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"BARGAINING POWER, MARK-UP POWER, AND
PRICE AND WAGE DIFFERENTIALS IN BRAZIL,
(1976-1985)"

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Abstract:

This paper examines four empirical questions concerning the movement of relative wages and prices in the Brazilian industry between 1976 and 1985, namely: (i) Is there a relationship between the capacity of firms to index (or 'over-index') costs and the bargaining power of unions, in the same industry? Answer: yes, a positive correlation. (ii) Can we identify 'star winners' and 'star losers' amongst relative wages and prices over the period under consideration? Answer: yes, there are winners and losers. (iii) Does the relative (to the average) bargaining power of unions and relative mark-up of firms play any role in explaining changes in wage and price differentials? Answer: yes, they are quite important. (iv) Is there any marked tendency in the behaviour of the dispersion of the relative power of unions and of the mark-up power of firms over the period? Answer: yes, dispersion of both fall.

Resumo:

Este trabalho examina quatro questões empíricas sobre o movimento de diferenciais de preços e salários na indústria brasileira entre 1976 e 1985, são elas: (i) Existe alguma relação entre a capacidade das firmas de indexar (ou sobre-indexar) custos e o poder de barganha dos sindicatos, em uma mesma indústria? Resposta: sim, uma correlação positiva. (ii) Podemos identificar 'ganhadores' e 'perdedores' entre os salários e preços relativos ao longo do período em consideração? Resposta: sim, há ganhadores e perdedores. (iii) O poder relativo (com respeito à média) de remarcar custos das firmas e o poder de barganha relativo dos sindicatos têm alguma importância para explicar o comportamento dos preços e salários relativos, respectivamente? Resposta: sim, eles são muito importantes. (iv) Há alguma tendência clara no movimento da dispersão dos poderes de barganha dos sindicatos e de remarcar custos das empresas ao longo do período? Resposta: sim, ambas as dispersões caem.

1. Introduction -

Is there a relationship between the capacity of firms to index (or 'over-index') costs and the bargaining power of unions, in the same industry? In other words, if firms in a certain industry are able to over-index their costs does this tell us anything about their attitude in bargaining with unions, and hence the degree of indexation of wages to inflation? These are the central questions concerning the Brazilian industry we ask in this paper. We are concerned also with the factors accounting for the movements in relative wages and prices, and the degree of dispersion of relative wages and prices as annual inflation accelerated from 40% in 1976 to 250% in 1985.

The Relation between Bargaining Power and Mark-up Power

The relation between the determination of wages and prices in a given industry is intimately associated with the competitive structure faced by the firms in the goods market and the institutional setting based on which labour unions organize and collective bargaining takes place. The product and labour markets have their own dynamics, but they certainly interact, and the nature of such interaction may be an important element in understanding the movement of relative wages and prices.

In the case of the Brazilian industry, until very recently, because the economy was quite closed, and the degree of industrial concentration was significant in most sectors, price leaders were able to fix their prices with little risk of losing their market shares. There are, however, factors which explain differences in the capacity of firms in each sector to index their costs. One is price controls which have been effective in certain periods. The other are differences in the 'degree of oligopoly' of industries due to product differentiation, barriers to entry, monopoly

rights, etc.

As for the structure of collective bargaining, the most prominent feature in the Brazilian case is the decentralized and desynchronized way in which wages are set. Unions are organized on a regional basis, most of them at the municipal level, and each union negotiates once a year with the corresponding firm. Negotiations are scattered over the year. Since the early '80's there has been a tendency towards a greater degree of centralization of collective bargains within industries. In industries where this has happened, the bargaining power of unions increased not only because they were able to mobilize a greater number of workers, but also because there is a tendency for firms to become more tolerant when negotiating together with their competitors in the goods market. Calmfors and Driffill (1988, p. 33) have an interesting argument which lends some support to this idea:

As unions get larger, they acquire greater market power. In an individual firm, workers have little market power. Indeed, any isolated increase in the nominal wage results in a large employment fall, since the firm is unable to raise its output price unless all firms in the industry do so. But, if the union were to control labour supply to all firms within the industry, its market power would grow. Indeed, each firm within the industry has the same incentive to raise its output price which, therefore, rises in the whole industry... Consequently, an industry union tends to set a higher wage.

The centralization of negotiations within industries tends to raise both the bargaining power of unions and market power of firms. The opposite is true in industries in which negotiations are less centralized. This might be an important factor in explaining the positive correlation between their movements over time.

Another aspect concerning collective bargaining is the growth of the labor movement in Brazil since 1977-78, and the creation of two important and quite

powerful central unions around 1981-82. The average capacity to mobilize workers and the level of labour activism due to these factors has increased dramatically and has spread out over the economy. There are, indeed, evidences of an increase in the bargaining power of workers after 1976.² On the other hand, the significant differentiation between the bargaining power of unions of the late seventies gave place to a gradual dissimination of labour activism and labour power.

In order to understand the evolution of relative wages and prices in the Brazilian industrial sector, as well as the relation between the mark-up power of firms and the bargaining power of unions in the same industry, it is important to bring inflation into the analysis. Inflation is a chronic phenomenon in Brazil --one with which agents have learned to live and defend themselves against. Indexation is the key word here. How effectively can unions index wages to consumers' price inflation, and how effectively can firms index their prices to the rise in costs? What concerns us here is the possibility of over-indexation of wages and prices in certain industries, and the 'under-indexation' or 'just-indexation' in other industries. This, together with the differences in the evolution of labour productivity and costs in different industries, is what accounts for the movement in wage and price differentials.

The hypothesis being tested in this paper is whether or not the relative (to the average) bargaining power of unions is correlated to the relative mark-up power of firms in the same industry. There are reasons to believe that there is a positive correlation between them.³ If firms in an industry are able to mark-up (or

² As noted in Amadeo (1990), real wages in the industrial sector increased on average 35% between 1976 and 1985.

³ The reasons for a positive correlation were

over-mark-up) costs with a small risk of losing their market shares --and the degrees of oligopoly and of centralization of wage negotiations within the industry are important factors in this respect-- they tend to become more tolerant in the process of wage bargaining. In being tolerant they avoid the costs of conflict with unions, and at the same time, increase the bargaining power of the latter as measured by the degree of indexation of wages to consumer prices inflation. A symmetric argument applies to industries in which firms face market constraints to fix prices or negotiations are decentralized.

There are two subsidiary questions in this inquiry. The first refers to the relation between the acceleration of inflation and changes in wage differentials: Can we identify 'star winners' and 'star losers' amongst relative wages and prices over the period of acceleration of inflation that goes from 1976 to 1985? The second question is associated with the sources of changes in price and wage differentials: Does the relative (to the average) bargaining power of unions and relative mark-up of firms play any identifiable role in explaining changes in wage and price differentials?

Wage and Price Dispersion

When inflation is high and accelerating agents stop looking to the past and start looking to the future. They form expectations concerning the evolution of the relevant inflation for each one of them, and try to fix their prices accordingly. The dispersion of expectations together with the differentiation in the market power of the agents induces an increase in wage and price differentials, and thus in the degree of wage first discussed in Camargo (1990) and Amadeo and Camargo (1989).

and price dispersion.⁴

There are, however, forces acting in the other direction. In the case of Brazil, one important element is the effectiveness of the wage policy, that is, the extent to which there is 'wage drift' in relation to the indexation parameter recommended (but not enforced) by the government. The level of excess demand (or supply) in the economy is an important factor in determining the effectiveness of the wage policy: when unemployment rises, the number of unions which are able to over-index prices falls, and the wage policy becomes the rule in most negotiations. The shortening of the indexation period of wages to inflation according to the wage law also tends to level out the bargaining power of unions, and thus the movement of relative wages. Finally, the growth of the union movement and the activities of the central unions also work in the direction of reducing the dispersion between the bargaining power of unions.

Hence, the final question examined in the paper is concerned with the dispersion of the relative bargaining power of unions, and indirectly, the dispersion of the relative mark-up of firms, and of relative wages and prices.

The rest of the paper is organized as follows. In section 2 we define the relevant variables for the analysis, in particular, the bargaining power and the mark-up power. In section 3 we present empirical tests

⁴ On the other hand, the greater the decentralization of wage negotiations (in the economy not within industries), the greater the inflationary pressures for, as noted by Jackman (1988, p. 17),

in a decentralized system, each union pushes up its money wage in the hope of gaining higher real wages. In the outcome, the result is a general rise in all money wages... The economy experiences inflation, which in turn leads to higher money wage claims as unions attempt to protect their real wages. Each individual union perceives itself as caught up in an inflationary spiral which its own individual actions are powerless to prevent.

for the questions posed above. Section 4 concludes.

2. Definitions

When negotiating wages, unions try to recover the purchasing power losses of wages incurred due to inflation since the last round of collective bargain. They also negotiate the 'real increase' in wages due to changes in the productivity of labour. In short, we assume that unions in industry j try to fix the wage in period t according to the following equation:

$$[1] \quad d(w_t^j) = w_{-12}^j [1 + d(\lambda_t^j) \hat{e}_t^j]$$

where $d(w_t^j)$ is the desired wage, w_{-12}^j is the wage level corresponding to the last negotiation (same month in last year), \hat{e}_t^j accounts for the sum of consumer price inflation and change in labour productivity in sector j since the last negotiation,⁵ and $d(\lambda_t^j)$ is the 'desired indexation factor', that is, the factor according to which the union would desire to index past inflation plus productivity changes.

The actual indexation factor, however, depends on the negotiation and will be at most equal to the desired indexation, that is, $\lambda_t^j \leq d(\lambda_t^j)$. We will refer to the actual (or ex-post) indexation factor as the 'bargaining power of the unions'. Hence the actual wage level will be given by:

$$[2] \quad w_t^j = w_{-12}^j [1 + \lambda_t^j \hat{e}_t^j]$$

⁵ The following notation will be used:

$$\hat{e}_t^j = \hat{p}_t + \hat{\delta}_t^j$$

where \hat{p}_t is the rate of consumer price inflation and $\hat{\delta}_t^j$ is the rate of variation of labour productivity.

and the proportional rate of variation in wages in sector j will accordingly be given by:

$$[3] \quad \hat{w}_t^j = \lambda_t^j * \hat{e}_t^j$$

From equations [2] and [3] we can define the index of wage differential (relative to the average) of industry j in period t :

$$[4] \quad r_{v,t}^j \equiv \frac{w_t^j}{w_t} \equiv \frac{w_{-12}^j * (1 + \lambda_t^j \hat{e}_t^j)}{w_{-12} * (1 + \lambda_t \hat{e}_t)}$$

and the ratio between changes in money wages in industry j and in the industrial sector as a whole which is, in fact, a measure of the change in the wage differential:

$$[5] \quad R_{v,t}^j \equiv \frac{\hat{w}_t^j}{\hat{w}_t} \equiv \frac{\lambda_t^j}{\lambda_t} * \frac{\hat{e}_t^j}{\hat{e}_t}$$

According to equation [5], a change in the relative wage of industry j can be decomposed into two parts: one which accounts for the relative (to the average) bargaining power and another which accounts for the ratio between changes in the inflation plus productivity factor. Note that if the bargaining power in all industries were the same (that is, $\lambda^j = \lambda$, for all j) changes in wage differentials would depend only upon the differences in changes in labour productivity, ie, the second component part in equation [5].

The determination of the price in industry j in period t follows the same logic. The actual price will be given by the following equation:⁶

⁶ Note the difference between the consumer price index (p) --the relevant price from the point of view of the workers-- and the wholesale industrial price

$$[6] \quad \pi_t^j = \pi_{-12}^j (1 + \varepsilon_t^j \hat{c}_t^j)$$

where ε_t^j is the ex-post mark-up power (at most equal to the desired mark-up) and \hat{c}_t^j is defined as follows:

$$\hat{c}_t^j = \gamma^j (\hat{w}_t^j - \hat{\delta}_t^j) + (1 - \gamma^j) \pi_t$$

that is, the rate of change in direct costs which, we assume, is given by the sum of the change in labour costs (that is, in money wages net of changes in productivity) and the variation in material direct costs as represented by the change in the average wholesale industrial price (π). Each of the two cost components are multiplied by their weight in total direct costs (γ^j in the case of labour costs and $1-\gamma^j$ in the case of the others).⁷ It is assumed that the composition of the basket of goods which accounts for the material direct costs of all industries is the same, and equal to the composition of the basket which composes the average wholesale industrial price index.^B

We can now write the analogons of equations [4] and [5] for the case of industrial prices:

$$[7] \quad r_{\pi,t}^j \equiv \frac{\pi_t^j}{\pi_{-12}^j} \equiv \frac{\pi_{-12}^j (1 + \varepsilon_t^j \hat{c}_t^j)}{\pi_{-12}^j (1 + \varepsilon_t^j \hat{c}_t^j)}$$

and

(π)--the relevant one from the perspective of the firms.

⁷ The value of γ in each sector is given by the share of the wage bill in direct or variable capital in the year of 1977.

^B This is an admittedly bad assumption for it reduces the degree of specificity of the industries which accounts for changes in relative prices. However, the simplifying assumption is an imposition of the data available.

$$[8] \quad R_{\pi,t}^j \equiv \frac{\frac{\hat{\pi}_t^j}{\pi_t}}{\frac{\hat{c}_t^j}{c_t}} \equiv \frac{\varepsilon_t^j}{\varepsilon_t} * \frac{\hat{c}_t^j}{c_t}$$

Again, as in the case of equation [5], the ratio between changes in the price of industry j and the average price can be decomposed into the relative mark-up power of the industry and the ratio between changes in costs in industry j and in the industrial sector as a whole. If the mark-up power of firms in all industries were the same ($\varepsilon^j = \varepsilon$), changes in relative prices would depend only upon the relation between changes in costs.

3. Empirical analysis ⁹

We now turn to the empirical questions posed in the introduction, that is, (1) the existence of winners and losers amongst relative prices and wages, (2) the sources of changes in relative wages and prices, (3) the relation between movements of the relative bargaining power and the relative mark-up power within the same industry, and (4) the dispersion of relative bargaining and mark-up powers over time.

3.1 The Evolution of Wage and Price Differentials

In Table 1 we list: i) the average values of the indexes of relative wages ($r_{w,t}^j$) and prices ($r_{\pi,t}^j$) as defined in equations [4] and [7] over the period 1976-1985; (ii) the average values of changes in wage differentials ($R_{w,t}^j$) and price differentials ($R_{\pi,t}^j$) as defined in equations [5] and [8]; and iii) the correlations between $r_{w,t}^j$ and $r_{\pi,t}^j$, and $R_{w,t}^j$ and $R_{\pi,t}^j$.

⁹ The source of the data is the Monthly Industrial Survey (PIM) of the Brazilian Institute of Statistics and Geography (IBGE).

Table 3
Evolution of Price and Wage Differentials (1976-1985)

	r_v^*	r_n^*	$cor(r_v, r_n)^{**}$	R_v^+	R_n^+	$cor(R_v, R_n)^{**}$
<u>Star Winners</u>						
Rubber	119	118	0.79(0)	1.08	1.10	-0.16(+2)
Ext. Ind.	112	125	0.88(0)	1.08	1.15	0.30(+2)
Pharma	109	106	0.49(+3)	1.05	1.04	-0.24(+1)
Metallurg	104	111	0.57(-2)	1.04	1.06	0.26(+1)
<u>Mixed Performances</u>						
Elect&elec	107	91	0.81(-3)	1.04	0.97	0.20(-2)
Chemicals	105	97	0.47(+3)	1.03	0.98=	0.09(-3)
Paper	102	95	-0.51(0)	1.02	0.98=	0.20(-3)
Textiles	101	88	0.10(-3)	1.00	0.95	-0.23(-1)
Foodstuff	97	102	0.55(+3)	0.98	1.00=	0.25(+2)
<u>Average Performances</u>						
Process	99	94	0.87(0)	0.99=	0.99=	0.35(+1)
Transport	100=	100=	0.65(+3)	0.99=	1.03=	0.28(-2)
Mechanic	98	97	0.44(-2)	1.00=	1.00=	0.34(-3)
Tobacco	98	99=	-0.43(+3)	0.99	1.02=	-0.38(+2)
<u>Star Losers</u>						
Liquors	81	91	0.49(0)	0.91	0.98=	-0.36(-2)
Perfums	93	94	0.26(+3)	0.98	0.95	0.26(-3)
Cloth	93	96	-0.56(0)	0.97	1.00	-0.24(0)
Plastic	93	88	0.73(0)	0.97	0.94	0.21(+1)

(*) Average relative wage (r_v^j) and relative wholesale price (r_n^j) over the period (1976 - 1985) in comparison with General Industry. 1976.1 = 100 for wages and prices in all sectors.

(+) Annual average rate of variation of rel. wages (R_v^j) and wholesale prices (R_n^j) over the period (1976-1985) in comparison with General Industry.

(**)Correlation between relative wage and price (or rates of variation). The numbers in parenthesis indicate the lag (-) or lead (+) of relative prices (or their rate of variation) in which the highest correlation with relative wages (or their rate of variation) was observed. (0) indicates that the contemporaneous correlation was the highest observed.

= Not significantly different from 100 (rel. wages and prices) or 1.00 (rates of variation of rel. wages and prices) at 5% level of significance.

We first note that there are, indeed, star winners and star losers. Both relative wages and prices are winners in the rubber, extractive, pharmaceutical and metallurgical industries. Both wages and prices are losers in the liquors, perfume & candle, clothing and plastic industries. The panels in figure 1 show the movements of $r_{w,t}^j$ and $r_{\pi,t}^j$ for some of the star winners and losers. There are industries in which neither relative wages nor prices changed significantly in relation to the average over the period under consideration. They had, so to speak, 'average performances' (process, transport, mechanic, and tobacco). Finally, there are sectors in which wages were winners and prices were losers (electronics & telecommunications and chemicals) and in which the opposite took place (foodstuff).

Figure 1(a)

FOODS

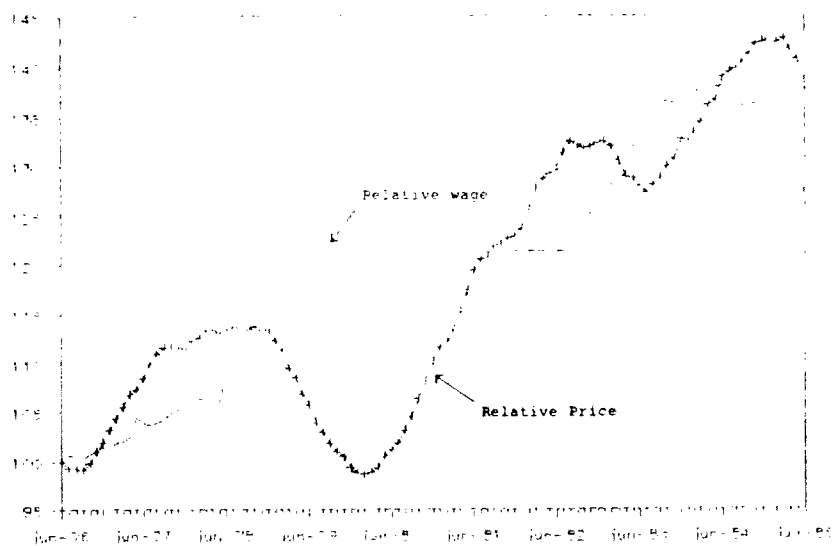


Figure 1 (b)

EXTRACT INDUST.

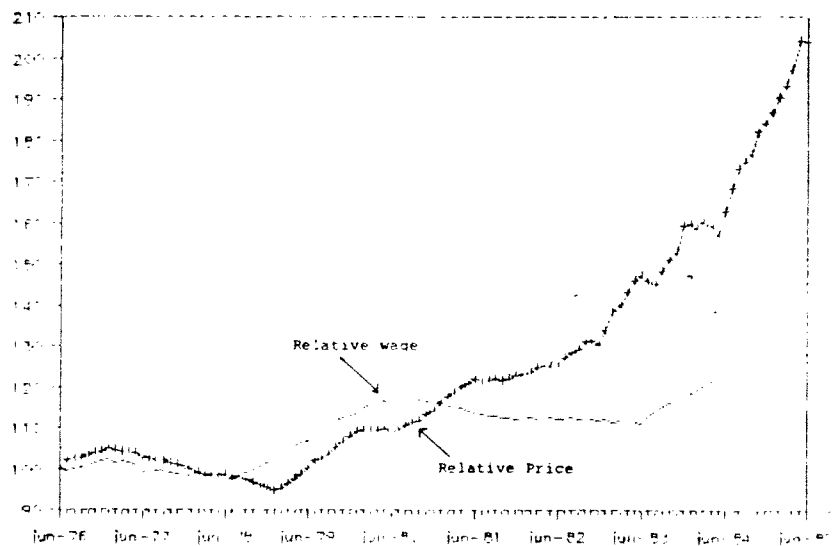


Figure 1 (c)

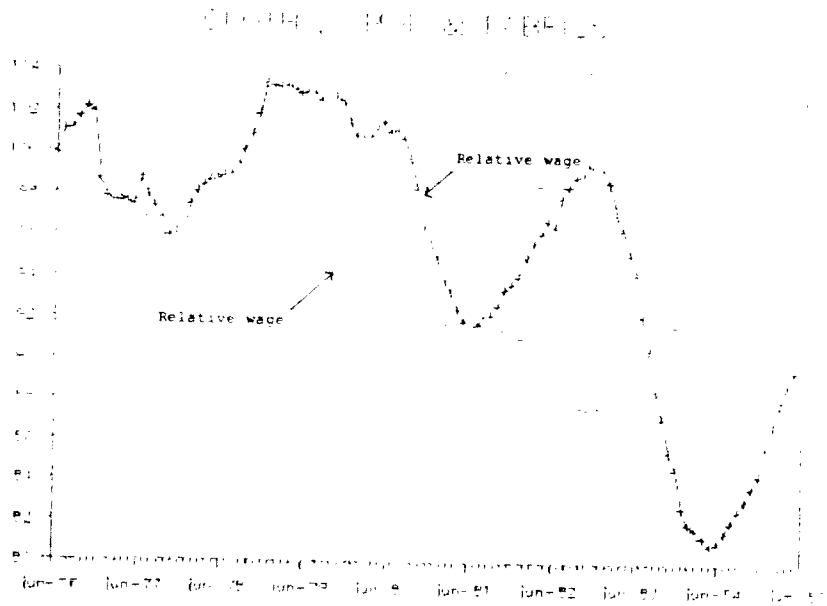
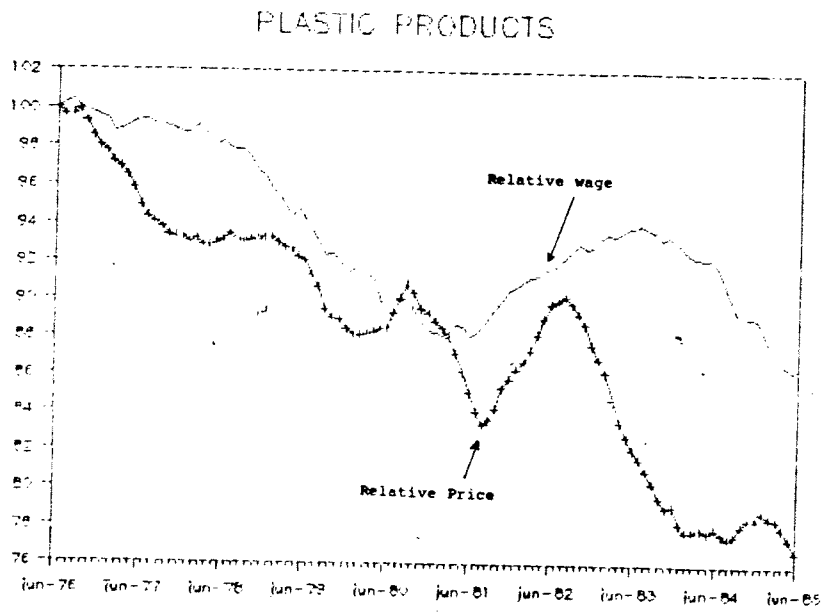


Figure 1 (d)



It is interesting that except for a few cases, the correlation between the movements of relative wages and prices, $\text{cor}(r_{v,t}^j, r_{\pi,t}^j)$, was positive and significantly different from zero; and that in the majority of the cases, the correlation between the indexes of changes in relative prices and wages, $\text{cor}(R_{v,t}^j, R_{\pi,t}^j)$, was also positive. However, the fact that these correlations are positive does not imply necessarily anything about the correlations between relative bargaining powers (λ^j/λ) and relative mark-up powers ($\varepsilon^j/\varepsilon$). For as we noted already, the evolution of relative wages and prices depends not only on the movements of relative bargaining powers and mark-up powers, but also on the relative movements of labour productivity and the composition of direct costs.

3.2 Sources of Changes in Wage and Price Differentials

There are two sources of change for variations in the relative wage of a given sector j as represented by the ratio R_v^j given by equation [5]. One is the relative bargaining power (λ^j/λ) of the sector and the other is the ratio between changes in the sum of consumer price inflation plus labour productivity in sector j and the industrial sector as a whole (\hat{e}^j/\hat{e}). In order to evaluate the weight of each of these sources, we take the log of both sides of equation [5] and then divide them through by $\log [R_v^j]$ thus obtaining:

$$[9] \quad 1 \equiv \frac{\log [\lambda_t^j / \lambda_t]}{\log [R_{v,t}^j]} + \frac{\log [\hat{e}_t^j / \hat{e}_t]}{\log [R_{v,t}^j]}$$

The first ratio in the right hand side of equation [9], that is, $\log [\lambda_t^j / \lambda_t] / \log [R_{v,t}^j]$, provides a measure of the relative bargaining power's share in 'explaining' changes in relative wages. This ratio is

positive whenever the relative wage in sector j grows faster (slower) than the average wage and the bargaining power in sector j is greater (smaller) than the average. When this ratio is greater than 0.5 the share of λ^j/λ in explaining changes in relative wages is greater than the share of \hat{e}^j/\hat{e} . On the other hand, if the ratio is negative it means that the relative bargaining power is greater (smaller) than one when wages in sector j grow slower (faster) than the average wage.

Table 2(a) presents the annual average values of the ratio $\log [\lambda_t^j / \lambda_t] / \log [R_{w,t}^j]$ for a sample of star winners and losers. In most years, the ratio is positive and greater than 0.5 implying that the relative bargaining power index explains most of the changes in relative wages.

Table 2 (a)

**Share of Relative Bargaining Power
over the Variation of Relative Wages
(Annual Averages)**

Star Winners

	Rubber	Ext Ind	Pharm	Metallurg.
1977	2.62	0.68	4.10	0.37
1978	0.25	1.40	-1.93	0.47
1979	0.78	-0.18	0.74	1.35
1980	0.86	1.07	3.37	1.97
1981	-0.86	-0.05	0.37	4.48
1982	1.23	3.30	1.73	0.79
1983	1.32	-1.67	1.18	2.10
1984	3.16	0.11	3.83	0.99
1985	0.71	0.89	0.83	0.77

Star losers:

	Liquors	Perfums	Cloth	Plastic
1977	-1.82	-0.85	0.50	0.06
1978	0.79	2.71	0.52	1.27
1979	0.08	2.40	-0.69	1.01
1980	1.28	1.41	0.98	1.46
1981	2.45	0.22	1.12	0.24
1982	0.86	3.97	2.23	0.20
1983	1.84	0.21	1.26	1.57
1984	0.82	0.91	-1.67	-1.45
1985	0.89	-0.89	1.32	0.83

Table 2(b)

Share of Relative Mark-up Power over
The Variation of Relative Prices
(Annual Averages)

Star Winners

	Rubber	Ext. Ind.	Food	Metalurg.
1977	0.96	0.18	1.87	1.06
1978	0.78	0.88	1.08	1.04
1979	0.10	0.99	-0.22	2.67
1980	1.03	1.01	0.97	0.87
1981	0.97	0.97	0.85	1.22
1982	0.76	1.29	0.94	0.93
1983	1.03	1.33	0.54	0.96
1984	0.93	1.10	0.72	1.10
1985	1.02	1.16	1.27	1.81

Star Losers

	Liquors	Perf.	Cloth	Plastic
1977	0.90	0.94	0.94	1.25
1978	1.45	0.69	0.70	0.18
1979	0.88	1.35	0.74	1.15
1980	1.04	0.48	2.10	0.88
1981	0.95	1.02	0.99	1.01
1982	0.91	0.90	0.89	0.98
1983	1.10	0.97	0.92	0.94
1984	0.76	1.42	0.96	1.12
1985	0.83	1.37	1.05	0.89

We may apply an analogous operation for equation [8] to obtain:

$$[10] \quad 1 \equiv \frac{\log [\varepsilon_t^j / \varepsilon_t]}{\log [R_{\pi,t}^j]} + \frac{\log [\hat{c}_t^j / \hat{c}_t]}{\log [R_{\pi,t}^j]}$$

Table 2(b) presents the annual average values of the ratio $\log [\varepsilon_t^j / \varepsilon_t] / \log [R_{\pi,t}^j]$. The conclusion we reach is that the share of the relative mark-up power factor in explaining changes in relative prices is clearly greater than the share of changes in relative costs.

3.3 The Relation between the Bargaining Power and the Mark-up Power

We turn to the analysis of the correlation between the relative bargaining power and the relative mark-up power in the same industry. In table 3 we list the average values of λ^j / λ and $\varepsilon^j / \varepsilon$ over the period 1976-1985 as well as the correlation between the two series.

Notice that in the case of the star winner, the average values of λ^j / λ and $\varepsilon^j / \varepsilon$ are always greater than 1; whereas they are at most equal to one in the case of the star losers. This is yet another evidence that the relative bargaining power and the relative mark-up power are important elements in explaining the performances of relative wages and prices respectively.

Table 3
Relative Bargaining and Mark-up Power (1977 -85)

	Avg (λ_j)	Avg (ϵ_j/ϵ)	Cor ($\lambda_j/\lambda, \epsilon_j/\epsilon$) [*]
<u>Star Winners</u>			
Rubber	1.08	1.09	0.52 (+3)
Ext. Ind	1.06	1.13	-0.11 (+3)
Pharm	1.10	0.99=	0.13 (-1)
Metallurg	1.08	1.06	0.41 (+3)
<u>Mixed Performances</u>			
Elec & Telec	1.01=	0.95	0.26 (+3)
Chemicals	1.00=	0.99=	0.78 (+3)
Paper	1.00=	0.96=	0.50 (-3)
Textiles	0.98=	0.95	0.37 (-1)
Foodstuff	1.01=	1.04	0.80 (-3)
<u>Average Performances</u>			
Process	0.99=	0.97	0.23 (+3)
Transport	1.03	1.03=	0.39 (+3)
Mechanical	1.04	0.98=	0.68 (-3)
Tobacco	0.98	1.04=	-0.50 (+3)
<u>Star Losers</u>			
Liquors	0.93	1.00=	-0.55 (-1)
Perfumes	0.98=	0.95	0.57 (-3)
* Cloth	0.99=	1.00=	n.s.
↓ Plastic	0.99	0.95	0.26 (-3)

(*) The numbers in parenthesis indicate the lag (-) or lead (+) of the relative mark-up power (ϵ_j/ϵ) in which the highest correlation with the relative bargaining power (λ_j/λ) was found. (0) indicates that the contemporaneous correlation was the highest observed.

= Indicates that the average relative bargaining power of mark-up power is not different from 1.00 at the 5% significance level.

n.s. Correlation is not significantly different from zero.

The correlation between the bargaining and mark-up powers are positive and significantly different from zero in all sectors with the exception of four of them, thus confirming the hypothesis that, in general, the capacity to mark-up costs of firms has a positive influence over the capacity of unions in the same industry to index their wages. This seems to be a strong evidence that there is a relationship between the capacity of firms in a certain industry to index costs, on the one hand, and their attitude in negotiating with unions and the degree of indexation of wages to prices, on the other hand.

3.4 Dispersion of Bargaining and Mark-up Powers

It is a well known stylized fact that relative price dispersion increases with the acceleration of inflation.¹⁰ In an economy in which wages are set in a decentralized and desisychronized fashion one would expect the same to be the case with relative wages.

In face of the evidences provided above, that is, that the bargaining power of unions and the mark-up power of firms are important factors in explaining the movements of relative wages and prices, respectively, we should expect that their dispersion would either remain constant or increase with the acceleration of inflation. But this is not the case; Figure 2 shows the behaviour of the coefficient of variation of the relative bargaining power and the relative mark-up power between 1977 and 1985, and it is evident that they both fall quite sharply. Also, Figure 3 shows that the dispersion of annual variations of wages and prices falls over the period.¹¹

¹⁰ See Fischer (1981) and Vining & Elwertowski (1976).

¹¹ It is important to note that the reduction in the dispersion of indexation factors of wages and prices (or relative bargaining and mark-up powers) does not imply a reduction in wage and price dispersion. In fact, all we can say is that if the dispersion of wages

and prices is indeed increasing, the rate according to which it is increasing is gradually falling over time.

Figure 2 (a)

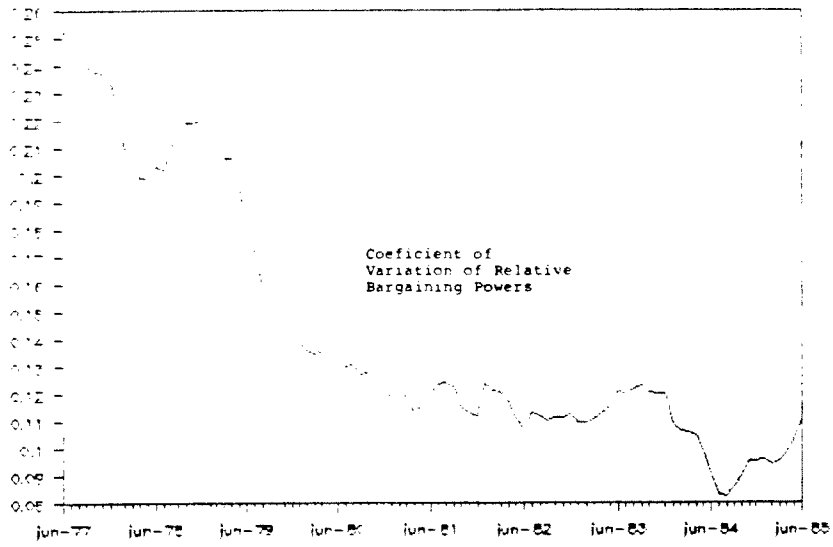


Figure 2 (b)

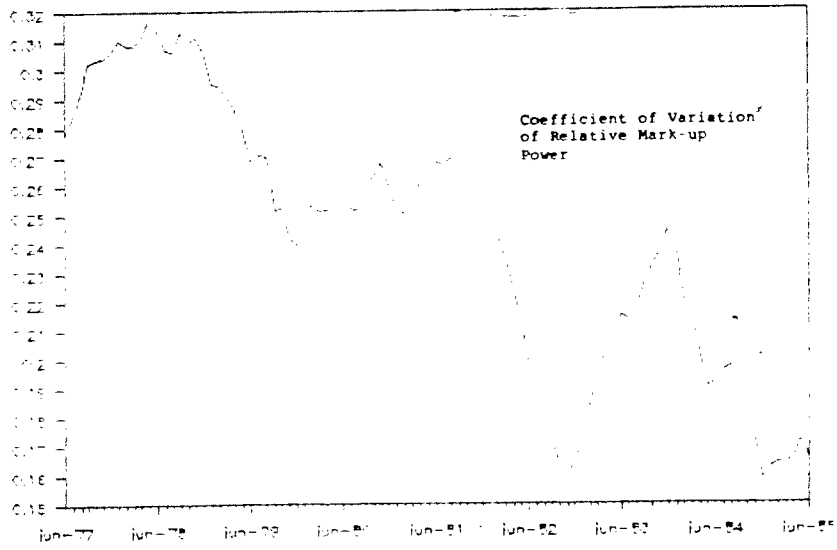
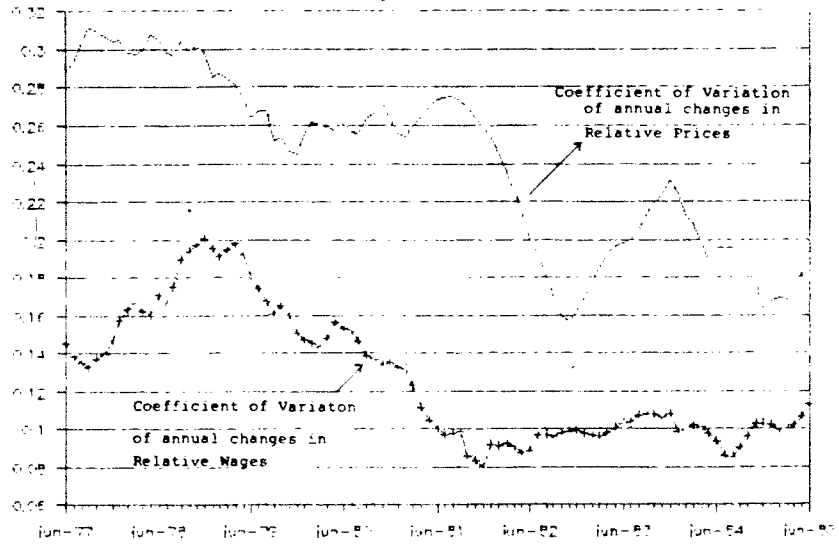


Figure 3



It is true that with the acceleration of inflation and the dispersion of expectations which accompanies this process, and in face of the differences in the market powers of firms and unions in different industries, we should expect the dispersion of bargaining and mark-up powers (that is, of the indexation factors of wages and industrial prices in different industries) to increase. However, as noted in section 1, there are forces coming from the other direction, and tending to reduce dispersion. One is the change during this period in the wage policy implying a gradual reduction in the period of adjustment of wages. This tends to level out the capacity to index wages to inflation of unions in different industries, and increase the effectiveness of the wage policy. The other possible cause is the recession of 1981-83 which reduced the bargaining power of unions thus making the wage policy the ruling indexation factor in negotiations. And last but also important is the leveling out effect over the bargaining power of unions of the reemergence of the union movement (after the militar regime) and the growth of the central unions.

The reduction in the dispersion of relative mark-up powers and of the rate of variation of prices must be associated, on the one hand, with the reduction in the dispersion of wages, and on the other, with the gradual shortening of the adjustment period of all prices which also tends to reduce the dispersion of indexation factors.

4. Conclusions

In sum, we conclude that the relative bargaining power of unions and the relative mark-up power of firms play an important role in modifying the movement of wage and price differentials as governed by changes in sectoral productivity of labour and costs.

Accordingly, the positive correlation between movements of relative wages and prices should be credited to the positive correlation between the relative degree of indexation of wages to CPI inflation and of industrial prices to costs. In turn, bargaining powers and mark-up powers move together as a result of certain characteristics of the competitive structure of the product market and the institutional arrangements based on which wages are set in Brazil. Finally, we conclude that in spite of the generally accepted arguments for an increase in the divergence of indexation factors of wages and prices as inflation accelerates, countervailing forces led to a reduction in the dispersion of relative bargaining and mark-up powers in Brazil over the period 1976-1985 when the yearly rate of inflation accelerated from 40 to 250% year.

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