TEXTO PARA DISCUSSÃO

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Minimum Wage in Brazil Theory, Policy and Empirical Evidence

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I. Introduction

The Brazilian Minimum Wage Law has been the object of intense theoretical and empirical dispute since its promulgation in 1940. The debate centers on the Law's effectiveness and on the mechanisms through which this institution affects the Brazilian overall wage rates. In fact, if the minimum wage is a relevant variable for the determination of the economy's wage structure, then it may have effects on the country's distribution of income, employment level and inflation rate.

The importance of the Brazilian minimum wage is directly related to two other official policies regarding the wage rates determination process. The first is the set of laws which regulate labour union activities and the relationship between employers and employees (CLT – Consolidação das Leis do Trabalho). The second is the Wage Law that, since 1965, stipulates the escalation indices to be applied to every salary in the economy.

The objective of this paper is to analyse the effects of minimum wage (taking into account the two other official policies referred above – CLT and Wage Law) on the general wage rates, employment level and income distribution in Brazil. Section II presents the different theories on which studies of the subject are usually based. Section III contains an empirical analysis of the effectiveness and importance of the minimum wage in the process of determination of the Brazilian wage structure. Finally, section IV relates minimum wage to employment and income distribution.

II. Theoretical and Institutional Aspects

One of three theoretical approaches is generally used in the analysis of the wage rate determination process in semi- industrialized countries like Brazil:

1. The neoclassical theory of the labour market
2. The subsistence wage theory
3. The structuralist theory of the labour market

Each one of these theories have different assumptions on the labour markets mode of operation and therefore, come to quite different conclusions regarding minimum wage social effectiveness, importance and consequences for the economy. A brief presentation of these approaches is made in this section[1].

[1] For a good review of the role of minimum wages in Latin America see P. V. da Cunha "Minimum Wages in Latin America", World Bank, June 1953.

II.1. The Neoclassical Theory

In its purest version, the neoclassical theory assumes that each individual or enterprise enters the labour market as an independent economic agent with no previous relations to the others. This basic assumption implies that the study of the labour market functioning must start by the analysis of how decisions are reached at the individual level. The dynamics of wages and employment are then the result of the mere aggregation of these independent decisions. This leads us to the analysis of the psychological and behavioural variables conditioning the decision – making process of individuals[2].

The workers decide the quantity of work they are willing to offer based on their personal scale of preferences, which discriminates between desirable and undesirable goods or activities. In other words, each person has a stable utility function.

In these utility functions, goods, services and therefore income have a positive value, generating utility, while work represent cost (disutility). Each worker tries to maximize his utility function reaching an optimum in his scale of preferences taking into account his own personal characteristics (education, training, age etc.), the prevailing wage and the prices of desirable goods.

Following these hypotheses, we conclude that each worker will raise the quantity of work offered until the disutility of the last work unit equals the wage received. Thus, the higher the wage paid, the greater the quantity of additional work necessary to equal its own disutility, thus raising work supply and vice-versa. Therefore, the individual work supply curve is an increasing function of the real wage paid. The market supply curve is obtained through the addition of all the individual curves.

On the side of the demand for labour, firms determine the amount of man power to hire by aiming at profit maximization, taking as given the technology, the price of its products, and the wage rates. It is also supposed that there is perfect substitution between production factors.

The maximization of profits thus forces the production unit to hire additional workers until the productivity of the last person hired equals the prevailing wage rate. This determines the demand for labour at the production unit level. Taking technology as given, the higher the wage rate, the lower the employment level and vice-versa. Therefore, the demand for labour is a decreasing function of the real wage paid. The sum of the individual demand curves generates market demand.

The interaction of demand and supply determines labour market operation. If the prevailing wage is such that the demand for labour is less than supply, the involuntarily unemployed will have less marginal disutility for work and consequently will offer cheaper labour. This will cause a

[2] See for example: L. Reynolds and P. Gregory, *Wages Productivity and Industrialization in Puerto Rico* – Richard D. Irwin, Homewood, 1965; C. Brown, C. Gilroy and A. Kohen "The Effect of Minimum Wage on Employment and Unemployment", *Journal of Economic Literature*, nº 20, 1982; J. Mincer, "Unemployment Effects of Minimum Wages", Journal of Political Economy, nº 84, 1976.

reduction in real wage, which will rise the demand and reduce the supply of labour. The continuation of this process will make involuntary unemployment disappear.

In this pure version of this theory of labour markets, full employment is the only result logically feasible, since markets operate with no constraints. Unemployment is a fortuitous phenomenon and will last only the period of time necessary for a reduction in the real wage to cause an increase in the demand for labour.

According to this analytical framework, unemployment and structural underemployment can only be the result of some exogenous constraints which hinder the free operation of the markets mechanisms just described[3]. Minimum Wage Law has to be analysed in this context.

The laws regulating the payment of minimum wages are (mainly in urban areas) the result of social and political pressures imposed on governments. These laws have the objective of preventing unemployment to cause the real wage to fall below the subsistence level. If this level is higher than the equilibrium real wage, there will be an artificial constraint which hinders the elimination of unemployment through market forces. Therefore, the first consequence of the establishment of a minimum wage is the occurrence of unemployment and a rise in the real wage (if compared to the level that eliminates unemployment) of the workers employed in the favoured sectors.

The establishment of an urban minimum wage which is higher than the one of equilibrium creates a gap between rural and urban wages. Individual responses to the existence of this gap play a fundamental role in this analytical framework[4].

As the individuals maximize their utility functions, and supposing there is a gap between rural and urban wages, there will be incentive to rural migration, and consequently, an excess supply of labour in the cities. As the real wage cannot fall, unemployment in urban areas increase. The existence of unemployment means that there is a relatively high probability that the real wage received by a newcomer be zero, at least in the initial period. It is then further assumed that workers subjectively try to maximize their lifetime income, which force them to take into consideration the urban unemployment rate.

When the newcomer reaches the urban center, he joins a pool of unemployed. The ones with the most recent migration will have a higher probability of remaining unemployed (personal characteristics taken as given). As time goes by, workers receive additional information, have other personal contacts and, there here, their chances of finding a job in this sheltered sector increase. Therefore, the larger the wage gap, the greater the migration, the greater the urban unemployment

[3] If the technology adopted requires fixed input proportions, then, there will be unemployment even if we use this same analytical framework. See R. Eckaus – "The Factor Proportions Problem in Underdeveloped Areas", *American Economic Review*, september, 1955.

[4] J. Harris and M. Todaro – "A Two-Sector Model of Migration with Urban Unemployment in Developing Countries". MIT Working Paper nº 32.

rate and the higher the probability of a newcomer not finding a job, at least during a certain period of time. To overcome this unemployment period, the migrant workers join activities with no institutional support, and give origin to the underemployment phenomenon, which is quite characteristic of the big cities of underdeveloped countries.

II.2. The Subsistence Wage Theory

The neoclassical theory and the theory of the subsistence wage contain similar hypothesis as regards to individual economic behaviour, but the latter introduces an additional factor, of a classical nature, which hinders market forces operation – the subsistence wage.

According to this theory there is a real wage level below which workers could not survive. Thus, if, due to market supply and demand conditions, the equilibrium wage falls below the subsistence level, the equilibrium becomes impossible, and structural unemployment occurs[5].

In these conditions, if the legal minimum wage is higher than the subsistence wage, the disequilibrium is intensified and the pool of unemployed is augmented. On the other hand, if the minimum wage is established below the subsistence wage, it will be ineffective.

In both theories described above, the existence of a minimum wage which is higher than the equilibrium wage generates unemployment and underemployment since some workers cannot get a job in the sheltered sector. These workers are, thus, willing to accept any kind of work that could provide for their subsistence. As it is impossible for government to maintain an effective control on every small firm in the economy, some will hire workers, with no formal contracts, and pay less than the minimum wage. Moreover, a considerable part of the work force become the various kinds of "self-employers" easily found in the big cities of underdeveloped countries.

The larger the gap between the equilibrium (or subsistence) wage rate and the minimum wage, the smaller the number of jobs offered by the formal sector, and the greater the number of jobs offered in the informal sector, where the Minimum Wage Law is ineffective, and which will operate with an increasing number of firms. In this context, the market demand and supply forces would be the main determinants of the overall wage rate. The maintenance of a minimum wage at a level higher than equilibrium (or subsistence) would simply raise the number of firms operating in the informal sector and vice-versa.

In short, we may say that, in this analytical framework, an effective Minimum Wage Law causes a reduction in the number of jobs offered in the sheltered sector and consequently

[5] R. Macedo, M. E. Garcia – "Observações sobre a Política Brasileira de Salário Mínimo", Trabalho para Discussão nº 27, IPE-USP, São Paulo, 1978, W. A. Lewis – "Economic Development with Unlimited Supplies of Labour", *The Manchester School of Economics and Social Studies*, vol. 22, nº 2, may 1954.

unemployment and structural underemployment. The final result is an increase in income concentration or alternatively, in case the labour market operation is sufficiently strong not to let the minimum wage prevail, the minimum wage will be, of course, totally ineffective.

II.3. The Structuralist Theory of the Labour Market

In direct opposition to the preceding theories, the structuralist theory of the labour market adopt completely different assumptions regarding wage-rates and employment level determination in semi-industrialized capitalist economies[6]. According to this theory, the modernization and industrialization processes do not occur in all sectors at the same pace and time in semi-industrialized countries. Quite on the contrary, industrialization destroys other pre-existent productive structures thus liberating manpower for capitalist industrial production. During the process of industrialization, some other production structures continue to exist and interact, being the dynamics of this relationship determined by the capitalist sector.

In the capitalist sector the production process requires huge amounts of capital, being the accumulation pace and therefore, the dynamics of the sector's growth, determined by oligopolistic competition between large firms. The basic characteristics of this sector are relatively high barriers to entry, high productivity and wage labour. Due to its accumulation process based on oligopolistic competition, this sector tends to invade the economic spaces previously occupied by other production structures.

On the other hand, the other production structures are characterized by the simultaneous operation of various small familiar firms and some "self-employers" in a kind of economic organization which is quite similar to the ones existing before industrial revolution. In this sector there is practically no barriers to entry and markets are protected and restricted only through physical or institutional barriers.

Since there are different co-existing production structures, the level of employment in the capitalist sector is determined by the total effective demand for its products being this, in its turn, determined by public expenditure, by the level of the firm's investments and by consumption expenditure in its products. Being the prices determined by the addition of profit gross margins to variable production costs, a variation in the wage rate modifies prices and has no effects on the level of employment.

On the other hand, the institutional variables play a very important role in the determination of

[6] For some contributions in the area see, for example P. R. de Souza and P. E. Baltar, "Salário Mínimo e Taxa de Salários no Brasil", *Pesquisa e Planejamento Econômico*, December 1979, V. Tokman and P. R. Souza, "The Informal Urban Sector in Latin America", *International Labour Review*, nº 114, 1978.

the sector's wage-rate. In Brazil, four institutions operate in the process of determination of capitalist wage rates: The Minimum Wage Law, the Wage Law, the set of laws regulating the relationship between employers and employees (CLT) and the relative bargaining power of unions.

The basic characteristic of CLT is the connection between trade unions and labour courts to the governmental executive branch. In order to operate, unions have to be licensed by the Ministry of Labour who controls not only its financial resources but also stipulates the very tight conditions under which a strike may be considered legal by labour courts. The Ministry of Labour has special power to directly interfere in the unions whenever such governmental regulations are not obeyed.

The resolution of conflicts between employers and employees may be obtained either through a "collective agreement" or through arbitrated settlements in the labour courts. In the first case the agreement in made without the interference of justice. When this is not possible, one of the parts declares its desire that the dispute be resolved by Labour Courts. In both cases the agreement has to be submitted to the Ministry of Labour who homologates it or not. So, central government has, in fact, the last word on the subject. The system just described turns quite effective the interference of the Brazilian executive branch on the settlement of wage-rates.

In this context, Minimum Wage Law and the Wage Law have a very important role. The Minimum Wage Law determines that the president is himself responsible for the fixation of the indices for minimum wage adjustments. From 1965 on, the Wage Law has settled the indices for adjustment of every wage in the economy. These indices are calculated through quite explicit rules that, until 1979 were established by central government.

In this institutional environment, the minimum wage became the fundamental variable in the determination of the wage rates of unskilled workers. Once this basic wage is settled, the wage scale of blue-collar workers would be determined by the firm's job ladders and by the internal labour markets, just like the way this is settled in the industrial sector of developed countries. Thus, the minimum wage turns to be a fundamental macroeconomic parameter of the economy.

The relative power of unions affects the wages level through the possibility of getting an adjustment through indices which are higher than the official ones. When unions are strong enough and there are favourable political conditions, unions activities intensify and press to get adjustments above the minimum[7].

Thus, in this analytical frame the minimum wage is the basis for determining the unskilled workers wage rate in the capitalist and, through the internal labour markets, wages structure and Wage Law, it is also the basis for the determination of every other wage of production line jobs.

The wages in bureaucratic activities with a direct or indirect relation to management, mainly

[7] See M. C. Tavares and P. R. Souza, "Emprego e Salários na Indústria: O Caso Brasileiro", *Revista de Economia Política*, 1981.

the jobs at the top of the promotion ladders, have their wages determined by profits and markets conditions.

In this theory, the relation between the wages paid in the capitalist sector (formal sector) and the wages paid in the other production structures (informal sector) is also indirectly made through the minimum wage.

Due to the informal sector characteristics, the pay for work in this segment is not obtained in the form of wages but, more often in the form of sales receipts (ambulant salesman, small familiar firms etc.). The products and Services sold are frequently competitive to the ones produced in the capitalist sector of the economy causing dependencebetween the prices charged. Once capitalist prices are based on production costs, the blue-collar wage rates play an important part in the determination of capitalist prices. Thus, for example, if a parking lot, organized within the capitalist sector charges x US$ per day, an autonomous Car keeper would charge approximately the same amount (probably a little less). If capitalist prices rise, the other prices will certainly also rise. The same occurs if we take into consideration ambulant salesman, small commercial firms etc. In this sense the capitalist production determines the prices charged by the other production structures.

The minimum wage affects the informal sector's income not only through the variable costs of production, as analysed, but also through the demand for its products. A great part of the non-capitalist production takes place in the big cities peripheries where the working population have their salaries greatly influenced by the minimum wage. Thus, lower wages correspond to smaller demand and, with fixed prices, smaller income.

This argument may be algebraically represented in the following way: Suppose α is the proportion of the wages received by workers of the capitalist sector which is spent in the purchase of products and Services produced by the informal sector. Suppose also the prevailing wage is dependent on the minimum wage and that capitalists spend all their incomes within the capitalist sector. Thus, $w = f(w^*) \therefore f' > 0 \therefore \alpha(wl_c) = d_i =$ demand for non-capitalist sectors products, where:

w = average wage of blue-collar workers in capitalist sector;

w^* = minimum wage;

l_c = capitalist sector level of employment;

$p_i x_i$ = non-capitalist sector income.

$p_i = \beta(1 + m)af(w^*) =$ non-capitalist prices, where:

x_i = non-capitalist production;

a = product-labour relation in capitalist sector l_c/x_c;

m = capitalist between the prices of the two sectors.

Then, non-capitalist production value will be:

$$p_i x_i = \alpha(w l_c) \therefore \frac{w l_c}{p_i} = x_i = \frac{f(w^*)}{\beta(1+m)af(w^*)} \alpha l_c \therefore x_i = \frac{\alpha}{\beta(1+m)a} l_c \therefore x_i = \frac{\alpha}{\beta(1+m)} x_c \qquad (1)$$

Where x_c represents capitalist sector total production. As seen through equation (1) the production in the informal sector depends on the production in the capitalist sector. A rise in the amount produced in this last segment will raise its employment and, consequently the demand for the Products of the informal sector. An increase in gross profit margins transfer income from workers to capitalists and reduces production in the informal sector.

On the other hand, as capitalism expands, destroying parts of the other production systems, though, for example, the economic infeasibility of small familiar firms, the proportion of the workers' income that is spent in the informal sector will decrease (reducing α) and, naturally, the sector's share in the economy will also be reduced.

As $R_i = p_i x_i$, the income of each worker in the non-capitalist sector will be:

$$R_p = \frac{R_i}{l_i} = \frac{p_i x_i}{l_i} = \alpha f(w^*) \frac{l_c}{l_i}$$

$$\frac{\partial R_p}{\partial w^*} > 0$$

$$\frac{\partial R_p}{\partial l_c} > 0$$

$$\frac{\partial R_p}{\partial l_i} < 0$$

$$\frac{\partial R_p}{\partial \alpha} > 0$$

This means that the per-capita income in the informal sector will have a direct relation to the minimum wage, to the capitalist sector employment level and to the share of the worker's income that is spent in its products, and will have an inverse relation to the number of people working in the non-capitalist sector.

This theory comes thus to conclusions which are quite opposed to the preceding ones as regards to the importance of the minimum wage. According to this theoretical frame, the minimum wage is responsible not only for the determination of the wage rate of the formal sector but also affects the informal sector's income. Section IV presents some empirical evidence on the relevance of minimum wage in Brazil. Before that, we will make a brief description of its historical evolution.

III. Historical Perspective

Brazilian minimum wage history starts in the late thirties when Federal Government created a special commission with the objective of defining a food basket, which should contain the minimum

set of nutrients considered indispensable for human survival in good physical conditions[8]. This basket would naturally be different for the various geographical regions. The basket was defined and, in 1940, a personal act of the president decreed the minimum urban wage in Brazil[9].

Because the prevailing prices and basic food baskets were not the same in the various States of Brazil, the minimum wage was settled in a regional basis. If compared to the average wage existing in 1940, the regional minimum wages decreed favoured the poorest regions of Brazil in detriment of the most industrialized and developed. Thus, for Rio de Janeiro and São Paulo, which concentrated respectively 15.8% and 34.9% of all industrial jobs in the economy in 1940, the minimum wage settled was lower than the average but in capitals like Belo Horizonte, Salvador, Curitiba and Recife it was higher than the average[10].

Two important points should be pointed out here: In the first place, as it was conceived, the Minimum Wage Law had the objective of preventing the establishment of a wage, which could be insufficient to provide for the worker's survival. In the second place, the Minimum Wage Law was a personal act of the president.

During the forties and the fifties, the nominal minimum wage was adjusted in different time intervals, which varied from 11 to 97 months (Table I).

Table I

Nominal Minimum Wage Evolution

Rio de Janeiro and São Paulo 1940 – 1960

Current cruzeiros

Dates	Rio de Janeiro		São Paulo	
	Cruzeiros	Variation (%)	Cruzeiros	Variation (%)
5/1/1940	0.24	-	0.22	-
1/1/1943	0.30	25.00	0.275	25.00
12/1/1943	0.38	26.67	0.36	30.91
1/1/1952	1.20	215.79	1.09	230.56
7/4/1954	2.40	100.00	2.30	93.28
8/1/1956	3.80	58.33	3.70	60.90
1/1/1959	6.00	57.89	5.90	59.46
10/8/1960	9.60	60.00	9.44	60.00

Sources: Luis A. Corrêa do Lago, Fernando Lopes de Almeida and Beatriz M.F.de Lima. *O Sistema de Relações Trabalhistas no Brasil e Suas Implicações_Econômicas e Sociais, 1940-1979* – IBRE/FGV-December 1979-mimeo.

[8] Decreto-Lei nº 399, april 30, 1938.
[9] Decreto-Lei nº 2162, May 1, 1940.
[10] 1940 Census, Statistical Yearbook 1953 – FIBGE and Decreto-Lei nº 2162, May 1, 1940.

The objective of maintaining a minimum standard of living for workers, through the minimum wage, was abandoned in 1946. From this year on, the minimum wage was adjusted only in 1952, in the second Getúlio Vargas period of government, despite the inflation rates observed in the period. Table II shows the evolution of real minimum wage yearly average between 1940 and 1960. As may be observed the minimum wage decreases after 1940 with a sharp fall in 1945. It is only after 1952 that this trend is reversed and from that year and until the end of the fifties the minimum real wage tends to increase.

Table II

Real Minimum Wage Yearly Average Evolution

Rio de Janeiro and São Paulo 1940 – 1960 (July 1940 = 100)

Year	Rio de Janeiro*	São Paulo**
1940	100	100
1941	90	89
1942	80	80
1943	82	79
1944	104	83
1945	89	67
1946	76	59
1947	62	45
1948	60	42
1949	58	42
1950	53	40
1951	47	37
1952	127	99
1953	111	81
1954	134	99
1955	148	111
1956	150	113
1957	166	123
1958	145	107
1959	166	119
1960	139	100

Source: "A Ração Essencial e sua Utilização como Deflator do Salário Mínimo", Texto para Discussão nº 23 – IEI/UFRJ, May 1983.
* Monthly deflated by the Rio de Janeiro Cost of Living Index, FGV.
** Using DIEESE deflator.

In the early sixties, the utilization of the minimum wage as a social policy was retaken. Due to inflation acceleration, Federal Government tried to prevent a sharp fall in its real value through an increase in the minimum wage escalation indices associated to a reduction of between adjustment intervals.

With the military coup of March 1964, the minimum wage was transformed from a social policy

designed to protect the worker's living standards into an instrument for stabilization policy. The new government beliefs were that the readjustments of the minimum wage were too high, being one of the important variables responsible for the high levels of inflation prevailing since 1960. Therefore, the stabilization policy then adopted required a reduction in the real minimum wage. This economic strategy was made politically viable, through the repression of union's activities and the imprisonment of its leaders.

Until 1974, the escalation of the minimum was made through indices below inflation and, consequently its real value was depressed. As we will see later, this tightening of the wage policy seems to have caused an impressing income concentration. Table III shows the evolution of the nominal minimum wage and of the real minimum wage yearly average from 1961 to 1974.

Finally, since 1974 the relaxation of the political regime through unions' revitalization reversed the minimum wage falling trend. Nevertheless, in 1979, it was still below the levels of the early forties (at least in São Paulo, see table IV) in spite of the productivity increase and economic growth experienced in these four decades. In the beginning of 1979, the inflationary pressure and the stronger unions forced Federal Government to adjust the minimum wage each semester thus preventing an even further reduction in its real value.

Briefly, we may say that, since its institution, the minimum wage went through two different phases. Until 1964, (except for the years between 1946 and 1951), its objective was the maintenance of an adequate minimum standard of living for Brazilian workers. As a reflection of this policy the real minimum wage experienced a clear increasing trend, mainly in the fifties. The reversal of this trend happens when the minimum wage turned to be an important tool for the stabilization strategy adopted after 1964.

The dual character of the minimum wage is evidenced by its historical evolution. In the one hand it has a social role, in the sense that it represents the worker's living standards but, in the other hand, it represents the enterprises cost and therefore, their prices. It is exactly this ambiguity that makes minimum wage policy one of the most important economic policies in the country.

Table III

Nominal and Real Minimum Wage Evolution

Rio de Janeiro and São Paulo

1961 – 1974

	Rio de Janeiro			São Paulo		
	Nominal Minimum Wage	Variation	Real Minimum Wage 1940=100	Nominal Minimum Wage	Variation	Real Minimum Wage 1940=100
10/16/1961	13.40	40.0		13.21	40.0	
1961			163			112
1962			152			102
1/1/1963	21.00	56.25		21.00	58.90	
1. 1963			142			90
2/24/1964	42.00	100.00		42.00	100.00	
1964			132			92
3/1/1965	66.00	57.14		66.00	57.14	
1965			129			89
6/1/1966	84.00	27.27		84.00	27.27	
1966			120			76
3/1/1967	105.00	25.00		105.00	25.00	
1967			115			72
3/26/1968	129.60	23.43		129.60	23.43	
1968			114			70
5/1/1969	156.00	20.37		156.00	20.37	
1969			114			68
5/1/1970	187.20	20.00		187.20	20.00	
1970			109			69
5/1/1971	225.60	20.51		225.60	20.51	
1971			110			66
5/1/1972	268.80	19.15		268.80	19.15	
1972			113			65
5/1/1973	312.00	16.07		312.00	16.07	
1973			117			58
5/1/1974	376.80	20.77		376.80	20.77	
1974			111			54

Source= Same as Table II

Table IV

Real and Nominal Minimum Wage Evolution

Rio de Janeiro and São Paulo

1975 - 1979

	Rio de Janeiro			São Paulo		
	Nominal Minimum Wage	Variation	Real Minimum Wage 1940=100	Nominal Minimum Wage	Variation	Real Minimum Wage 1940=100
5/1/1975	532.80	41.40		532.80	41.40	
1975			117			57
5/1/1976	768.00	44.14		768.00	44.14	
1976			115			57
5/1/1977	1106.40	44.06		1106.40	44.06	
1977			116			59
5/1/1978	1560.00	41.00		1560.00	41.00	
1978			118			61
5/1/1979	2268.00	45.38		2268.00	45.38	
1979			118			61
1/11/1979	2932.80	29.31		2932.80	29.31	

Source: Same as Table II

IV. Minimum Wage Effectiveness Empirical Evidence

The minimum wage effectiveness has been the focus of intense dispute amongst the followers of the different theoretical approaches presented in section II. In fact, the available empirical evidence is not conclusive and, may be used in different interpretations supporting the alternative theories. Though inconclusive, we will try to show that the most recent data analysis tends to confirm the importance of the minimum wage in the operation of Brazilian labour markets. In this section, we present a summary of the debate on this matter and the main empirical evidence available.

There are two kinds of empirical evidence which may be taken into consideration for the analysis of the minimum wage effectiveness in. the determination of the whole Brazilian wage structure. The first is data on the relation between unskilled wage-rates (basic-wage) and the minimum wage. Not only this relation is important itself but also the evolution of the percentage of workers receiving wages close to the minimum is a fundamental parameter. If this percentage falls when the real minimum wage falls, we may say that the labour market has itself some importance for the determination of Brazilian wage rates, thus diminishing minimum wage relevance.

The second set of empirical evidence is data on the blue-collar wage structure. As we have seen, one of the hypothesis of the structuralist theory of the labour market is that the blue-collar wage-rates

profile is relatively stable and anchored on the official minimum wage through the unskilled worker's wage.

It is quite difficult to obtain systematic information on the unskilled wage-rates for the completely Brazilian industry even though some trials have been made in order to test minimum wage influence on the determination of the Brazilian wage structure. The most important attempt in the area was made by Edmar Bacha and Lance Taylor[11]. These authors built up a regression model relating the median wage in the Rio de Janeiro's industry to the minimum wage to the per-capita gross domestic product and to the cost of living index in the period 1952-1973. The per-capita GDP and the cost of living index were introduced in the model with the objective of testing the influence of inflation and productivity variations in nominal wage-rates behaviour. The results of this regression model are presented below.

$W = 1.589 + 0.476\ MW + 0.288\ CLI + 0.28$ per-capita GDP

(8.737) (6.874) (1.855) (3.133)

R^2 = 0.99

D.W. = 1.88

$\overline{W} = 1.424 + 0.519\ \overline{MW} + 0.218\ CLI$ per-capita GDP

(11.63) (8.604) (2.941)

R^2 = 0.78

D.W. = 1.6

Where:

W = nominal median wage

$\overline{W}$ = real median wage (using CLI deflator)

CLI = Rio de Janeiro's Cost of Living Index

per-capita GDP = per-capita Gross Domestic Product

MW = nominal minimum wage

$\overline{MW}$ = real minimum wage (using CLI deflator)

The numbers in parenthesis are "t" statistics of the respective coefficients. The variables are taken in natural logarithms.

As may be observed, the results show an elasticity of approximately 0.5 between the median and the minimum wage. This means that a reduction of, let's say, 10% in the real minimum wage results in a reduction of 5% in the real median wage, being this effect undoubtedly important.

[11] E. Bacha and L. Taylor "Brazilian Income Distribution in the 1960's: Facts, Model Results and the Controversy" in L. Taylor et. all. *Models of Growth and Distribution for Brazil*, Oxford University Press, New York, 1980.

These results may be criticized in two ways. In the first place, J. Wells and A. Drobny[12], in a recent article, showed that there is a high level of collinearity between the independent variables of the estimated equation.

In the second place, we may say that, although the median wage represents the lowest wages better than the average wage it is still affected by the variation of the top wages in the distribution.

In both cases, the estimated coefficient may present a statistical bias once it is difficult to correctly separate the effects of the different independent variables.

Based on these observations, J. Wells and A. Drobny studied the evolution of the unskilled Brazilian wage rates and the construction industry wages structure in the years between 1969 and 1979[13]. Using data collected for this sector by FIBGE since l969 (the only information available which relates occupation to wage) the authors attempted the estimation of cross section regression equations including 23 States of the Federation (Acre, Roraima and Rondônia were excluded because they are sparsely populated frontier States) and relating the "servente" wage (the least qualified occupation) to the regional minimum wage in each year in the period. The estimated equation is:

$W_{it} = \alpha + \beta MW_{it}$

Where W_{it} = "Servente" monthly average of hourly wage-rates in state i for year t.

i = 1 … 23

t = 1969 … 1979

MW_{it} = monthly average of hourly minimum wage in state i for year t.

All variables in nominal terms. The results are presented in table V below.

For the sub-period 1969-1974, the results are strongly consistent with the hypothesis that the official minimum wage is the main factor responsible for the determination of the wage rates of unskilled workers in the Brazilian construction industry. The values of the β coefficient lie between 0.9 and 1 (except for 1970) and the elasticity of the "servente" wage with respect to the minimum are close to 1. These results are particularly relevant, since we know that, during this period, the adjustment of wages was made below inflation, (see section III), with a consequent reduction of the real minimum wage and a fast growth of the sector.

[12] J. Wells and A. Drobny – "A Distribuição de Renda e o Salário Mínimo no Brasil: Uma Revisão da Literatura Existente", *Pesquisa e Planejamento Econômico*, December 1982.

[13] A. Drobny and J. Wells, "Salário Mínimo e Distribuição de Rendas no Brasil: Uma Análise do Setor de Construção Civil", *Pesquisa e Planejamento Econômico*, August 1983.

Table V

Cross-Section Results:

"Servente" Nominal Wages and the Minimum Wage

Years	β	t	α	t	Elasticity	f Test Ho $\alpha = 0$ $\alpha = 1$	t Test Ho $\beta = 1$	R^2	D.W.
1969	0.95[b]	13.0	0.03	1.0	0.93	1.71	0.66	0.89	2.53
1970	0.78[b]	6.9	0.15	1.9	0.76	2.55	1.63	0.62	2.22
1971	0.99[b]	12.2	0.01	0 2	0.98	0.67	0.07	0.88	2.17
1972	0.95[b]	9.7	0.05	0.7	0.93	0.91	0.52	0.82	2.56
1973	1.06[b]	12.5	-0.03	0.3	1.03	3.09	0.70	0.88	2.17
1974	1.23[b]	5.7	-0.20	0.7	1.14	3.34	1.05	0.61	1.53
1975	1.33[b]	6.0	-0.43	1.1	1.22	5.33[C]	1.50	0.63	2.02
1976	1.68[b]	8.4	-1.27[b]	2.6	20.72[c]	3.40[d]	0.77	2.77	2.17
1977	1.98[b]	9.2	-2.86[b]	3.8	1.72	24.04[C]	4.54[d]	0.80	1.50
1978	1.71[b]	10.4	-2.86[b]	3.5	1.52	24.82[C]	4.30[d]	0.83	1.30
1979[e]	1.50[b]	9.8	-2.49[b]	2.4	1.33	25.09[d]	3.29[d]	0.82	2.06

Source: A. Drobny and J. Wells, *Op. Cit.*, page 424

Obs: b - significantly different from zero at 95% level
c - f Test rejects hypothesis at 95% level
d - Significantly different from unity at 95% level
e - Based on six months only

The other sub-period, 1975-1979, have somewhat different results. The β coefficient values tend to rise above unity, and the same happens to the elasticity values. Both values reach a maximum in 1977, coming down afterwards. We may then conclude that, since that year, other factors, besides the minimum wage, have been important for the determination of the "servente" wage rate. 1974 is also a political turning point, with the beginning of a general liberalization process, which particularly favoured labour unions freedom and activism. This fact, associated to the rapid growth of the demand for labour experienced by the sector, contributed to the upward "drift" of the "servente" wage rate above the official minimum after 1974.

The time-series analysis of each state confirms the interpretation Table VI shows the results of the estimated equation for each one of the 26 states of the Federation. Quarterly information is used and the period was divided into two sub-periods: 1969.1-1973.4; and 1974.1-1979.2.

Table VI

Time – Series Results

Servente Wage Rates and the Minimum Wage

A - 1969.1-1973.4

B - 1974.1-1979.2

States	Minimum Wage		Coefficient		Intercept				t Test for		R^2		D.W.	
	A t coef.		B t coef.		A t coef.		B t coef.		Ho: β = 1 A	B	A	B	A	B
Santa Catarina	1.223[a]	27.2	1.33[a]	24.8	0.13[a]	3.2	0.32	1.5	2.87[b]	6,15[b]	0.98	0.97	1.98	1.25
R.G.do Sul	1.07[a]	30.6	1.34[a]	20.9	0.06	1.9	0.15	0.6	2.00	5.30[b]	0.98	0.96	0.94	1.27
Paraná	1.13[a]	27.3	1.02[a]	22.8	0.05	1.3	0.47[a]	2.7	3.14[b]	0.45	0.97	0.96	2.32	1.43
Minas Gerais	1.00[a]	1428.3	1.18[a]	24.3	0.00	0.4	0.04	0.2	0.0	3.71[b]	1.00	0.97	2.11	1.50
Espírito Santo	0.97[a]	50.4	1.25	25.0	0.01	0.8	0.20	1.1	1.56	5.00[b]	0.99	0.97	2.51	0.96
Rio de Janeiro	1.00[a]	42.7	1.27[a]	31.2	0.01	0.4	0.37[a]	2.2	0.0	6.63[b]	0.99	0.98	2.52	1.53
Guanabara	1.00[a]	c	1.29[a]	28.8	0.00	0.0	0.26	1.4	0.0	6.47[b]	1.00	0.98	0.18	1.53
São Paulo	1.07[a]	17.2	1.18[a]	33.1	0.06	1.0	0.25	1.7	0.13	5.05[b]	0.94	0.98	1.20	2.04
Maranhão	0.99[a]	61.2	1.00[a]	72.7	0.00	0.2	0.04	1.0	0.62	0.0	0.995	0.996	2.42	1.97
Piauí	1.01[a]	23.3	0.96[a]	44.0	0.03	1.0	0.05	0.7	0.23	1.83	0.97	0.99	1.72	1.46
Ceará	1.05	35.5	1.02[a]	39.0	0.02	1.2	0.04	0.6	1.69	0.76	0.99	0.99	1.13	1.91
R. G. do Norte	0.90[a]	9.4	0.98[a]	25.5	0.08	1.4	0.11	0.9	1.04	0.52	0.83	0.97	1.21	2.06
Paraíba	1.01[a]	41.1	1.07[a]	37.0	0.01	0.6	0.19[a]	2.2	0.41	2.42[b]	0.99	0.99	2.07	1.51
Pernambuco	1.37[a]	16.8	0.99[a]	30.9	0.15[a]	2.5	0.11	1.1	4.546	0.31	0.94	0.98	0.92	1.32
Alagoas	0.91[a]	15.5	1.10[a]	36.1	0.16[a]	4.3	0.04	0.4	1.53	3.28[b]	0.93	0.98	0.77	1.19
Sergipe	0.96[a]	29.1	1.06[a]	84.3	0.01	0.4	0.13[a]	3.4	1.21	4.77[b]	0.98	0.997	2.21	0.94
Bahia	0.98[a]	43.1	1.27[a]	28.3	0.01	0.3	0.36[a]	2.4	0.88	6.02[b]	0.99	0.98	2.54	2.18
Mato Grosso	1.15[a]	16.9	1.25[a]	26.7	0.05	1.0	0.33[a]	2.2	2.20[b]	5.34[b]	0.94	0.97	1.03	1.79
Goiás	1.01[a]	21.3	0.96[a]	26.4	0.01	0.4	0.43[a]	3.6	0.21	1.10	0.96	0.97	1.18	0.86
Distrito Federal	1.04[a]	16.4	1.05[a]	39.5	0.06	1.1	0.05	0.4	0.63	1.80	0.94	0.98	1.25	1.11
Pará	1.02[a]	41.2	1.05[a]	39.2	0.01	0.5	0.14	1.5	0.81	1.87	0.99	0.99	1.95	1.54
Amapá	0.81	15.8	0.89[a]	16.9	0.12[a]	3.2	0.61[a]	3.5	3.71[b]	2.09[b]	0.93	0.93	1.37	1.23
Rondônia	2.81[a]	13.4	1.98[a]	17.9	0.06	0.4	0.06	0.2	8.63[b]	8.86[b]	0.91	0.94	1.11	1.64
Acre	1.17[a]	13.8	1.85[a]	21.6	0.31[a]	5.1	0.74[a]	2.6	2.1	9.92[13]	0.91	0.96	1.37	1.16
Amazonas	0.34[a]	4.2	1.13[a]	9.8	0.17	1.2	0.29	0.8	0.80[b]	1.12	0.49	0.83	1.00	0.46
Roraima	0.59[a]	3.1	1.39[a]	20.0	0.66[a]	4.8	0.27	1.2	2.15	5.61[b]	0.34	0.95	0.93	1.30

Source: A. Drobny and J. Wells – *Op. Cit.*, page 431

Obs: a) Significantly different from zero at 95% level
b) Significantly different from unity at 95% level
c) Perfect fit; T - statistic 840 m.

In the period 1969.1-1973.4, 19 of the 26 States had slope coefficients which were not significantly different from unity while, in the other period 1974-1- 1979.2, 10 of the 26 States had slope coefficients which were not significantly different from unity. The Southern States were the ones where the most drastic changes occurred in the passage of one period to another (Rio Grande do Sul, Espírito Santo, São Paulo, Guanabara). This southern region is also the most developed of the country, the place where the pressure resulting from the increase of the demand for labour was more intense and the place where the strongest unions are based. Meanwhile, in the northeastern region (Maranhão, Piauí, Ceará, Rio Grande do Norte) where unskilled workers are abundant and unions are not strong, there was no significant change in the slope coefficient values. In those States, the minimum wage continued to be the predominant factor in the determination of the rates of pay of unskilled workers in construction industry.

The conclusions listed above refer to the construction industry in Brazil and to the median wage in the transformation industry in Rio de Janeiro. They show a strong dependence of the pay rates of unskilled workers on the official minimum wage.

The empirical evidence relating the percentages of workers earning salaries around the minimum are much more debatable, since there are serious deficiencies in the available data.

Table VII shows the evolution of this percentage in Rio de Janeiro and São Paulo in the years between 1961 and 1974.

Tale VII

Percentages of workers receiving between zero and 1.5 Minimum Wages

Industry = Rio de Janeiro and São Paulo 1965-1974

Years	Industrial Sector Rio de Janeiro			Industrial Sector São Paulo		
	≤ 1.0 MW	≤ 1.5 MW	≤ 2.0 MW	≤ 1.0 MW	≤ 1.5 MW	≤ 2.0 MW
1965	16.5	71.0	82.3	20.2	65.9	78.4
1966	17.8	64.1	80.1	4.8	4.2	79.5
1967	29.9	63.1	78.1	20.3	60.1	74.3
1968	16.5	60.3	76.0	18.2	54.9	70.7
1969	11.5	47.3	63.2	12.6	41.0	58.6
1970	16.7	43.7	62.1	15.4	38.6	57.3
1971	13.1	42.8	64.0	13.7	41.0	59.9
1972	10.2	43.0	61.7	13.4	39.8	57.5
1973	14.1	42.4	60.1	14.3	38.6	53.2
1974	7.1	35.4	-	8.3	29.4	-

Source: 2/3 Law Technical Reports, Ministry of Labour, quoted in R. Macedo and M. E. Garcia, Op. Cit.

At first sight, this table indicates that during the period of reduction of the minimum wage, between 1965 and 1974, there was a simultaneous reduction in the proportion of workers receiving

wages around the minimum. In other words, the more the real minimum wage fell, the least important it became for the determination of the rates of pay of unskilled workers[14].

The problem with this interpretation is that there exist two important discontinuities in the series presented, one in 1968/1969 and another in 1974, both related to the rules under which wage adjustments are made in Brazil. The CLT defines different groups of workers (and their respective unions) based on occupational and regional criteria. During the year, in different dates, each of the worker categories have their salaries adjusted according to the Wage Law escalation schedule.

Thus, each month, a predetermined group of workers have their wages adjusted. On the other hand, during the period under analysis the minimum wage was adjusted only once a year, in March, until 1968, and in May, from then on. Thus, in the exact month of minimum wage escalation adjustment, we may expect a greater percentage of workers to receive wages close to the minimum. However, as the year goes by, the different categories have their salaries adjusted, thus reducing this percentage. On the other hand, as the wage escalation indices (including minimum) depend on the inflation observed in the latest twelve months, when inflation accelerates, the escalation indices tend to increase and the difference between the wages effectively paid and the minimum wage tend to grow, thus the proportion of workers receiving wages close to the minimum declines. We call this phenomenon, which happens every year, "short-term drift". Then, in a long run analysis, what has to be observed is the evolution of the *average percentage* of workers receiving wages close to the minimum during the year. However, 2/3 Law data is collected only in April of each year.

In order to prevent misinterpretation of the statistical series three conditions must be fulfilled: 1) data should be collected in the same month every year; 2) the month of the minimum wage adjustment must not change and 3) the inflation rate has to be constant. However, while condition 1 is always fulfilled, conditions 2 and 3 are not in two occasion during the period. In the first place, until 1968 the minimum wage was adjusted in March of each year, one month before the data collection, and, from 1969 on, in May, and one month after the data collection. This is why, due to the short-term "drift" described above, and we should expect that, until 1968, the percentage of workers receiving near-minimum wages should be at a maximum, while, from 1969 on, it should be at a minimum. Therefore, we may say that the simple change of the minimum wage escalation date may have caused the observed reduction of the proportion under analysis between 1968 and 1969.

In the same way, the 1974 inflation acceleration may have been responsible for the reduction of this proportion in that same year (between 1973 and 1974, the inflation rate, measured by the General-Price Index, increased from 15% to 28% a year)[15]. Keeping this in mind, we may observe now that there is no reduction trend in the proportion of workers receiving near minimum. The series

[14] R. Macedo and M. E. Garcia, *Op. Cit.*
[15] These arguments are presented in J. Wells and A. Drobny, *Op.Cit.*, pages 905 and 906.

are indeed discontinuous both in 1968/1969 and in 1973/1974. From 1969 on, this proportion is practically maintained. Thus, it is not possible to conclude that the minimum wage lost its importance in the determination of the Brazilian wage structure.

The most recent data (though not statistically comparable) confirm the minimum wage's relevance for the definition of the rates of pay of unskilled workers. Since 1976, this information is collected every year in a census of the Brazilian formal labour market, RAIS (Relação Anual de Informações Sociais). This census is based on the firm's statements on various variables relating to their employees. We use its results for 1976 since the results for the other years were not published.

Table VIII presents the Brazilian employment distribution by regional minimum wage bands and years of schooling in 12/31/1976. Two important points may be taken into consideration in the analysis of this table:

Table VIII

Accumulated Distribution of Employment on 12/31/1976

by Regional Minimum Wages Bands and Years of Schooling

Brazil (%)

Education Level	w < 1.0 MW	w ≤1.0 MW	w ≤ 1.5 MW	w ≤ 2.0 MW	w ≤ 5.0 MW
Illiterate and not declared	7.2	36.7	62.6	76.1	94.9
Elementar literacy	7.2	29.7	60.4	76.7	97.0
lst grade/1 to 4 years of schooling incomplete	5.4	21.8	51.6	70.3	96.6
lst grade/1 to 4 years of schooling complete	4.7	18.5	45.0	62.4	94.0
lst grade/5 to 8 years of schooling incomplete	5.5	20.5	44.6	60.5	91.1
1st grade/5 to 8 years of schooling complete	4.0	15.3	33.6	47.6	84.7
2nd grade/8 to 11 years of schooling incomplete	3.6	13.7	30.9	45.9	84.1
2nd grade/8 to 11 years of schooling complete	3.0	8.2	18.7	29.4	67.7
Superior incomplete	3.0	5.8	12.4	19.9	56.5
Superior complete	3.2	4.0	7.6	11.5	32.0
Total Brazil	4.7	18.1	41.3	56.8	87.2

Source: Ministry of labour Yearbook – 1976 – Brasília, 1980, page 1017 quoted in J. Saboia – "O Salário Mínimo e a Taxa de Salários na Economia Brasileira: Novas Evidências", IEI/UFRJ, June 1983, mimeo.

Firstly, only 4.7% of the Brazilian formal sector labour force received less that the minimum wage in 1976. If we take into consideration that this percentage includes minors, whose minimum wage is half the adults', data on table VIII indicate that the minimum wage stipulates a "floor" for the formal sector's labour market wage rates.

In the second place, the percentage of workers receiving wages around minimum is higher for the lowest years of schooling bands. While more than 50% of the workers with few years of schooling received less than 1.5 regional minimum wages in 1976, this percentage felltol0%, for university

level workers.

Table IX presents this same distribution by firm's size. Again, in the small enterprises, where the least qualified employees are concentrated, the importance of minimum wage is remarkable. In firms with less than 10 employees, more than 60% of all workers received less than 1.5 minimum wages. In the biggest firms, (more than 1000 employees), we must note that more than 55% of workers received 2.00 regional minimum wages or less which is, undoubtedly, a great concentration of the distribution around the official minimum wage.

These data confirm the hypothesis that the minimum wage is a fundamental parameter in the determination of a wage "floor" in the Brazilian formal sector. However, they do not provide sufficient evidence on the minimum wage effect over the whole wage structure and over the country's income distribution. These topics will be analysed in the next section.

Table IX

Accumulated Distribution of Employment in 12/31/1976

by Regional Minimum Wages and Firm Size

Brazil (%)

Firm Size*	w < 1.0 MW	w ≤ 1.0 MW	w ≤ 1.5 MW	w ≤ 2.0 MW	w ≤ 5.0MW
less than 1 employee	4.8	51.5	74.9	85.3	98.0
1 to 5 employees	7.2	45.8	71.1	82.4	97.1
5 to 10 employees	6.6	34.6	61.6	75.1	94.8
10 to 20 employees	6.2	26.8	53.0	67.7	91.9
20 to 50 employees	5.6	20.6	46.4	61.6	89.1
50 to 100 employees	5.0	16.8	43.0	59.2	87.9
100 to 250 employees	4.4	14.1	40.9	58.0	87.3
250 to 500 employees	4.0	12.5	38.3	56.0	86.8
500 to 1000 employees	3.2	11.2	34.5	52.7	85.7
1000 and more employees	2.6	7.4	21.3	36.5	79.7

Source: Ministry of Labour Yearbook, 1976, Brasília, 1980, pages 920 to 938 quoted in J. Saboia *Op. Cit.*

* Size measured by the average number of workers during the year.

V. Minimum Wage, Employment and Income Distribution

The empirical evidence presented in the preceding section attest to the relevance of the minimum wage in the determination of Brazilian unskilled workers wage rates. However, being one of the most important parameters in the institutional process of the basic-wage determination, the

minimum wage has important effects on the country's income distribution pattern and wage-rate profile. The objective of this section is the analysis of the relation between minimum wage policy, wages and income distribution in Brazil.

According to the structuralist analytical framework, we may divide the formal labour market of semi-industrialized countries like Brazil into two different segments, which have completely distinct wage mechanisms. The first segment is composed of blue-collar and clerical workers who do not take part in the firm's direction, and the second segment is composed of administrative and managerial personnel directly or indirectly related to the firm's direction. The wage rates of both segments are based on administrative internal rules, which are relatively rigid in the short and medium runs, and which constitute the segment's wage and job structures. The basic difference between these two segments is their relationship to the prevailing conditions in the labour and product markets.

For the blue-collar segment, the internal wage structure is based on the unskilled rates of pay prevailing in the labour market, since this is the basic wage in the segment's pay structure. As the minimum wage is the relevant parameter in the determination of the unskilled worker's wage (see section IV) we may say that the minimum wage is also an important variable in the determination of the wage-rates of the blue-collar and clerical worker's segment.

Directly opposed, is the labour market segment constituted of jobs related to the firm's direction. For these, minimum wage policy is much less effective, being their rates of pay determined by the relative availability of professionals for certain occupational categories and by profit rates. Thus, in periods of fast economic growth and high profitability, salaries tend to increase at rates higher than that of the minimum wage and, of course, higher than the growth rates of the other segment's wages. When the official minimum wage is depressed, the wages of blue-collar workers decrease relatively to the other wages, increasing the wages and income concentration in the economy.

This hypothesis may be tested through a regression model having the relation between the average wage of administrative and managerial personnel and average wage of blue-collar workers, as the dependent variable and, as independent variables, the real minimum wage and industrial output variation rates. The results of the regression for the period 1963-1979 are shown in the diagram below.

Diagram I

	Intercept	$R\widehat{M}W_1$	$R\widehat{M}W_2$	$\hat{X}$	R^2	DW	F	RHO
y	1.90	-0.026		0.022	0.60	2.41	6.85	0.111
(corc)	(22.6088)	(-1.72139)*		(2.73604)				
y	1.91		-0.031	0.018	0.80	2.39	18.56	-0.006
(corc)	(33.9107)		(-3.90618)	(2.96542)				

$y = \frac{\text{average remuneration of administrative and management personnel}}{\text{average wage of blue-collar workers}}$

$\widehat{RMW}_1$ = real minimum wage variation rate deflated by FGV Cost of Living Index

$\widehat{RMW}_2$ = real minimum wage variation rate deflated by DIEESE lost of Living Index

$\hat{X}$ = industrial output variation rate

The numbers in parenthesis are "t" statistics of regression coefficients. All are statistically significant at 95% level except for (*) which is significant at 90% level.

Sources: y - Pesquisa Industrial- FIBGE - various issues.
$\widehat{RMW}_1$ and $\widehat{RMW}_2$ – see tables III and IV
$\hat{X}$ – Conjuntura Econômica IBGE-FGV various issues

The results obtained indicate that the relationship between the wages of both segments of the labour market is inversely related to the real minimum wage and directly related to the industrial output variation. In other words, a reduction of the real minimum wage also reduces blue-collar and clerical pay rates with respect to the remuneration of administrative and managerial personnel. The opposite happens to the variations of industrial output. These results support the hypothesis that the minimum wage has a much more effective influence on salaries in the first segment analysed than in the second, where remuneration depends more on the relative availability of professionals of certain occupational categories and on profit rates[16].

As administrative and managerial personnel are the workers with the highest wages in the whole wage structure (see table X) the final result of a reduction in the real value of the minimum wage is an increase of wage concentration in the formal sector of the economy.

Table X
Relation Between the Average Remuneration of Administrative and Managerial Personnel and the Average Wage of Blue-Collar Workers in the Brazilian Industry
Brazil 1963-1979

Year	Average remuneratian of administrative and managerial personnel / Average wage of blue-collar workers
1963	1.96
1964	1.94
1965	1.85
1966	-
1967	2.11
1968	2.22
1969	2.23
1970	2.11
1971	-
1972	2.43
1973	2.48
1974	2.38
1975	1.81
1976	2.14
1977	2.10
1978	1.75
1979	1.95

Source: Industrial Census - FIBGE - various issues.

[16] We must remark that these results were obtained in spite of the inclusion of same workers' categories who have their payments effectively determined by the minimum wage (like secretaries for example) in the administrative and managerial group of workers i.e. some jobs which are not related to the firm's direction were included in the second group.

We must analyse now the relationship between minimum wage and employment in the Brazilian economy. As we have seen in section II the different theoretical approaches have opposite conclusions regarding this point. While neoclassical theory and subsistence wage theory conclude that a rise of the real value of minimum wage reduces employment in the formal sector, the structuralist theory supports that the employment level of the formal sector is determined by the effective demand for its products having little or no relation to the prevailing wage rates. Obviously the final result of increases and reductions of the real value of the minimum wage on income concentration pattern will depend on the effects of these variations on the formal or sheltered sector's level of employment (see section II).

In order to examine the relation between the real minimum wage value and the employment level in the formal sector we estimated equations in which the dependent variable is a natural logarithm of the industrial employment level and the independent variables are natural logarithm of real average wage in the industrial sector w (which, as we have seen, depend on the minimum wage), of the total industrial output, x, and of time t. These equations reflect the productivity increases of the period 1966-1976. The results are presented in diagram II below:

Diagram II

	Intercept	log x	log w	log t	R^2	DW	F	RHO
log y	2.25	0.72	-0.04	-0.18	0.99	1.67	490.007	0.28
(corc)	(4.68649)*	(4.22535)*	(-0.308164)	(-1.65131)**				
log y	3.89		-0.14	0.44	0.99	1.75	382.601	0.97
(corc)	(22.1797)		(-0.674445)	(4.29544)*				
log y	2.32	0.70		-0.18	0.99	1.71	808.065	0.30
(corc)	(5.90194)	(4.58075)		(-1.64914)**				

Source: y and w – Pesquisa Industrial – FIBGE – various issues
x – Conjuntura Econômica – IBRE/FGV – various issues
Numbers in parenthesis are "t" statistics of the respective coefficients
* statistically significant at 95% level
** statistically significant at 90% level

As may be observed, the industrial level of employment is insensitive to variations in the real average wage of industrial workers and is directly related to the volume of industrial output. The employment elasticity with respect to the production level is approximately 0,7. i.e., an increase of, let's say, 10% in the production level, generates an increase of 7% in the number of industrial jobs. If we take the variable real average wage out of the regression equation, the level of production coefficient does not change.

Based on these results we may say that the level of employment in the formal sector of the Brazilian economy depend on the production level (and of total demand), having little or no

connection to the real wage rates paid to workers of that sector.

The information analysed up to now allows us to conclude that the minimum wage is quite relevant for the determination of a wage "floor" for the labour market of the Brazilian formal sector. Furthermore, we may say that this sector is in fact divided into two distinct segments with different mechanisms of wages determination. On the one hand, the blue-collar and clerical categories of workers (with no relation to the firm's administration) whose salaries depend on the minimum wage and, on the other hand, the managerial personnel (directly related to the firm's administration) whose remuneration depend on production level and profit rates. Finally, we have shown that the level of employment in the formal sector depend on the volume of industrial output with little sensitivity to the variation of industrial real wage rates.

Thus, an economic policy which reduces the real minimum wage value has the effect of reducing the average wage of every blue-collar worker as compared to the average remuneration of the other segment. As employment in this sector is not affected by the real wage level prevailing in the labour market, the effect of this policy is to increase income concentration.

If the level of industrial output is increased, there will be a greater wage concentration (since the remuneration of administrative and managerial workers is increased as compared to the pay of production-line workers), as well as a higher level of employment in the formal sector, with the absorption of workers of the informal sector. If the official minimum wage is higher than the per-capita income of workers in the informal sector, this would probably mean an increase in the real income level of this last group of workers, even if the official real minimum wage is falling. The final results, in terms of income concentration, will depend, in this case, on the relative elasticities involved in this process and also on real minimum wage and industrial output evolutions.

In this context, the evolution of income concentration levels in Brazil reflect a strong influence of official minimum wages. Table XI shows the Gini coefficient for the years: 1960, 1970, 1972, 1976 and 1980.

Table XI
Gini-Coefficient – Brazil

Years	Gini-Coefficient
1960	0.500
1970	0.562
1972	0.622
1976	0.589
1980	0.580

Sources: 1960 C.G. Langoni – *Distribuição de Rendas e Desenvolvimento Econômico no Brasil*, Editora Expressão e Cultura, Rio de Janeiro, 1973, page 62
1970, 1972, 1976 – "Income Distribution in Brazil", United Nations Department of International Economic and Social Affairs, Technical Paper nº 2, New York, March 1983
1980 – R. Hoffman – "Distribuição de Rendas no Brasil em 1980, por Unidades da Federação", *Revista de Economia Política*, jan-march 1983

As may be observed, Brazilian income concentration increased in the sixties and in the early seventies, following the real minimum wage reduction trend. From 1974 on, income concentration decreases, still following the real minimum wage trend. Naturally, 1974 was also a turning point in the relation between the wage rates of the two different segments of the labour market.

Together with the reduction of the real minimum wage, the industrial output yearly growth rates reached the impressive levels of twelve to fifteen percent some years between 1967 and 1974. From that year on, industrial output growth rates decrease to comparatively low levels, around seven to eight per cent a year, although these are still high if compared to international standards.

The reduction of the real minimum wage and the fast industrial expansion may have been the most important economic forces pressing for greater income concentration in the years between 1960 and 1974. Henceforth, the increase of real minimum wage associated to the relatively modest industrial expansion seems to have contributed to reduce the coefficients of income concentration in the late seventies.

VI. Conclusions

The main objective of this work is the analysis of the effects of minimum wage policy in Brazil, in the years between 1960 and 1980. A summary of the different theoretical approaches used by experts on the subject has been made. Hence, some empirical evidence has been presented tending to support the idea that the minimum wage is the relevant parameter for the determination of the rates of pay of unskilled workers in Brazil. Next, we have shown that the segmentation of the labour market of the formal sector allows the clerical and blue-collar pay rates to be tied to the official minimum wage, while the remuneration of administrative and managerial workers is determined by profit rates and by the relative availability of professionals of different occupational categories. Finally, we have shown that Brazilian industrial employment depends on output levels and not on the prevailing real wage rates. As a result, we concluded that the reduction of real minimum wage which occurred between 1964 and 1974, associated to the fast industrial expansion, were the variables responsible for the country's increasing income concentration in the period 1960-1974. From then on, the real minimum wage tended to increase and, as a result, in the late seventies, the Brazilian income was not as concentrated as it had been in the preceding years.

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