]$

where:

 $w_i^{initial}$: initial mean wage for unskilled labor in the informal sector;

N_{iu}^{initial}: initial number of wmin unskilled workers in the informal sector;

 $^{\rm N} {\rm if}^{\rm initial} :$ initial number of wmin unskilled workers in the formal sector.

e) of course some tax scheme for financing such increases would have to be generated. This discussion, though interesting, is beyond the scope of the exercise. We may simply assume an inflation tax taking care of the problem. In this case there is no

 14 Less than 8 years of schooling.

qualification or correction to be made in terms of the distributive impact, as only the relative incomes matter. For the evaluation of poverty and indigence reduction, the respective poverty and indigence lines have to be increased the same percentage amount of the increase in total income generated by the rise in the minimum wage.

Two points are worth noticing. First, implicit in the above framework is the hypothesis of no changes in employment. Everyone that gets unemployed in the formal sector gets a job in the informal sector. Second, even though this may cause substantial changes in the value imputed to those who lost their jobs in the protected sector and migrated to the informal segment of the economy, the wage of those unskilled workers already in there was simply corrected by the fraction $[w_i^{after}/w_i^{initial}]$. The idea, again, is to be neutral about who was affected the most and who suffered up to that point.

Regarding to the interpretation of the results so generated, it would be helpful if we had a reference point for evaluating the strenght of the distributive and poverty/indigence reduction impacts of wmin policies, as it is hard to develop a feeling for judging them as small or significant out from nothing. A parallel exercise was carried out for that matter. The basic idea was to simulate what would happen if instead transferring income to wmin earners we somehow managed to transfer the same amount of resources to those in bottom tail of the distribution, i.e., if we were able to increase exclusively the poor's incomes.¹⁵

The "negative income tax" exercise was implemented in two steps. First we evaluated which would be the level of income, and the respective percentile of the distribution associated to it, to which it would be possible to bring every individual poorer than that, in such a way that the total increase in nominal income required to do so would be equal to that implied by the raise in the minimum wage. Next we made the income of all individuals below that mark equal to it.¹⁶

 $^{^{15}}$ such procedure roughly corresponds to the negative income tax policy that is pretty much in the middle os the debate on antipoverty policies nowadays.

 $^{^{16}}$ In other words, we truncated the bottom tail of the distribution at that income level, thus reducing inequality and, at least, the intensity of poverty and indigence.

In both cases, and for all the labor demand "elasticities" (e) here considered, we evaluated the new Gini coefficient and the Theil T index, as well as the P^0 (or H, the head-count index), P^1 (or PG, the poverty gap), and P^2 poverty and indigence measures, and compared than to the values actually measured. The results for 1989 are described in the following Table 5.

Theil T Gini P0 P1 P2 P0 P1 P1 Original 0.8304 0.6174 0.298 0.421 0.125 0.074 0.113 0.415 0.047 0 e=0 Mu 0.8179 0.6120 0.284 0.409 0.116 0.068 0.101 0.418 0.042 0 x -1.5 -0.9 -4.5 -2.8 -7.2 -8.3 -10.9 0.9 -10.1 IT- 0.8083 0.6073 b.298 0.306 0.910 0.040 0.050 0.991 0.050 % -2.7 -1.6 -27.4 -27.4 -27.4 -3.0 -90.2 -90.2 e=0.2 Mu 0.8188 0.6124 0.285 0.411 0.117 0.068 0.102 0.419 0.043 0. x -1.4 -0.8 -4.3 -2.3 -6.6 -7.5 -10.1 1.1 -9.2 1T- 0.8096 <td< th=""><th></th><th></th><th></th><th>Ineau</th><th><u>uality</u></th><th></th><th></th><th>Poverty</th><th></th><th></th><th>,</th><th></th><th></th></td<>				Ineau	<u>uality</u>			Poverty			,		
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There we can see that, even in the most favorable $case^{17}$ (e equal to 0), the distributive impact of a substantial increase in the minimum wage -- 25% -- is rather small: the Gini coefficient falls meager 0.003 points, from 0.617 to 0.614, what amounts to a percentage decrease of just 0.9%. If instead we consider the Theil T, the results are still very modest: it falls from 0.830 to 0.822, or 1.5% (the difference is because the Theil T is more sensitive to the lower tail than the Gini coefficient).

These impacts are progressively narrowed when we account for possible reductions in the level of employment in the formal sector induced by real increases in the minimum wage. For the case of unitary "elasticity" they are cut to about 2/3 of the original decrease (the reduction in the Gini coefficient comes down to 0.6%, whereas the decrease in the Theil T index falls to 1.0%).

The results are a bit more significant when we consider the poverty and indigence measures. For the very reason that these indices take into account only the bottom of the distribution and, despite some spillovers to higher strata, it is there that most of the wmin earners are, the improvements become more sizable in this case. In the simulation that considers no losses of jobs in the formal sector, an increase of 25% in the minimum wage results in a decrease of the percentage of poor from 29.8% to 28.4%, and the percentage of indigent goes down from 11.3% to 10.1%. and in the simulation where 25% of the unskilled wmin workers lose their jobs in the protect sector, the new percentage of poor is equal to 28.9% (about 2/3 of the reduction achieved for e=0), whereas the percentage of indigent is reduced to 10.6% (almost half of the decrease obtained for e=0).

Regarding the poverty gap (P^1 index), we found a decrease between 4,1% and 7,2% for the poor, and between 5.0% and 10.1% for the indigent. The index P^2

 $^{^{17}}$ Of course the situation where the increase in the minimum wage somehow is translated in increases in higher wages could produce different results. We do not consider this case here.

is the one that reveals the largest improvements, in the interval between 4.4% to 8.3% for the contingent of poor and between 3.3% and 7.9% for the indigent.¹⁸

For the sake of developing an idea about the efficiency of the wmin policy in promoting equality and reducing poverty and indigence, as well as about the undermining of these goals caused by the spillovers to higher income strata, we can compare the previous results with those that would be produced were the same amount of resources given directly to the poorest individualsfamilies. We can see in the table, under the label "IT", that the improvements in the distribution would be almost twice as large as in the case of minimum wage polices: the Gini coefficient goes down by something between 1.1% and 1.6%, and the fall in the Theil T is in the 1.9%-2.7% range.¹⁹

In this kind of simulation there is no reduction in the number of poor, for the simple reason that the total amount of resources is not high enough to bring the poor to the poverty line, but just to the income level corresponding to the $10^{th}-11^{th}$ percentile. Therefore, no poor crosses the poverty line.²⁰ The differences appear when we incorporate other dimensions of poverty into the measurement, specifically intensity (P¹) and inequality (P²). From Table 5 we can see that the poverty gap narrows down about 3.5 times more in the

 $^{18}{\rm It}$ is interesting to notice that the improvements in $\rm P_1$ are largest than in P_0 for the poor, the opposite taking place for the indigent. This result is basically reflecting the fact that the relation the relation between the average income of the poor (indigent) and the poverty (indigence) line (1-I) behaves differently: it goes up with the increase in the minimum wage for the former and goes down for the latter (i.e., most of those who benefit from the increase in the wmin are very close to the indigence line). In both case this relation goes down with the degree of unresponsiveness of the demand for skilled labor to the increase in wmin.

¹⁹It is important to realize at this point that the reductions in the inequality indices for the IT- simulation, though much larger than in the wmin simulation, are still modest. This is due basically to the low values of the minimum wage in Brazil, which cause a small amount of transfers even when it is increased by 25%. It is not necessarily true, however, that the distributive effects would increase substantially for higher values of the minimum wage, as in this case the impact of wmin policies on the demand for unskilled labor should of larger magnitude too.

 20 In other words, you either eliminated poverty or leave the number of poor unchanged in this exercise. The second option prevailed here.

case of IT- than for the wmin boosting policies. Similarly, but in an even more acute fashion, is what takes place for P^2 : the fall in this index is 5 to 8 times bigger when income transfers are handed directly to the poor than when one resorts to rising wmin policies. Of course the striking difference between the effects of the two policies on P^2 comes as no surprise, given that this index is accounts for the heterogeneity among the poor, and the IT- kind of policy is equivalent to censoring the lower tail of the distribution.

If instead of looking at the poor we consider the indigent, we can see from Table 5 that the reductions in the indices are substantial: the percentage of indigent is cut to half in the basic simulation (e=0), I is reduced in 78%, whereas P¹ and P² are virtually eliminated.

The somewhat weak impacts of increases in the minimum wages on the degree of inequality and poverty, together with the significant differences obtained through a scheme of income transfers directly to the poor, confirms the existence of severe leaks in the first policy to the more favored family units. Therefore, part of the beneficiaries are not those meant to be in first place, which contributes to reduce the impact on poverty (as they are not poor) and the degree of inequality (as they may belong to rich families, what enhances inequality). The picture becomes bleaker when one considers the generation of unemployment via the imposition of higher minimum wages. In this case, not only we have leaks, but also the production of losers -- those who fail to keep their jobs in the protected sector and end up in low-paying occupations in the informal segment of the economy. This phenomenon ends up contributing to undermine even more the potential effects of that policy, casting shadows on its adequacy for achieving those goals.

6 - SUMMARY AND CONCLUSIONS

In this study we tried to describe the main characteristics of the worker that receive the minimum wage (and/or its equivalent) in the urban Brazil, using the year of 1989 as reference. The characteristics we focused upon are related to personal attributes -gender, age, education, and ethnics, among others --, the jobs they hold -- such as sector of activity, position in occupation, and region --, and their position in the income distribution.

Among the more important conclusions of the analysis is the identification of the groups that are over-

represented in the class of minimum wage earners: women (45% against 37% in the EAP), youth (persons less than 29 years old represent 58.5% of them, compared to 46.1% in the EAP), and secondary workers (63.5% against 50.9% overall). These results have strong implication for the distributive and poverty alleviation effects of minimum wage policies, as they tend to reduce their magnitude. They also have important implications for the very conception of these policies, as the subsistence of the family is the parameter usually taken as reference for the determination of the legal value of the minimum wage.

Another important finding confirms the result previously obtained in Reis (1989), and relates to the position of these workers in the income spectrum. We found that 35% of them belong to families that are above the median of the household per capita income distribution. Thus, increases in the minimum wage do not accrue only and necessarily to the poor, and a significant fraction of the workers that take advantage of it do not need this kind of help.

This leakage, needless to say, may severely undermine the distributive and poverty reduction effects of such policies, and reinforce a pessimistic view about the role of the minimum wage for promoting such goals. This does not mean denying the existence these effects, but just that they are limited, in such a way that other distributive policies should be considered and pursued.

In the final part of the study we evaluated empirically the reach of minimum wage policies, under a set of simplifying hypotheses, as well as for a range of demand "elasticities" for unskilled labor in the formal sector of the economy. The general pattern was a very shy response of inequality, poverty, and indigence cases to increases in the minimum wage: in the most favorable situation (no one would lose their jobs in the sector as a consequence of the raise), a real increase of 25% in the value of the minimum wage would reduce the Gini coefficient by just 0.9%, and the percentage of indigent by no more than 4.5% and 10.9%. These figures compare to a reduction of 1.6% in inequality and 55.4% in indigence, were the same amount of resources transferred directly to the poorest.

Overall, we may say that even though minimum wage policies may be an interesting instrument for protecting the factor labor, as it is fiercely defended by some, it is very difficult to justify their implementation based on their distributive and poverty reduction impacts. It seems that the costs associated to their adoption may very well overshadow the

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potential benefits in this front. Thus, the consideration of alternative policies aimed at making the distribution more egalitarian and alleviating poverty, be them of the income transfer type or of structural nature, should be very much at stake.

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