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Bargaining power, mark-up power, and the acceleration of inflation in Brazil: (1976-1985)

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DEPARTAMENTO DE ECONOMIA
PUC/RJ

TEXTO PARA DISCUSSÃO
NO. 262

"BARGAINING POWER, MARK-UP POWER, AND
THE ACCELERATION OF INFLATION IN BRAZIL,
(1976-1985)"

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¹I am quite grateful to Theodoro da Costa Messa for his work as a research assistant.

Abstract

This paper is concerned with three stylized facts which together form the basis of the 'inertial theory of inflation', namely, that the indexation of wages to CPI inflation is, at most, equal to one, that profit margins are constant, and that the behaviour of wages and industrial prices are unimportant for the acceleration of inflation. We argue that these stylized facts do not correspond to the real facts, and that, indeed, over the period 1976-1985, when annual inflation went from 40 to 250%, real wages increased, profit margins oscillated quite dramatically, and the compound effect of over-indexation of wages (in relation to CPI inflation) and prices (in relation to costs) in the industrial sector was an important element in the acceleration of inflation.

Resumo:

Este trabalho examina três fatos estilizados que, juntos, formam a base da 'teoria inercial da inflação', a saber: que o grau de indexação dos salários aos preços ao consumidor é, no máximo, igual a um, que as margens de lucro são relativamente constantes, e que a sobre-indexação de salários e preços no setor industrial não são importantes para explicar a aceleração da inflação. Procuramos mostrar que estes fatos estilizados não correspondem aos fatos reais. Na verdade, entre 1976 e 1985, quanto a inflação anual passou dos 40 para os 250%, os salários reais cresceram, as margens de lucro oscilaram muito, e o efeito composto da sobre-indexação de salários com relação aos preços ao consumidor, e dos preços com relação aos custos, no setor industrial, foram importantes no processo de aceleração da inflação.

1. Introduction

This paper refers to the period 1976-1985 in which the annual rate of inflation in Brazil accelerated almost continuously from 40% to 250%. There are a few 'stylized facts' associated with the behaviour of wages and prices in the industrial sector during this period which together form the basis of the 'inertial inflation hypothesis' according to which the acceleration of inflation results from 'supply shocks', and the perpetuation of high levels of inflation after the shocks is a consequence of a system pervasive indexation of wages and prices ²

The first stylized fact is that, due to the wage policy, which indexed wages to inflation with a lag, real wages tended to fall over time, or at most remain constant, with the acceleration of inflation. The second one is that firms operated with a reasonably stable mark-up over direct costs implying that the capacity to mark-up variations in costs was close to one. The corollary of these two stylized facts is that the acceleration of inflation of industrial prices resulted either from supply shocks or from changes in the rate of inflation of consumer prices --to which wages in the industrial sector were indexed. Put in other words, the central result was that the role of over-indexation of wages and industrial prices in the acceleration of inflation was rather unimportant.

In this paper we argue that these stylized facts do not correspond to the real facts. Indeed,

² See Lopes (1986) and Modiano (1989). The inertial inflation hypothesis formed the basis of the 'heterodox therapy' to fight inflation put in practice in Brazil, Argentina and Peru. The therapy was based on the notion that if inflation was indeed inertial, and hence neutral in terms of relative prices and wages, a price and wage freeze would be sufficient to stop inflation.

except for a few months in 1980 and the recession years, the annual variation of money wages in almost all industrial sectors was greater than the official inflation rate. This obviously implies that over most of the period, in spite of the acceleration of inflation, there was an increase in real wages. As for the behaviour of the mark-up, we will show that it varied according to the period under consideration, and oscillated quite dramatically in certain sectors. Finally, we will note that after 1979, the compounded effects of over-indexation of wages (in relation to the CPI) and of industrial prices (in relation to costs) created important inflationary pressures in the system, and were indeed responsible for the impressive acceleration of inflation between 1983 and 1985.

A further hypothesis tested in the paper refers to the relation between the degree of indexation of wages and prices in the same industrial sector. We will show that in the majority of the sectors there is a positive correlation between the 'bargaining power of unions' (as measured by the degree of indexation of wages to the CPI inflation) and the 'mark-up power' of firms (as measured by the degree of indexation of prices to costs). This, we will argue, results from the influence of firms' capacity to mark-up costs over their behaviour (more or less lenient) in collective wage bargains.

The following strategy guides the paper. In section 2 we describe the institutional setting based on which industrial wages and prices are set in Brazil. In section 3 a few basic definitions are presented, and based on them, the stylized facts mentioned above are re-stated. Section 4 discusses the empirical findings. Section 5 concludes.

2 Institutional Setting

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 collective bargaining takes place.

In the case of the Brazilian industry, because the economy was quite closed (at least until 1990) and in most sectors the degree of industrial concentration is significant, price leaders in each sector were able to fix their prices freely, with little risk of losing their market shares. On the other hand, there are factors which explain differences in the capacity of firms in each sector to index (or, more to the point, over-index) their costs. One is price controls which have been effective in certain periods. The other factor is associated with the differences in the 'degree of oligopoly' amongst industries which implies that the capacity to mark-up costs of firms in certain sectors is smaller than in others.

The determination of wages in Brazil is based upon the wage policy of the central government and an annual collective bargain at the firm level. The wage policy fixes the minimum degree of indexation of wages to inflation. Since 1974, the declared objective of the policy was to keep the average real wage constant over time. Accordingly, wages were fully indexed to inflation over a given indexation period.³ However, under this scheme, the acceleration of inflation obviously leads to a reduction in real wages. This is the reason why in most analyses, it is usually assumed that the acceleration of inflation over the period under consideration was accompanied by a reduction in real wages.

As for the collective bargaining process, the

³ One year until 1979 and six months thereafter.

most prominent feature is the decentralized and desynchronized way in which wages are negotiated in the economy. Unions are organized on a regional basis, most of them at the municipal level. Each union negotiates once a year with the corresponding firms. However, since the early '80's there has been a tendency in certain industrial sectors towards a greater degree of centralization in collective bargains within industries. In sectors in which this occurred, both the bargaining power of unions and the mark-up power of firms tended to increase. The former tends to increase not only because unions are able to mobilize a greater number of workers, but also because the centralization of negotiations allows the firms in the industry to be more tolerant when bargaining with unions side by side with their competitors in the product market. The mark-up power tends to increase because the firms, together, decide on an uniform indexation of prices to costs.⁴

Another important aspect concerning collective bargaining is the growth of the labor movement after 1978, and the creation of two important central unions. The average capacity to mobilize workers and the level of labour activism due to these factors has increased dramatically since the late seventies.

In order to understand 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 -- a phenomenon with which agents have learned to live and defend themselves against. Indexation is the key word here. How effectively can unions index wages to inflation, and how effectively can firms index their prices to the rise in costs? The acceleration of inflation is usually associated with shocks -- supply shocks, devaluations, etc. But there

⁴. For an elaboration over this argument, see Calmfors and Driffill (1988).

are 'endogenous factors', so to speak, which also accounts for the acceleration of inflation. What concerns us here is the possibility of 'over-indexation' of wages and industrial prices. 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 expectation of an acceleration of inflation induces unions and firms to anticipate future losses in real wages and profit margins, respectively, and thus induces them to over-index past inflation. This attitude of the agents is self-fulfilling in the sense that the over-indexation of wages and prices creates inflationary pressures in the system.

As noted in the introduction, an hypothesis being tested in this paper is whether or not the bargaining power of unions is correlated to the mark-up power of firms in the same industry. There are reasons to believe that there is a positive correlation between them.⁵ If firms in an industry are able to mark-up (or over-mark-up) costs they tend to become tolerant in the process of wage bargaining.⁶ In being tolerant they avoid the costs of conflict with unions, and at the same time, increase the bargaining power of unions as measured by the degree of indexation of wages to consumer price inflation. A symmetric argument applies to industries in which firms face market constraints to fix prices, or where wage negotiations are decentralized.

⁵ The reasons for a positive correlation were first discussed in Camargo (1990) and Amadeo and Camargo (1989).

⁶ Both the existence of barriers to entry and the centralization of wage negotiations within the industry are important elements in increasing the mark-up power or the degree of oligopoly of firms in an industrial sector.

3 Definitions

When negotiating wages, unions try to recover the purchasing power of wages which tends to fall when inflation accelerates.⁷ At the same time, they negotiate the 'real increase' in wages due to changes in the productivity of labour. In short, 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 money wage level corresponding to the last negotiation (same month in the last year in the case of Brazil), \hat{e}_t^j accounts for the sum of consumer price inflation and changes in labour productivity since the last negotiation,⁸ 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 desired indexation factor is positively affected by the (expected) acceleration of the rate of inflation.

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:

⁷ In Brazil, collective bargains take place once a year.

⁸ 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.

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

and the proportional rate of variation in wages will accordingly be given by:⁹

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

We may also define λ_t^{j*} as the indexation of wages in relation to the CPI gross of changes in productivity:

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

Quite obviously, $\lambda_t^{j*} > \lambda_t^j$ when labour productivity grows -- as it did almost continuously in all sectors over the period in consideration (refer to Figure 5(c) in section 4).

The determination of the price in industry j in period t (π_t^j) follows the same logic. Firms would prefer to index costs in accordance with a 'desired indexation factor' but in fact, the actual price will be given by the following equation:¹⁰

$$[4] \quad \pi_t^j = \pi_{-12}^j (1 + \varepsilon_t^j \hat{c}_t^j)$$

where ε_t^j is the ex-post or actual indexation factor to which we refer as the 'mark-up power'. The latter is at most equal to the desired mark-up. Variations in costs are given by \hat{c}_t^j which in turn is decomposed as follows:

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

⁹ All rates of variation in the paper refer to the annual proportional change of the variable.

¹⁰ 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 (π) -- the relevant one from the perspective of the firms.

that is, the rate of change in costs which, we assume, is given by the sum of the change in labour costs (changes in money wages net of changes in productivity) and the change 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) ¹¹ 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. ¹²

According to equation [4], the proportional rate of variation of price π^j will be given by:

$$[5] \quad \hat{\pi}_t^j = \epsilon_t^j * \hat{c}_t^j$$

In accordance with the discussion in section 2, we will test the hypothesis that the correlation between the bargaining power of unions (λ^j) and the mark-up power of firms (ϵ^j) in the same industrial sector is positive, that is, $\text{cor}(\lambda^j, \epsilon^j) > 0$.

We now turn to the discussion of over-indexation. In the case of the industrial sector as a whole (which means dropping the superscript j), if we substitute \hat{w}_t^j from equation [3] into equation [5] we obtain the following equation relating the rate of variation of industrial prices ($\hat{\pi}_t$) to the variation in consumer prices (\hat{p}_t):

¹¹ The value of γ in each sector is given by the share of the wage bill in direct of variable capital in 1977.

¹² 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.

$$[6] \quad \hat{\pi}_t \equiv \alpha_t [(\hat{p}_t + \hat{\delta}_t) - \hat{\delta}_t / \lambda_t]$$

where $\alpha_t \equiv (\varepsilon_t \lambda_t \gamma) / [(1 - \varepsilon_t (1 - \gamma))]$

Over a year, given the rates of variation in consumer prices (\hat{p}) and productivity ($\hat{\delta}$) --the behaviour of which we do not examine here -- the 'degree of indexation' of industrial prices will be given by α which, in turn, is positively affected by the bargaining power of unions (λ) and the mark-up power of firms (ε), that is

$$\alpha_t = \alpha (\lambda_t^+, \varepsilon_t^+)$$

Hence, α measures the degree of indexation of industrial prices in relation to changes in consumer prices and productivity. Whenever α is smaller than 1, there will be a deflationary pressure in action, and vice-versa. Turning to the specific industrial sectors, the analog of equation [6] for the case of sector j is the following:

$$[7] \quad \hat{\pi}_t^j \equiv \alpha_t^j \hat{p}_t + \gamma (\lambda_t^j - 1) \hat{\delta}_t^j$$

where $\alpha_t^j \equiv \varepsilon_t^j [\gamma \lambda_t^j + (1 - \gamma) \alpha_t]$

According to equation [7], the degree of indexation of prices in sector j depends on the average degree of indexation (α), and on the specific bargaining and mark-up powers of the sector ($\varepsilon_t^j, \lambda_t^j$). In short, we can write that

$$\alpha_t^j = \alpha (\varepsilon_t^j, \lambda_t^j, \alpha_t)$$

Given the average degree of indexation (α), the behaviour of agents in sector j will create inflationary pressures whenever the specific degrees of indexation of wages (λ) and/or prices in the sector are greater than 1, and vice-versa.

Stylized Facts Re-stated

We may now return to the stylized facts mentioned in the introduction. The first one is that, due to the fact that the wage policy indexed wages to consumer prices with a lag, the ratio between variations in wages and consumer prices within an year was at most equal to one. Whenever inflation accelerated, the degree of indexation would tend to be smaller than 1. In terms of the definitions presented above, the stylized fact would imply that:

$$\lambda_t^{j*} = \frac{\frac{\hat{w}_t^j}{\hat{P}_t}}{\frac{\hat{w}_t^j}{\hat{P}_t}} = \frac{(w_t^j/w_{-12}^j) - 1}{(P_t/P_{-12}) - 1} \leq 1$$

which obviously implies a reduction in real wages when $\lambda^* < 1$. If $\omega_\tau = w_\tau/p_\tau$ is the real wage in period τ , then we can write that

$$\frac{(\omega_t^j p_t / \omega_{-12}^j p_{-12}) - 1}{(P_t / P_{-12}) - 1} = \lambda_t^j \leq 1 \implies \omega_t^j \leq \omega_{-12}^j$$

ie, that when $\lambda^* < 1$, the real wage will fall from one year to the following. The same results hold true in the case of λ (as defined in equation [3]) assuming that labour productivity is growing over the period, that is,

that $\hat{\delta} > 0$.

The second stylized fact is that firms operated with a fixed mark-up, which in terms of our notation implies that the capacity to mark-up costs (π) is equal to one. Indeed, if we assume that the mark-up over costs is constant, and given by $\mu_{\tau}^j = \pi_{\tau}^j / c_{\tau}^j = \mu^j$ for all τ , then

$$\frac{(\mu c_t / \mu c_{-12}) - 1}{(c_t / c_{-12}) - 1} = \varepsilon_t = 1$$

and, obviously, if $\mu_t \geq \mu_{-12}$ then $\varepsilon_t \geq 1$.

The assumptions that $\varepsilon = 1$ and $\lambda \leq 1$ (or $\lambda^* \leq 1$) imply that the inflation of industrial prices would tend to be smaller than, or at most equal to, the inflation of consumer prices. Indeed, assuming $\varepsilon^j = 1$ and $\lambda^j \leq 1$ for all j , equations [6] and [7] would be written as follows:

$$[6'] \quad \hat{\pi}_t \equiv \lambda_t [(\hat{p}_t + \hat{\delta}_t) - \hat{\delta}_t / \lambda_t]$$

and

$$[7'] \quad \hat{\pi}_t^j \equiv [\gamma^j \lambda_t^j + (1 - \gamma^j) \lambda_t] \hat{p}_t + \gamma^j (\lambda_t^j - 1) \hat{\delta}_t^j$$

which imply that, necessarily, $\hat{\pi}_t \leq \hat{p}_t$ and $\hat{\pi}_t^j \leq \hat{p}_t^j$, and hence that the contribution of industrial prices to the acceleration of inflation would be, under these assumptions, unimportant.

4. Empirical Findings

In this section we present evidences on the values of the sectoral bargaining power (as measured by λ^j and λ^{j*}) and mark-up power (μ^j) indexes, the correlation between these two indexes, and the degree of indexation of industrial prices (α^j).¹³

In Figures 1 and 2, the average (General Industry) value of the two measures of bargaining power (λ^{j*} and λ^j) are shown. The line representing the average is within a band which represents one standard deviation (to each side of the average) of the values of sectoral bargaining powers of 17 industrial sectors. We note that, in general, except for 1980 and the end of the recession period (1983-4), money wages grew faster than the sum of CPI inflation plus labour productivity, and except for 1983, money wages grew faster than CPI inflation alone. In 1980, the drop in λ was due to a major devaluation of the domestic currency to which wages reacted quite strongly with λ increasing significantly and reaching values around 1.3 in 1981 and 1982. The following 12 to 18 months were marked by the deepening of a strong recession and growing unemployment which led the bargaining power measures to values well below one.

¹³ We use monthly data and all rates of variation refer to the annual rate of proportional change. In the case of a general variable x , x_t refers to the observation in month t of $(x_t / x_{t-12}) - 1$. The series go from Jan. 1976 to Dec. 1985, and their source is the Monthly Industrial Survey of the Brazilian Institute of Statistics and Geography.

Figure 1
 Bargaining Power net of Productivity Gains (λ)
 (General Industry and Standard Deviation)

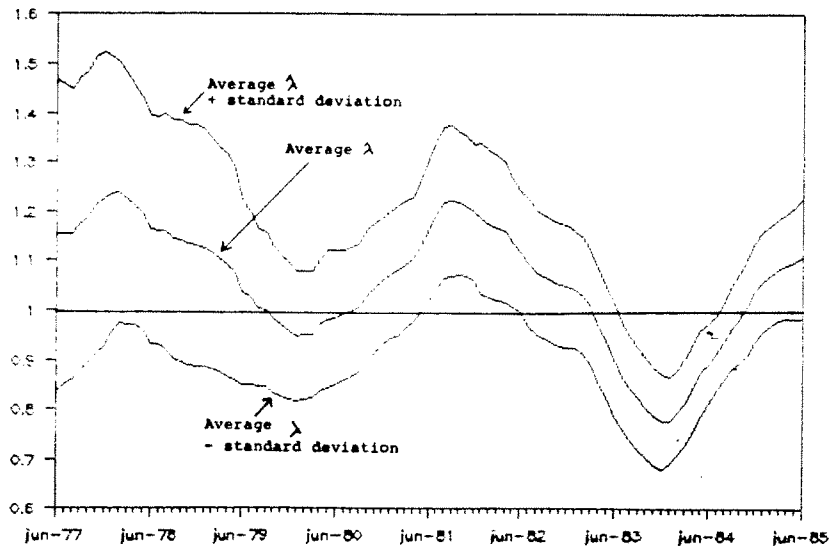


Figure 2
 Bargaining Power (λ^*)
 (General Industry and Standard Deviation)

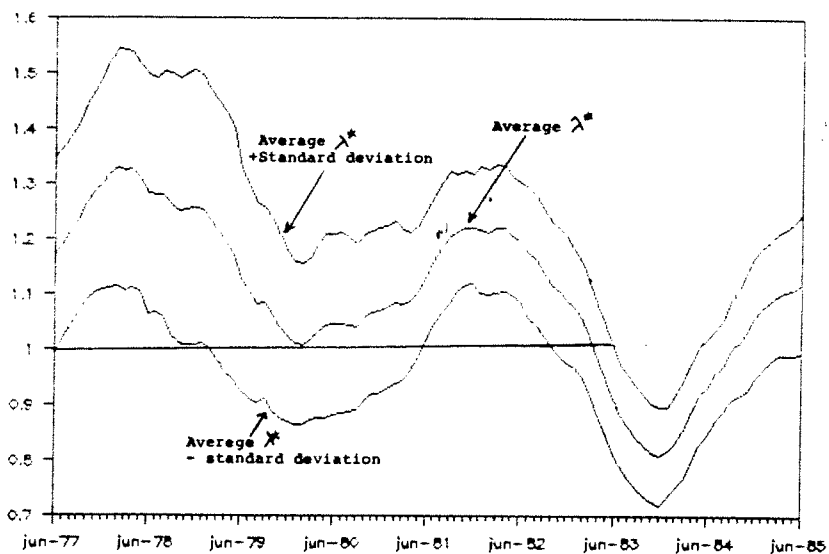


Figure 3 (a)
Average Mark-up Power (%)

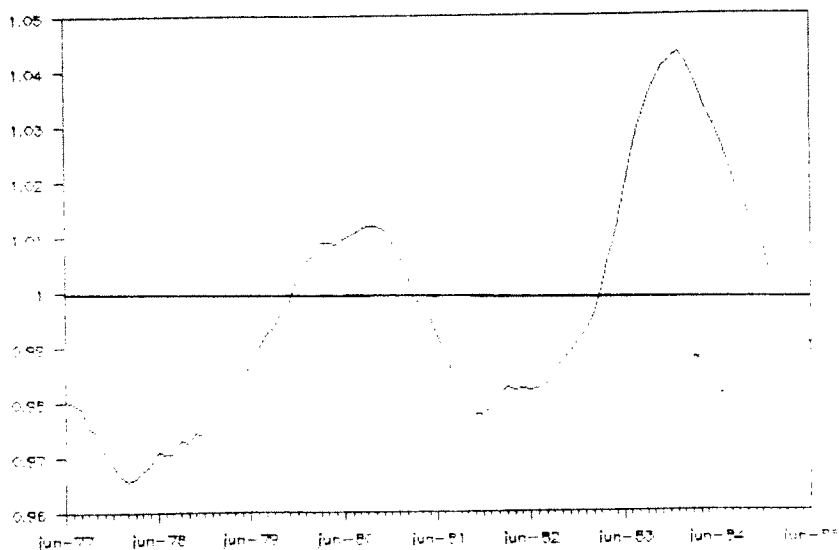
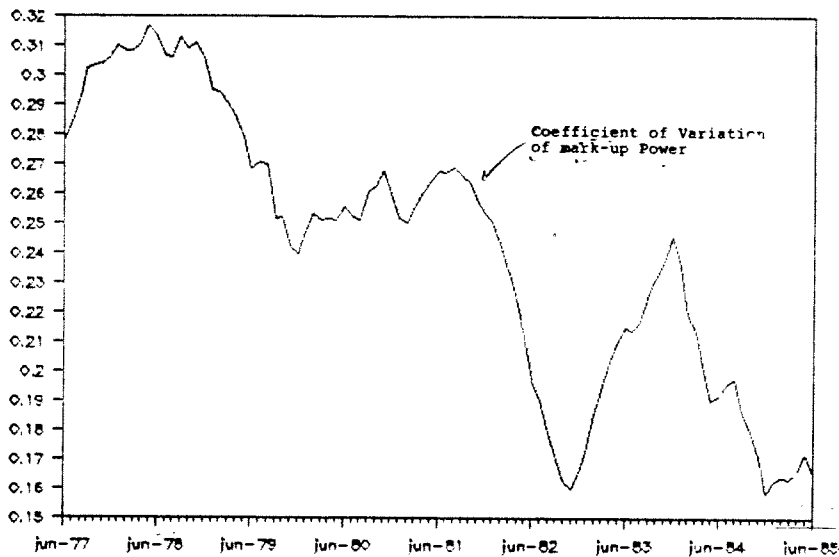


Figure 3 (b)



It is important to note is that, in spite of the acceleration of inflation between 1978 and 1981 and again after 1983 (refer to Figure 5(b) in section 4), real wages grew 40% until mid-1982 and then 10% after mid-1984 (refer to Figure 5(a)). As for the behaviour of the real wage net of changes in productivity, it grew almost 20% between 1976 and 1982 (with a slight reduction in 1980), then fell in 1983 and remained stable until 1985.

Figure 3(a) shows the behaviour of the average mark-up power (μ), and Figure 3(b) shows the coefficient of variation corresponding to the movement of the mark-up power in 17 industrial sectors over time. In certain sectors (namely extractive industry, rubber and metallurgy) the mark-up power is greater than one in most of the years; in other sectors (plastic products, clothing and liquors) it is smaller than one in most years. In general, the mark-up power varied over the period under consideration with the coefficient of variation ranging between 13% (metallurgy) and 42% (tobacco). In face of these evidences, it seems quite inappropriate to assume that the profit margin in the industry remained constant over this period.

It is interesting to note that whereas the average bargaining power fell during the recession in all sectors, the mark-up power did not change significantly in many sectors. Whereas the average bargaining power (general industry) fell from 1.12 in 1982 to 0.89 in 1983 and 1984, the average mark-up power increased from 0.98 to 1.02. As a matter of fact, over the whole period (1976-85), the average mark-up power has a clear upward tendency. This is what explains the sharp reduction in the 'share of wages in industrial product' as measured by the ratio between the wage net of productivity gains and the average industrial price index (refer to Figure 5(a)).

It is interesting to note that both the

dispersion of the bargaining power and the dispersion of the mark-up power fall over the period. The reduction in the dispersion of these two measures of indexation is probably due to the shortening of the indexation period of wages to inflation according to the wage law and the recession. Both factors contribute for the effectiveness of the wage law and thus for the reduction of wage and price drifts in relation to average inflation.

In Table 1 we report on the correlation between the bargaining power and the mark-up power. We note that there is indeed a positive correlation between the two in most of the sectors. When we calculate the correlation for the sub-period 1981-1984, the correlations become much greater, indicating that, in each sector, the bargaining and mark-up powers moved together during the recession period. These results lend some support to the notion that the capacity of firms to mark-up costs affects the capacity of unions to index prices.

Table 1
Bargaining Power and Mark-up Power

(Coefficients of Correlation)
COR (λ_t^j, e_{t+e}^j)

	1977.6-1985.6	1981.01-1984.06
Extractive	-0.68 (+3)	-0.91 (+3)
Process	0.32 (-3)	0.63 (-3)
Metallurgy	0.48 (+3)	0.45 (+3)
Mechanic	0.62 (-3)	0.84 (-3)
Electronics	-0.30 (-3)	0.64 (+3)
Transport	0.61 (+3)	0.82 (+3)
Paper	-0.34 (+2)	-0.51 (+3)
Rubber	0.43 (-3)	0.89 (-3)
Chemicals	-0.32 (+1)	-0.57 (+3)
Perfume, soap...	0.61 (-3)	0.76 (-3)
Plastic	-0.11 (-2)	0.49 (-3)
Textiles	-0.54 (+2)	-0.73 (+3)
Cloth	0.60 (+3)	0.76 (+3)
Foodstuff	0.27 (+3)	-0.95 (-3)
Liquors	0.09 (-3)	0.88 (-3)
Tobacco	0.25 (-3)	0.88 (-3)
Pharmaceutical	0.24 (+3)	0.76 (+3)

The numbers in parenthesis indicate the lag (-) or lead (+) of the mark-up power in which the highest correlation with the bargaining power was found.

Finally we turn to the indexation factors (the α and α^j variables) as defined in equations [6] and [7], that is, the compound effects of the indexation of wages and industrial prices on the overall indexation of industrial prices over the CPI. This measure provides an idea of the contribution of industrial wages and prices to the acceleration of inflation taking the CPI inflation as given.

Figure 4 (a)
Indexation Factor (α)
(General Industry and Standard Deviation)

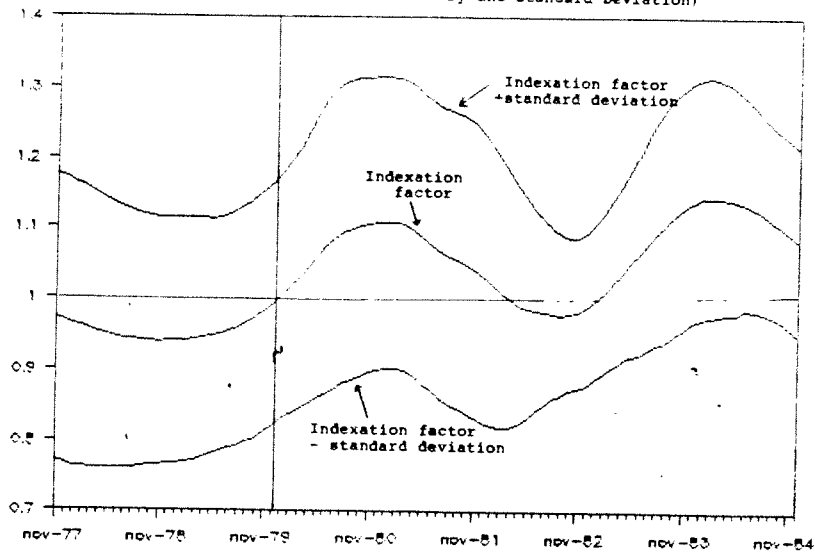


Figure 4 (b)
Coefficient of Variation

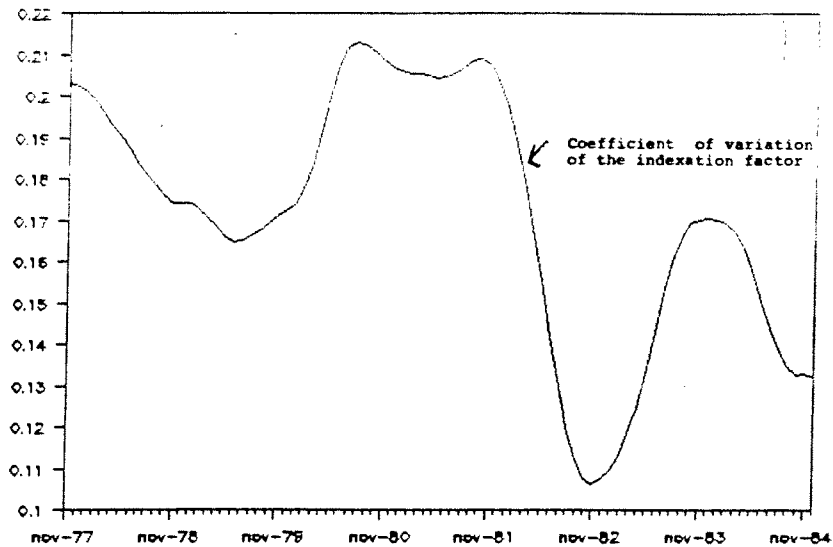


Figure 4 (c)
Indexation Factor (Extractive Industry)

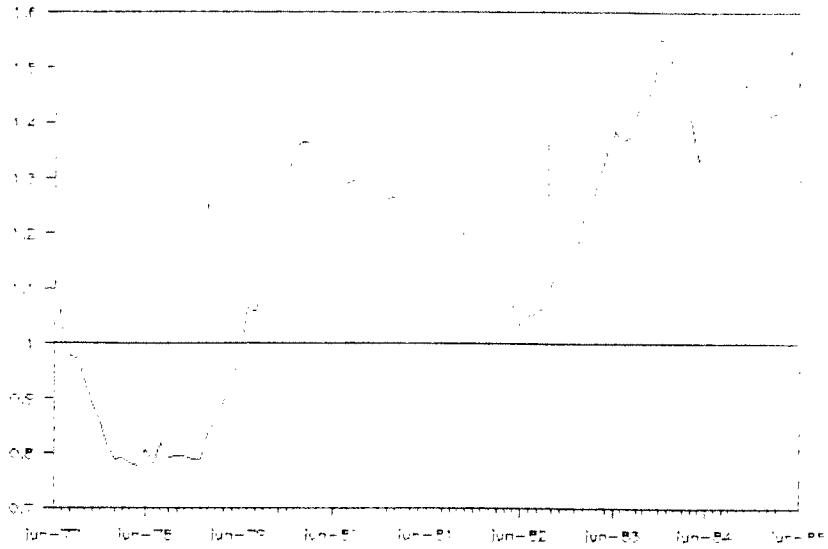


Figure 4 (d)
Indexation Factor (Rubber)

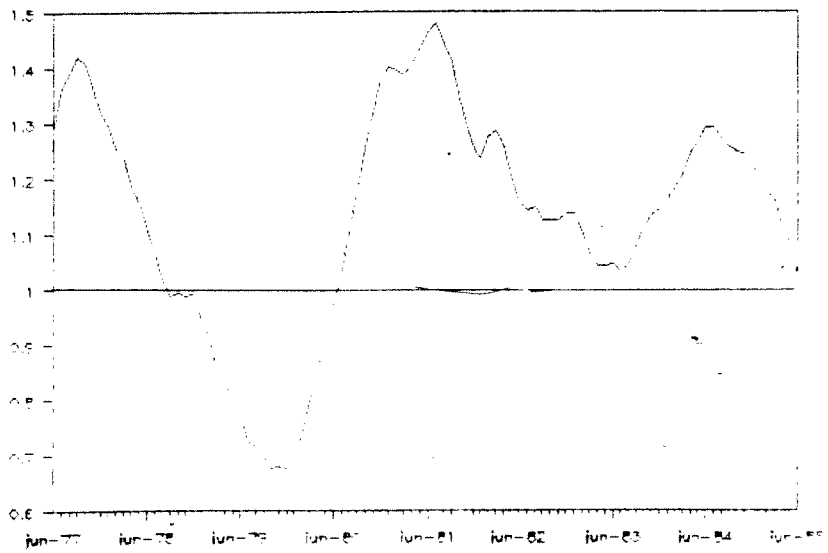


Figure 4(a) depicts the indexation factor of the General Industry (α). We note that in spite of the high levels of the bargaining power in 1977-79, the indexation factor is smaller than one. This is due to the under-indexation of industrial prices in relation to costs ($\varepsilon < 1$), and the greater share of material direct costs over total direct costs (87%) as compared with the share of labour costs (13%). After 1979, with the exception of a short period in 1982, the indexation factor becomes significantly greater than one implying that industrial wages and prices together contributed to the acceleration of inflation over the period. It is clear also that the acceleration of inflation after 1983 resulted basically from the over indexation of prices ($\varepsilon > 1$). It cannot be attributed to the behaviour of the bargaining power of unions which in fact was considerably below one in all sectors in 1983 and 1984.

In Figure 4(b) the coefficient of variation of the indexation factor is shown. It is interesting to note that it falls quite sharply in 1981-2 as a result of the reduction in the dispersion of the bargaining power and of the mark-up power.

Figures 4(c and d) depict the movements of the indexation factors of the extractive and rubber sectors. These are the sectors in which both wages and prices grew faster than average wages and prices, respectively, during the period under consideration.¹⁴ The bargaining power and mark-up power in these industries are considerably above the average. It is clear therefore that, over most of the period, the over-indexation of wages and prices in these sectors created significant inflationary pressures in the system.

¹⁴ See Amadeo (1990) for an analysis of changes in relative wages and prices in the Brazilian industry.

5. Concluding Remarks

It seems quite clear that the stylized facts mentioned in the introductory section are not really appropriate in the case of Brazil. The bargaining power of unions in the years 1977-1982 and 1984-5 was greater one, and the mark-up power of firms showed a great degree of variation over the whole period. It is true, however, that the mark-up power did not fall as much as the bargaining power during the recession years. Finally, it is clear that the over-indexation of wages and prices in the industrial sector created huge inflationary pressures after 1979, and most specially after 1983

Figure 5 (a)

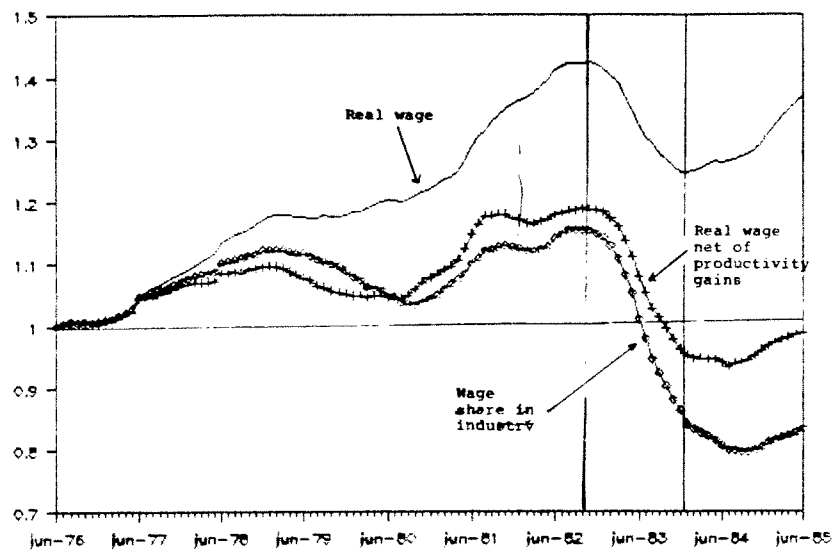


Figure 5 (b)

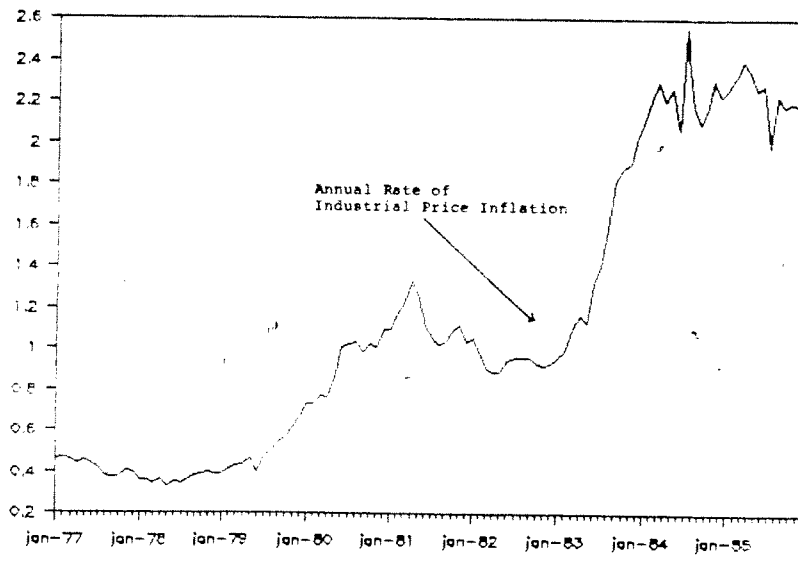
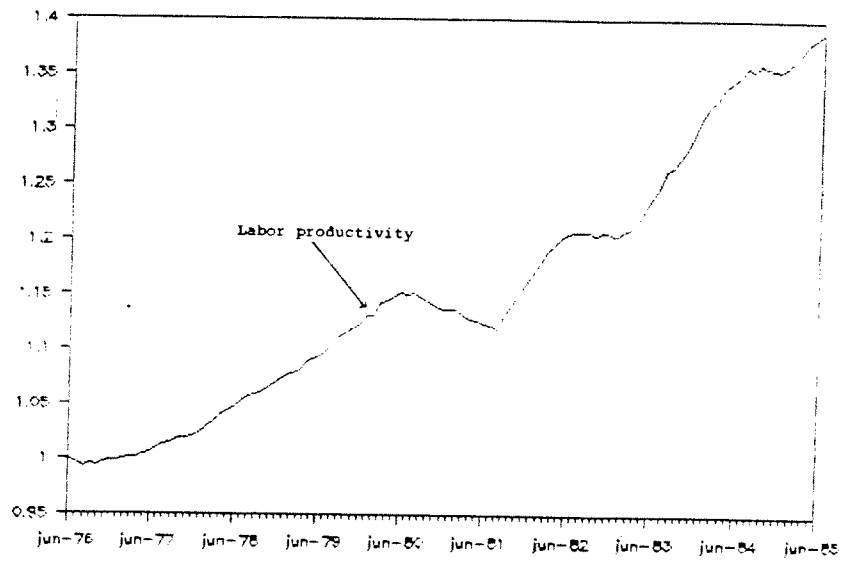


Figure 5 (c)



What seems to be interesting in the previous analysis is the way in which the combination of a few empirical findings explain the behaviour of three important distributive variables, namely the real wage, the real wage net of productivity gains and the share of wages in the industrial product. Refer to figure 5. The fact that bargaining power as measured by λ^* is greater than one in most of the sub-periods implies that real wages increased over the period in spite of the acceleration of inflation. It is true, however, that real wages net of variations in productivity felt more than the real wage in 1983-4 implying that wages did not absorb part of the productivity gains during this period. On the other hand, the mark-up power in most sectors (and on average) did not fall as much as did the bargaining power in 1983-4 which explains why the share of wages in the industrial product fell dramatically in 1983 and almost did not recover afterwards. Hence when we compare the situations in the beginning and at the end of the period, the result is that if, on the one hand, real wages increased, on the other, the share of wages in industrial output decreased.

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