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ON INERTIA, SOCIAL CONFLICT, AND THE STRUCTURALIST ANALYSIS OF INFLATION

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ABSTRACT

This paper discusses some issues in the interpretation of inflation within recent structuralist models, giving special attention to the different views of the precise role of conflict in inflation that, in turn, can be found among them. The first section of the paper is devoted to a presentation of the common features shared by most recent structuralist views, essentially those that follow from a model of lagged wage indexation, while leaving the precise role of social conflict in inflation unspecified. The author then addresses the role of social conflict and its implications in sections II and III. The discussion there centers mainly on two views of social conflict and inertial elements. We argue that, in their pure versions, these two views can be seen as limiting cases of a whole family of inflation models and that the differences between them—which can have remarkable policy implications—turn out to depend on the presence, and speed, of adaptation processes in the determination of economic agents' targets. A final section sets the previous discussion in a broader context by comparing structuralist views with other inflation theories.

RESUMEN

Este trabajo discute algunos aspectos en la interpretación de la inflación según los modelos estructuralistas recientes, dando especial atención a los diferentes enfoques que se encuentran en estos modelos, en torno al papel específico del conflicto en la inflación. La primera sección del trabajo se dedica a la presentación de los aspectos comunes compartidos por la majoría de los enfoques estructuralistas recientes, sobre todo aquellos que siguen el modelo de indexación salarial retardada, sin especificar el papel preciso del conflicto en la inflación. Este aspecto es retomado y sus implicaciones son discutidas en las secciones II y III. Allí la discusión se centra principalmente en dos puntos de vista sobre el papel del conflicto social y los elementos inerciales de la inflación. Se sostiene que en sus versiones puras, estos puntos de vista pueden ser vistos como casos extremos de una familia completa de modelos de inflación y que las diferencias entre ellos—las cuales pueden tener implicaciones políticas importantes—dependen

de la presencia y velocidad de los procesos de adaptación en la determinación de las metas de los agentes ecomómicos. Una sección final amplía la discusión anterior al comparar los enfoques estructuralistas con otras teorías de la inflación.

Social conflict is a conspicuous feature of inflation-prone economies. The role of conflict in inflation is, however, an old and debated theme whose investigation has followed at least two different routes. One is consistent with orthodox theories of inflation, and limits that role to the pressures that conflicting aims may put, through the political process, on fiscal and monetary policy. A second route assumes, at least as a first analytical step, a passive or accommodating monetary policy, and looks into the more direct effects that conflicts in market power may have on price formation and the distribution of income. This more direct role is less widely acknowledged, and is characteristic of structuralist analyses of inflation.

The purpose of this paper is to discuss some issues in the interpretation of inflation within recent structuralist models, giving special attention to the different views on the precise role of conflict in inflation that, in turn, can be found among them.[1] The first section of the paper is devoted to a presentation of the common features shared by most recent structuralist views, essentially those that follow from a model of lagged wage indexation, while leaving the precise role of social conflict in inflation unspecified. This question is then taken up and its implications discussed in sections II and III. The discussion there centers mainly on two views of the role of social conflict and inertial elements. We argue that, in their pure versions, those views can be seen as limiting cases of a whole family of inflation models and that the differences between them—which can have remarkable policy implications—turn out to depend on the presence, and speed, of adaptation processes in the determination of economic agents' targets. A final section sets the previous discussion in a broader context by comparing structuralist views with other inflation theories.

I. The Basic Framework

Drawing on an older tradition of heterodox approaches in Latin America, recent structuralist models were developed over the late seventies and early eighties as an alternative interpretation of inflation processes that did not fit well into more conventional interpretations.[2] In this respect, two major features were hard to reconcile with orthodox diagnoses: 1) the prominent

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[1] The issue has attracted renewed attention in the context of recent development in these models, while its policy relevance was made clear by the problems faced by the heterodox counter-inflation policies followed in Brazil and Argentina during 1985-86. For a discussion of these experiences, see Ros (1987) and the references included there. The present paper is limited to the analysis of the inflation models underlying those "heterodox shock" programmes.

[2] As to the older structuralist school, Noyola (1956) is a pioneering contribution and a classical statement is Sunkel (1958). Formal expositions can be found in Seers (1962) and Olivera (1967), while Olivera (1964) contains a penetrating analysis of the core of structuralist theories. Canavese (1982) compares the Latin American and European branches of structuralist inflation theory.

role of real shocks and widespread indexation mechanisms in amplifying and perpetuating inflation; and 2) a strong resiliency of inflation to fiscal and monetary restraint, which undermined a number of policy experiments in Latin America in the early eighties.

Many characteristic features of those new structuralist theories of inflation can be illustrated and formalized by means of a simple model.[1] We may see it as a skeleton model since the issue of the precise role played by conflict over the distribution of income is left open until the next section.

We consider a system of lagged wage indexation which, for simplicity, abstracts from asynchronization problems.[2] Nominal wages are fixed simultaneously throughout the economy in bargains that take place at discrete time intervals of length ψ, and once settled do not change until the next general round of bargaining. Under these assumptions, and even before considering the adjustment rules for nominal wages, a relation is established between the real wage received on average over the indexation interval (ω), the rate of inflation (p_ψ), the length of the indexation interval (ψ) and the peak real wage (w, i.e. the real wage which is received on the first pay day after a general round of settlements):[3]

$$(1)\ \omega = \varphi(p_\psi, \psi, w) \qquad \varphi_p, \varphi_\psi < 0, \varphi_\omega > 0$$

Expression 1 states that, *ceteris paribus*, the average wage is inversely related to the length and rate of inflation over the indexation interval, and is positively related to the peak real wage. For example, in a state of steady inflation with real wages being eroded by inflation at a uniform rate over the indexation interval, the average real wage is given approximately by:

$$(1.a)\ \omega = w \bullet (P_{t-\lambda}/P_t)$$

where P_t is the price level at time t and $\lambda = \psi/2$. If we express λ as a fraction of the unit time period (a year, for example), then $(P_t/P_{t-1}) = (P_t/P_{t-\lambda})^{1/\lambda}$; and by substitution into 1.a:

$$(1.b)\ p = (w/\omega)^{1/\lambda} - 1$$

where p is the rate of inflation measured over the unit time period. Since ψ and λ are expressed as fractions of the unit time period, $1/\psi$ is the number of wage settlements taking place over that

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1 Related presentations can be found in Bacha (1982), Taylor (1983), Lopes (1984), Ros (1984), Modiano (1987). Here, we rely also on Rowthorn (1977).

2 The case of staggered wage contracts is considered in the appendix, where we also explore the relation between price variability and inflation.

3 See, among others, Taylor (1983, ch. 6).

period.

Feedbacks between the rate of inflation and the indexation interval are an important feature of actual inflation experiences.[1] Indeed, the indexation period is unlikely to remain fixed as the rate of inflation changes; either as a consequence of the uncertainty associated with higher inflation or, more simply, as a reaction to the fall in the real average value of contracts, as inflation rises the length of the indexation interval will tend to shrink. This inverse relation is introduced in equation 2, expressing in a simple and continuous function a process that, in practice, is likely to be highly discontinuous[2] and, within limits, irreversible:

$$(2)\ \lambda = \lambda o/(1+p)$$

Besides wages, the gross output of the private sector is subject to the following claims: import costs, revenue from tariffs on state services, and domestic capitalist profits. Since the model focuses on lagged wage indexation, it abstracts, for simplicity, from lags in the indexation rules for the exchange rate and government tariffs. The latter are continuously adjusted so as to keep the share of gross income absorbed by the state and import costs unaffected by domestic inflation. Pricing in the private sector is such as to achieve a given profit markup on current unit costs, and so the profit share of gross income is also unaffected by inflation.[3] This assumption of markup resistance (or "real profits resistance") is a simplifying one, and is meant to dramatize a common asymmetry in capitalist and workers pricing policies, reflecting a situation where the balance of market power in favor of sellers in the product markets is much more pronounced than in the labour market.[4] All this leaves the wage share and the real wage to be determined as residuals for, under those assumptions, the price cost identity implies that:

$$(3)\ \omega = \Omega\ (e,t,\pi) \quad \Omega_e,\Omega_t,\Omega_\pi < 0$$

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1 On these feedbacks see Modigliani and Padoa-Schioppa (1978) and Taylor (1979).

2 Minor accelerations of inflation may not lead to an increase in the frequency of price and wage adjustments, given the transaction costs involved in recasting contracts. But when the economy sets into a hyperinflation, the reduction of the indexation period is likely to accelerate suddenly and sharply. See, on the subject, Arida and Lara Resende (1985).

3 This does not necessarily imply the absence of lags between cost and price changes. What is being assumed is that the latter are shortened as inflation rises, so as to compensate for the erosion, which would otherwise take place, of the average markup on current costs over the unit time period. Alternative assumptions on the behavior of profit margins will be considered in section IV.

4 The asymmetry is common at least in Latin American countries and models. In this respect, the latter differ from Scandinavian-type models of inflation where—due to centralized wage bargains in the labour market, strong international competition in product markets and a regime of fixed nominal exchange rate—profits, rather than wages, are the residual share.

where ω is, as in equation (1), the average real wage rate; e, t, and π being respectively the real exchange rate, real government tariffs, and the profit markup. Increases in any of these reduce real wages.[1]

Equation 3 implies that the real wage is determined exclusively by the predetermined shares of profit, import costs, and state revenues and is, therefore, independent from changes in the rules for and frequency of nominal wage adjustments. The latter may affect the rate of inflation (through equation 1) but will leave the real wage unaltered. This feature of the model arises from the presence of a lag in the system of wage indexation together with our assumptions of markup resistance and perfect indexation of the exchange rate and government tariffs.

With the real exchange rate, government tariffs, and profit margins taken as exogenous, an assumption to be relaxed later on, equations 1.b, 2, and 3 represent a system of three equations and four unknowns (the rate of inflation, the indexation interval, and the average and peak real wages). The indeterminacy arises from the fact that we have not fully specified the wage equation, i.e. the adjustment rules for nominal wages. In order to determine the rate of inflation, and the rest of the endogenous variables, additional hypotheses about the relation between peak and average real wages must be introduced. It is to this question that we now turn.

[1] We abstract from changes in labour productivity that positively affect the real wage rate.

II. Inflation, Conflict and Inertia

In order to proceed we must bring distributional conflict into the model. Indeed, a basic tenet of both old and new structuralist theories is that price formation in a decentralized market system will have conflicting impacts on the distribution of income whenever the balance of power among transacting parties differs in different markets. A common form of this conflict (and the one on which we, and most models, concentrate) arises when the real wage reflecting the balance of power in the labour market, and expressing the expectations created in wage bargains, is not validated by the real wage implied by price formation in other markets.[1] The latter, in terms of the model of section II, is the average real wage, i.e. the actual real wage implied by the predetermined values of the real exchange rate, government tariffs, and profit margins. The former, i.e. the real wage reflecting the balance of power in the labour market, is commonly referred to as the target real wage,[2] and it must be distinguished from the peak real wage, with which it need not coincide.

Side by side with this common hypothesis, however, views diverge with respect to the effects that distributional conflict can have on inflation. Indeed, two main and distinct hypotheses, which we present here in their pure form, can be found in the literature. For reasons that will soon become clear and following a common denomination, we call them the "inertial" and "conflict" views of steady inflation.[3] In spite of an otherwise common model, the particular "model closure" adopted by each of them can have remarkable consequences with respect both to the interpretation of inflation and the related policy implications.

Our objective, in what follows, will be to clarify and make fully explicit the key assumptions underlying the two views. In contrasting them, we shall consider a system of full but lagged wage indexation (i.e., with a 100% adjustment in nominal wages to past inflation). This assumption will make the two views formally identical except for the determination of the target real wage, and will allow us to concentrate, precisely, on the underlying interpretations of the role of conflict in inflation.

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[1] Scitovsky (1978) traces the historical development of the conflicting power relations in product and labour markets.

[2] Rowthorn's (1977) negotiated wage share and Marglin's (1984) conventional wage express essentially the same notion.

[3] This distinction can be traced back to the one between conflict models and structuralist theories *stricto sensu*. (See Heymann 1986, although some classic structuralist authors, such as Noyola, combined elements of both views). It was reintroduced in a different form by Tobin (1981) in his distinction between inertial and conflict inflation, and it has been developed recently by Bacha (1986).

Inertial Inflation

Distributional conflict is here an original inflationary pressure but plays no role in the perpetuation of inflation. Implicit in it is, in our view and as a key underlying assumption, the presence of an adaptive mechanism in the determination of the target real wage. Economic agents require time to adjust their aspirations to changed circumstances and, in an analogous way to habit-persistence theories of consumption, it is through adaptation that the target real wage adjusts to present average wages.

Although the adaptation process can take different forms and will be influenced by particular historical circumstances, let us assume for the sake of simplicity that the target real wage (ω^*) adjusts to the average wage with a one period lag:

$$(4.a)\quad \omega^* = \omega_{-1}$$

Since, according to 1.b (section I) $(w_{-1}/\omega_{-1}) = (1+p_{-1})^{\lambda}$ and given our assumption of full indexation ($w_{-1} = w$), it follows that: $(1+p) = (1+p_{-1})\bullet(\omega_{-1}/\omega)^{1/\lambda}$.

Substitution of 4.a into this expression yields:

$$(5.a)\quad p = (1+p_{-1})\bullet(\omega^*/\omega)^{1/\lambda} - 1$$

Equations 4.a and 5.a have several properties characteristic of the view that is being presented. First, in the absence of shocks, present and past real wages are equal ($\omega=\omega_{-1}$) and thus, present inflation is determined by past inflation ($p=p_{-1}$). In such a state of steady inflation, the target real wage is the real wage received on average over the indexation period. The fact that at every wage settlement workers claim a 100% adjustment to obtain the previous peak real wage does not reflect an aspiration gap. It reflects, rather, rational behavior in a situation where the system has been caught in a non zero sum, non-coordinated game.[1] For each group of workers knows that if they alone were to adjust below the 100% clause at the end of an indexation period, they would suffer losses, while the gains from reduced inflation would redound to others. It is only if all agents were to adjust equally and simultaneously that they could all be better off. This requires, however, organized collective action, in the absence of which inflation continues as a consequence of a coordination failure.

Distributional conflict, therefore, plays no role in perpetuating steady inflation. The

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[1] This view is present in Lopes (1984) and is also implicit in Arida and Lara Resende (1985). Lopes' analogy with Keynes' explanation, in *The General Theory*, of nominal wage rigidity as a consequence of *relative* wage rigidity is most relevant in this respect.

workings of the adaptation process close the gap between target and average real wages and make the original conflict disappear. Aspiration gaps do come in, however, to explain accelerations of the inflation rate from one steady state to another. Due to the presence of a lag in the adaptation process, relative price shocks—such as a real exchange rate devaluation or a change in government tariffs—temporarily disturb the equality between target and average real wages and, by reducing present real wages ($\omega < \omega_{-1}=\omega^*$), trigger an acceleration of inflation ($p > p_{-1}$) towards a new steady state.[1] As an example, the successive accelerations of inflation rates in Latin America following the debt crisis in the early eighties can be seen, from this approach, as a result of the fall in real wages imposed by the exchange rate devaluations and the increased share of government revenues required to service the external debt.

The consequences of a shock on the inflation rate depend on its magnitude—given by its effect on real wages (ω_{-1}/ω)—and on the length of the indexation interval that amplifies the impact of the shock. The higher the frequency of price and wage adjustments (the lower λ in equation 5.a), the larger the impact on inflation of a given shock. To this one must add the feedback effects between inflation and the indexation interval (given by equations 2 and 5.a combined). However, even if, as a result of an acceleration of the inflation rate, the frequency of adjustments increases, inflation will eventually converge to a new steady rate provided that adaptation mechanisms work at a sufficient speed. In the absence of new shocks, inflation is an inherently stable process.

Models of inertial inflation are thus best suited to explain that characteristic pattern of low and medium inflation processes, whereby inflation rises by stages and stabilizes around them until a new shock induces an acceleration towards a higher but stable "plateau." Its very strength from this perspective becomes its very weakness when dealing with highly unstable hyperinflation processes. Even then these models illuminate an important feature of the mechanisms leading to the end of hyperinflations. Indeed, this view emphasizes the elimination of the "memory" of past inflation that is brought about through the increase in the frequency of adjustments. As the indexation interval shrinks to zero the general price level is freed from its ties to past inflation and becomes pegged to the nominal exchange rate. Inertia having been eliminated, stopping inflation becomes a matter of stabilizing the exchange rate.[2]

Conflict inflation

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[1] In the absence of a lag in the adaptation process, the equality between target and average real wages could not be perturbed by real shocks, and we would be back into pure excess demand models of inflation with atomistic competition and powerless economic agents.

[2] See Arida and Lara Resende (1985). Note, however, that in this interpretation the assumption of a stable indexation interval, in the absence of new shocks, must be relaxed.

In this view, distributional conflict is both an original inflationary pressure and a major factor in the perpetuation of inflation. The target real wage always differs from the average real wage. The peak real wage is frequently taken to reflect workers' aspirations and bargaining strength,[1] although the implications of this view are consistent with less rigid assumptions. Past real wages may be the target, and adaptation mechanisms may be assumed. The critical assumption with respect to the previous model is that adaptation is incomplete, so that an aspiration gap is always present in an inflation process.

Let us follow the standard presentation and assume that the target wage is the peak real wage. This assumption must be interpreted as a limiting case of distributional conflict and lack of adaptation where, in fact, inertia is assumed away. Thus:

$$(4.b)\quad w = \omega^*$$

where now, in contrast to the previous model, the target real wage (ω^*) must be taken as an exogenous variable, uninfluenced by the recent evolution of average real wages. Substituting 4.b into equation 1.b:

$$(5.b)\quad p = (\omega^*/\omega)^{1/\lambda} - 1$$

Let us now see the implications of non-adaptation by comparing them with the previous view. Gaps between target and average real wages now play a role not only in the origin of inflation or in explaining its changes, but also as a perpetuating mechanism. Due to incomplete adaptation, aspiration gaps are not eliminated. In the absence of distributional conflict ($\omega^*=\omega$), inflation would disappear ($p=0$). Not so in models of inertial inflation, as can be seen by comparing expressions 5.a and 5.b under the assumption that $\omega^*=\omega$.

As in the first model, inflation remains constant in the absence of new shocks leading to changes in the average real wage, provided that the indexation interval stabilizes at a given value. But the proviso is now not warranted. The lack of complete adaptation of the target real wage implies that fixed indexation rules do not keep the real value of contracts at its target level. There will, then, be a permanent pressure to change indexation rules—and in particular the length of the indexation interval—which, even if temporarily repressed due to a particular correlation of forces, makes inflation a potentially unstable process. Steady inflation, in this view, is best interpreted,

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[1] See for example, L. Taylor (1979 and 1983), Ros (1984), and Modiano (1987). As we shall see in section IV, Marglin's (1984) basic model also reflects this view. Following the analogy with the source of nominal wage rigidity in Keynesian theory (see footnote 14), the relevant notion here would be "real wage resistance" rather than the rigidity of relative wages. While the latter is present in *The General Theory*, real wage resistance is implicit in *How to Pay for the War*, as we shall argue in section IV.

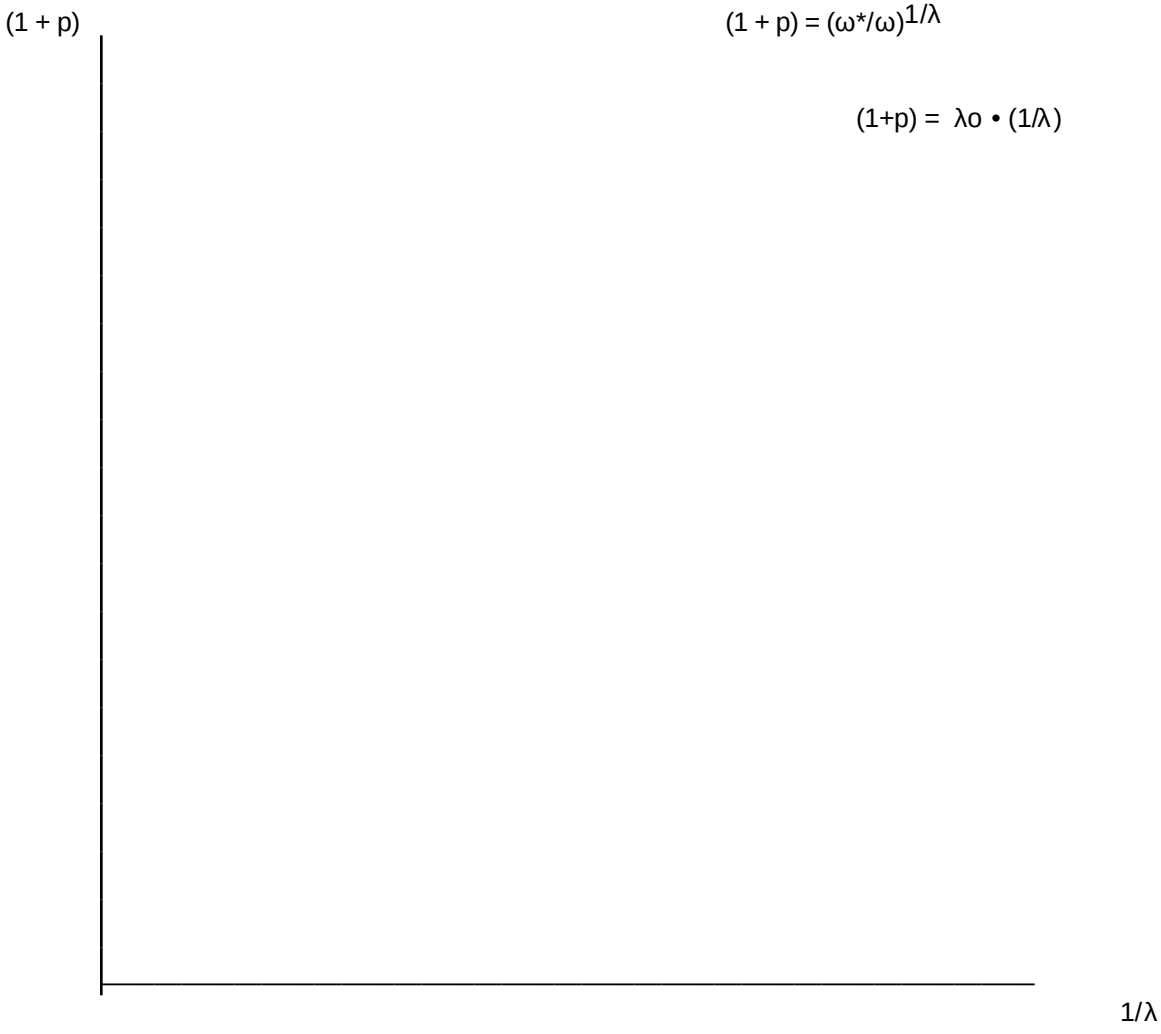
generally, as a disequilibrium state.

Indeed, while in the first model the inverse relationship between inflation and the indexation interval implied only that the impact of a shock would be amplified by an increase in the frequency of adjustments, in the present view it may also make inflation unstable. This can be illustrated by combining equations 2 and 5.b as in figure 1, which shows the possibility of two equilibria, the low inflation one being stable and the high inflation one being unstable. The latter is a hyperinflation barrier since beyond it an explosive process of ever accelerating inflation is triggered. A further implication is that if the aspiration gap (ω^*/ω) is too large there will not be any steady inflation equilibrium. A large shock may trigger a process tending to hyperinflation. A classic case is the German hyperinflation of the 1920s, interpreted as the consequence of a large aspiration gap between workers' claims and the low wage implicit in the real exchange rate necessary to generate the trade surplus required to pay war reparations.

Thus, while the present model is harder to reconcile with the generalized presence of that step-wise function characteristic of medium and low inflation processes, it is best suited to explain the increased instability that accompanies high inflation rates and, especially, the rapid and self-sustained acceleration that takes place when the process has entered into a hyperinflation stage. Moreover, this second model focuses on another important aspect of the end of hyperinflations: the elimination of conflict. The process by which, in the last stages of a hyperinflation, prices and wages are quoted in a foreign currency or are paid in kind may be seen also as a mechanism that closes the gap between peak and average prices and wages (see Lopes 1984). This is made possible by a real appreciation of the exchange rate which, at first sight paradoxically, takes place together with a sharp acceleration of the inflation rate as a consequence of the increased

frequency of price adjustments.[1] As Lopes (1984) has pointed out, the end of the German and Austrian hyperinflations after World War I were preceded by a real appreciation of the exchange rate that was made sustainable, after the stabilization, by external support of the balance of payments. More recently, a similar process appears to have taken place during Bolivia's hyperinflation (see Morales 1987). In the latter, however, the sharp reduction of real wages that was imposed during the stabilization from September 1985 onwards also illustrates that the suppression of conflict may involve coercion as a major element.

Figure 1



[1] To make this explanation consistent with the model, the assumption of a fixed real exchange rate regime has to be relaxed, a step which is only realistic when dealing with a hyperinflation.

III. Game Theory Analogies and Policy Implications

Our discussion up to this point suggests that the two views presented may be seen as limiting cases of a more general model, or rather of a whole family of models. This more general view would recognize the importance of adaptation processes in the determination of economic agents' targets, especially in the presence of minor or moderate shocks; but it would also be willing to accept that, in the face of large shocks leading to sharp reductions in real wages and to substantial aspiration gaps, adaptation may be incomplete or too slow to avoid making inflation an inherently unstable process. And it would have to acknowledge that the particular combination of elements borrowed from the two models and the role of intra- as well as inter-class coordination and conflict will be strongly conditioned by country specific institutional contexts and historical circumstances.

The resulting family of models lends itself to interesting analogies with game theory.[1] The relative importance of conflict and inertia is not, however, the only element determining the nature of the underlying game. Another major element arises from the fact that inflation imposes costs on economic agents—through its effects on financial wealth, the misallocation of investments, and output losses—costs that may be more or less important depending on institutions and circumstances, and that are more or less widely and equally shared by different social groups. Due to the presence of inflation costs, a common interest in reducing them generally coexists with distributional conflict feeding the inflation spiral.

If inflation had no costs (or had costs for some social groups and benefits for others) and distributional conflict was overwhelming, the inflation process could be seen as the outcome of a zero sum game. In such a situation of "pure conflict," no scope is left for cooperation among economic agents and policies of social coordination have no role to play in the eradication of inflation. Institutional crisis and transformation following a hyperinflation have tended to be the common historical way out of such an impasse.

At the other end of the spectrum, when inertia is predominant and inflation costs are significant and widely shared, the game becomes one of "pure coordination," to use Schelling's (1960) expression in another context. Tobin's (1981) well-known stadium metaphor or Sen's assurance game with multiple equilibria epitomize this situation, where the high inflation equilibrium is perpetuated essentially through a pure intergroup coordination failure.[2] In this

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[1] The idea of inflation as a form of market failure is a common theme that can be traced back to the writings of Keynes and has been pursued by many subsequent authors. For references to this literature see Maital and Benjamini (1980) and, in the context of models of inertial inflation, Cortázar (1987).

[2] For an interpretation of inertial inflation in terms of Sen's assurance game, see Cortázar (1987).

case, a temporary, and perhaps compulsory, coordination of price decisions and the deindexation of wage and financial contracts, together with a principle of distributional neutrality, may be the main sufficient condition for a successful counter inflation policy.

More complex problems arise in the intermediate cases where, even if a counterinflation programme leaves the distribution of income no worse than it was under inflation, it may simply not be accepted. The game here is a mixed one, where inflation costs and aspiration gaps persist so that a common interest in social coordination coexists with conflict as to how collective action is to be organized. Prisonner's dilemmas or Schelling's notion of "non zero sum conflict" best epitomize such situations. A social bargaining process will then be required involving, perhaps, a broad revision of the social pact and some form of permanent incomes policy. This complexity is likely to be a significant feature of intermediate inflations. For in such processes, the presence of significant aspiration gaps raises the problem of the coordination of conflicting class claims while, at the same time, the costs of inflation are not high enough for the conflict of interests in the choice of action to be overwhelmed by the sheer need for concerting on *some* action.

The nature of the inflation process will also impinge upon the scope for monetary and fiscal policies. Its role will be limited, first, by the presence of inertia: the present level of aggregate demand cannot affect past inflation. But future inflation, of course, may well be the product of present and past demand shocks affecting the real exchange rate, profit margins, or target real wages; and deflationary demand policies may thus change the trend of inflation as they temporarily create a negative aspiration gap. However, a negative demand shock will not generate a process of ever decelerating inflation in a world of imperfect competition and inertial inflation. The workings of indexation mechanisms and adaptation processes imply that, unlike Phillips curve models, there is not a unique natural rate of unemployment or output level at which inflation is non-accelerating (or decelerating). In the presence of inertia, inflation may be stable over a wide range of capacity utilization and unemployment rates.

A further implication is that the higher inertial inflation is, the lower will be the contribution of a given demand shock to changes in the inflation rate *over the indexation interval*, although the larger frequency of price and wage adjustments that is likely to accompany the higher rate of inflation will *per se* amplify the impact of a given demand shock.[1] This feature may give a clue to why intermediate rates of inflation, characteristic of many Latin American countries over the present decade and combining a significant inertial component with a still relatively large indexation interval, have shown such a strong resiliency to restrictive macroeconomic policies. And it may also explain why the scope for monetary and fiscal policies is enlarged in

[1] On the effects of lagged indexation in reducing the role of excess demand in inflation see, among others, Taylor (1979) and Simonsen (1983).

hyperinflations when, as the indexation interval shrinks to zero, the weight of past inflation is increasingly weakened and the impact of a given demand shock is then rapidly transmitted from market to market, starting typically with the market for foreign exchange.

Our discussion suggests then, perhaps paradoxically at first sight, that deflationary demand policies have a greater role to play in conflict than in inertial inflations. For it is through its effects on distributional conflict that demand may affect the trend of inflation. The scope for it will depend, however, on how much conflict is responsive to demand and this, in itself, is subject to controversy. In fact, the most common view within conflict models of inflation is rather pessimistic: market power is rooted in market structures and institutions that are unlikely to be much affected by economic fluctuations. And the negative effects that a demand contraction has on labour productivity (together with, in some views, a counter-cyclical behavior of profit margins) may even exacerbate distributional conflict and aggravate inflation. A shrinking pie, in this perspective, is hardly a solution to conflicting claims on it.

A more optimistic view acknowledges a greater role for monetary and fiscal policy. It emphasizes the discipline that demand imposes on the market power of economic agents (Rowthorn 1977). Unemployment weakens the bargaining strength of workers in the labour market while excess capacity increases competition in product markets. By lowering target wages and profit margins, deflationary demand policies can reduce aspiration gaps and moderate inflation, although the costs of it may be very large in face of a high degree of distributional conflict. Indeed, as our previous analysis suggests, if the deflationary demand shock is not large enough to completely eradicate conflict inflation—or at least, to sufficiently reduce it as to achieve the stable equilibrium of figure 1[1] —inflation will eventually start to accelerate again. Thus, even in this more optimistic view, deflationary demand policies may have only temporary benefits in terms of reduced inflation while implying significant and permanent output losses.

There is, however, another important aspect to the role of monetary and fiscal policies and to the trade-off between inflation and unemployment. It refers to the "aggregate demand-inflation schedule," which is generally neglected in policy discussions focusing exclusively on the shape of the Phillips Curve. Inflation, even in highly indexed systems and in the absence of excess demand pressures, is generally not neutral in its macroeconomic and distributional consequences. It redistributes real income between the private and the government sectors, modifies the composition of taxation and the distribution of private disposable incomes and alters the structure of real asset returns.[2] To this extent, the rate of inflation is itself an important

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[1] An outcome that is unlikely to happen as a consequence of monetary and fiscal policies *unassisted* by deindexation programmes, given the discontinuous and irreversible nature of the relation between inflation and the indexation interval (which is not captured by figure 1).

[2] Ros (1987) deals extensively with this subject.

determinant of the level of aggregate demand and, as the recent experiences of heterodox policies in Argentina and Brazil suggest, a sudden and large reduction of inflation may produce a demand shock which, if uncompensated, may seriously undermine the success of the counter-inflation programme. Fiscal and monetary policies may, thus, have an important role to play in neutralizing the macroeconomic effects of deindexation programmes and incomes policies, except in circumstances where the real effects of disinflation are negligible or, in the presence of massive excess capacity, may be absorbed through changes in capacity utilization.

We can now bring these various aspects together, and summarize our discussion in a four-fold classification of inflations according to the particular mix of policies most effective to deal with them. At one end of the spectrum, we would find those inflation processes that can be effectively suppressed by incomes policies unassisted by fiscal and monetary measures. Here, there is no real trade-off between inflation and unemployment either because the "Phillips curve" is horizontal, over the relevant output range, or alternatively because inflation has only minor effects on aggregate demand.[1] In either of these cases there is no point in moving along the Phillips curve. The solution to inflation lies in shifting it, through deindexation measures and incomes policies; the

[1] Such a case is not impossible in states of high inflation. Consider, for example, a situation where the loss of normal tax revenues due to fiscal lags and inflation is of the same order of magnitude as the inflation tax. Then–abstracting from other, probably minor, effects—an abrupt elimination of inflation will be neutral in its effects on aggregate demand. See, on the subject, Ros (1987).

nature of these, as argued above, depending on the relative importance of distributional conflict, inertia, and inflation costs.

A second category of inflations requires for its cure both incomes policy and fiscal and monetary measures. Depending on the degree of conflict inflation and on its response to demand policies, the latter may be limited to neutralize the effects on aggregate demand of the reduction of inflation brought about by incomes policy, or they may have a more active role to play in moderating income claims and thus in enlarging the scope for effective incomes policies.

When inertia is absent, the degree of conflict is very high, and inflation costs are unequally distributed, there may be no room left for social coordination, as we argued earlier. However, if conflict inflation is responsive to demand policies, the latter may represent an effective cure for inflation even when unassisted by income policies. This third category of inflations fits well, therefore, into the orthodox prescriptions of pure excess demand models. Paradoxically so, since the underlying case for fiscal and monetary policy is quite different. There, it is the absence of conflict, and of interdependent decisions among powerful economic agents, and not its presence, that leaves no role for incomes policies. The effects of monetary and fiscal policies may also be very different; in contrast to the essentially costless policies of orthodox models, the resolution of conflict through demand deflation may involve large economic and social losses.

Also, it is not quite clear that a high degree of conflict, leaving no room for incomes policies, is mutually consistent with conflict inflation being sensitive to demand deflation measures, or with the latter having a chance of being adopted. When this second condition does not hold, we are led to our final category, the intractable cases. Inflation then becomes a chronic feature of society and we may see, under these conditions, a wide variety of policy experiments failing one after another until eventually a drastic change occurs in the institutional structure of society or in the nature of inflation itself.

IV. Some Comparisons and Extensions

The purpose of this final section is to set our previous discussion into a broader context by comparing the main features of structuralist models with those of other inflation theories.

Theories of inflation may be distinguished depending on the answers they give to the following questions: 1) Does excess demand for commodities and labour lead mainly to price or quantity adjustments? 2) Do markets clear at all, i.e., is market disequilibrium a transitory or a permanent feature of the inflation process? 3) Is disequilibrium, when a permanent feature of inflation, primarily located in products or labour markets, or both?

Let us now look at these three issues in detail. The first one leads us to the distinction between quantity-adjustment and price-adjustment models. The inertial and conflict models of

inflation examined in this paper both give the same answer to the first question, and consider that quantity changes—within limits set essentially by full capacity utilization—play a dominant role in market adjustments. Imperfect competition and lagged indexation are the conditions that account for this feature in both models. In this respect, they differ from both Phillips curve and Keynesian models with flexible markups, where price adjustments play the leading role in market clearing. It is of course this central difference that accounts for the contrasting roles attributed to excess demand and real shocks in the explanation of inflation by the two groups of theories.

It is on the answer to the second question that inertial and conflict theories differ among themselves. Models of inertial inflation view disequilibrium—expressed as a gap between target real wages and the average real wage implied by equilibrium in product markets—as a temporary phenomenon, the product of a real disturbance that in its turn produces a shift towards new equilibrium values. Through the workings of adaptation mechanisms, accelerations of inflation eventually peter out and the process reaches a new steady state where average and target real wages are again equal. In contrast, conflict inflation is characterized precisely by the persistence of aspiration gaps, expressing a chronic disequilibrium between target and average wages. In structuralist models, conflict is to inertial inflation what unanticipated is to anticipated inflation in Phillips curve models.

Taking questions 2 and 3 together, inflation models could be classified into the four boxes of Table 1, depending on whether inflation does or does not reflect market disequilibrium and on which market disequilibrium is assumed to persist in.

Our previous discussion would clearly lead us to fill the first box with inertial inflation and the anticipated inflation of Phillips curve models. Both of these are notions of equilibrium inflation where price expectations, in the one case, and real income targets, in the other, are fulfilled. In our simplified model of inertial inflation, for example, price formation in product markets not only reflects firms' target profit margins (given our assumption of "markup resistance") but it also validates, in steady inflation, the real wage bargain in the labour market. Where those two notions of equilibrium inflation differ is, as

Table 1

		Product Markets	
		Equilibrium	**Disequilibrium**
Labour Market	**Equilibrium**	1	3

Disequilibrium	2	4

we argued above, with regard to the role of expectations and indexation and the underlying assumptions about market structures and adjustment mechanisms.

Conflict inflation is, on the contrary, an expression of permanent disequilibrium. In the simplified model presented in this paper, disequilibrium is located in the labour market while the assumption of "markup resistance" ensures the fulfillment of capitalists' profit targets. If this assumption is relaxed, a gap between average and target profit margins would also arise in the product market, and inflation would reflect a disequilibrium in both product and labour markets. This is box 4 in table 1, and is illustrated by Rowthorn's model of *unanticipated* inflation (see Rowthorn 1977). Similarly, in price-adjustment models with output fixed, profit margins may not fully adjust to achieve a balance between savings and investment plans, such unbalance coexisting with disequilibrium in the labour market. This case is analyzed in Marglin's synthesis of Keynesian and Marxian models of growth and income distribution. Here, as the author puts it: "inflation measures both the frustration of workers trying to maintain a conventional wage and the frustration of capitalists trying to carry out their investment intentions" (Marglin 1984, p. 131).

So far we have looked at the two polar cases of full equilibrium (box 1) and, so to speak, the full disequilibrium of box 4. The remaining boxes also reflect conflict inflation, but with disequilibrium located in only one market. Joan Robinson's "inflation barrier", for example, refers to a price-adjustment model with full "real wage resistance" in the labour market and persistent disequilibrium in product markets. Indeed, as a consequence of workers' ability to defend real wages, profit margins and savings cannot increase enough to balance investment plans and inflation is perpetuated by the persistence of excess investment demand at the profit rate corresponding to the predetermined real wage (see Robinson 1962 and also Marglin 1984, p. 129).

The opposite case, where equilibrium is achieved in product markets while disequilibrium persists in the labour market, is illustrated by another classic example: Keynes' *How to Pay for the War*. With output fixed at full employment, the investment-savings balance is achieved through an increase in profit margins and overall profits that generates the required level of savings. And it is because the resulting fall in consumption standards creates an aspiration gap in the labour market that inflation is perpetuated through the price wage spiral. Conflict inflation, in the version presented in this paper, is nothing else but the "quantity adjustment" analogue of *How to Pay for the War*. Output is here allowed to adjust and, thus, to balance savings and investment. But, just

as in Keynes' analysis, inflation is driven by a disequilibrium between workers' aspirations and the real wage implied by firms' profit margins.

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Appendix on Staggered Wage Contracts, Price Variability and Inertial Inflation

The relation between inflation and relative price variability has been the object of an increasing literature in recent years.[1] This has focussed primarily on the precise nature of the relation as well as on its implications for the welfare significance of inflation. Our interest in the subject also has a different perspective. Whatever the effects of inflation on resource allocation and aggregate supply, it is clear that, in a policy programme involving a price freeze, a high dispersion of relative prices away from their long-term average values constitutes an element of latent inflationary pressure in the post-freeze situation. More generally, the lack of synchronization of price decisions, from which relative price variability results, aggravates the coordination problems discussed in section III, which are present in a process of inertial inflation.

In models of inertial inflation, price variability and inflation relate to each other in two different ways. First, as discussed in section II, relative price shocks are a major source of accelerations (or decelerations) in the inflation rate. Causality, here, runs from price variability to the *change* in the inflation rate. The second aspect concerns the relation between relative price variability and the *level* of the inflation rate. It is on this relation that we shall focus now.

In order to deal with this question it is necessary to relax the assumption made in section I, that wage contracts are revised simultaneously across sectors in general rounds of bargaining. Wage setting is now staggered throughout the unit period. We assume that it is evenly staggered in the sense that a fraction 1/n of the labour force revises contracts in every period of length ψ/n.[2] An implication of this assumption is that as the frequency ($1/\psi$) of wage adjustments increases, wage synchronization rises in the sense that, for any given time period, a larger percentage of the labour force adjusts wage contracts.

Wages are adjusted with a 100% indexation clause, and pricing follows a mark-up rule over current unit labour costs. The assumed mark-up rule allows us to simplify. For, in steady inflation, the dispersion of relative prices away from their average long-term values is then determined by the variance of relative wages. The latter, in turn, given the assumption that wage settlements are evenly staggered, will be determined by the relation between peak and average real wage in any sector i of the economy (w_i/w_j).[3] Let us then, call this relation VAR. From 1.b in

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1 See Fischer (1986, ch. 3) for a review of alternative approaches.

2 Thus, if the unit period is one year, n is equal to 2, and wage contracts last for one year ($\psi=1$), half of the contracts are revised every semester. If ψ is reduced to 1/2, half of the contracts are revised every quarter.

3 Since settlements are evenly staggered and any sector is a representative sector from the point of view of the variance *through time* of real wages, the latter becomes an indicator of the

section I and considering states of the economy where the inflation rate has converged to a steady level and the length of wage contracts (after possible changes) has become uniform across sectors, it follows then that:

$$(1) \qquad VAR = (1+p)^{\lambda}$$

Equation 1 shows, first, that in a period of inflation ($p>0$) some degree of dispersion of relative prices and wages away from their long-term average values will be present under discontinuous and staggered wage and price setting. Moreover, as long as prices change at discrete and fixed intervals (i.e. given λ), the dispersion of relative prices increases as the inflation rate rises.[1] On the other hand, an increase in the frequency of wage and price adjustments, given the inflation rate, leads to a reduction of price variability through a higher degree of wage and price synchronization.

As argued in section I, however, the indexation period is likely to shorten as the rate of inflation rises, a relation which is expressed in a simple way, in the following equation (which replicates expression 2 in section I):

$$(2) \qquad \lambda = \lambda o/(1+P)$$

Combining now equations 1 and 2:

$$(3) \qquad 1n\, VAR = \frac{\lambda o \bullet 1n\,(1+P)}{(1+p)}$$

Equation 3 shows that, when account is taken of the effect of inflation on the frequency of price and wage adjustments, the relation between inflation and the dispersion of relative wages and prices may present an inverted U shape as in Figure 2.

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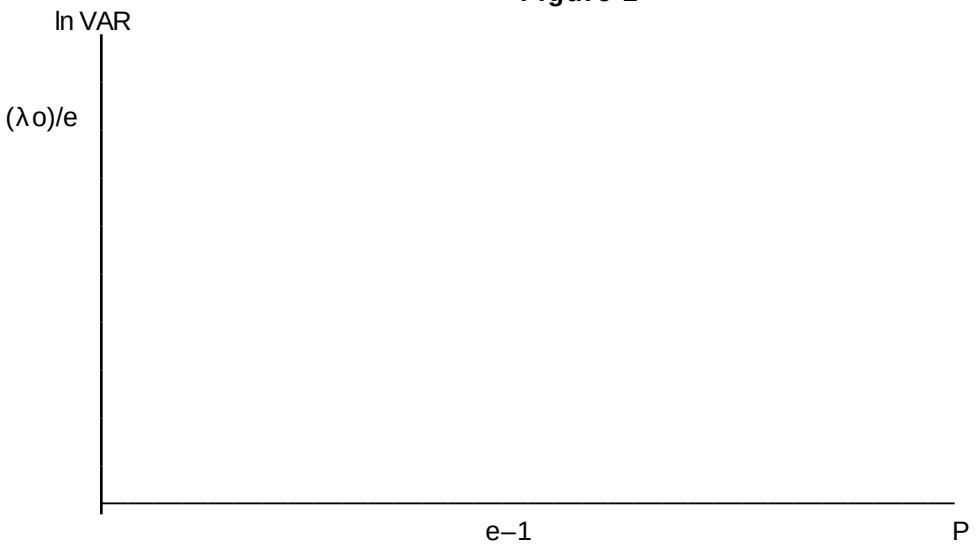
deviations *across sectors* of relative wages from their average long-term values, at any given point in time.

[1] This is a feature of the so-called “menu cost” approach to the relation between price variability and inflation. See Fischer (1986).

Figure 2



This inverted U shape can be interpreted as follows: at low or medium inflation rates, prices are changed more frequently as inflation rises but, due to the presence of transaction costs in revising contracts, not often enough to maintain the previous dispersion of relative prices that, then, widens. However, at high rates of inflation, sharp accelerations in the frequency of price and wage adjustments are likely to occur in order to protect the real value of contracts (a process which, in practice, may take the form of an increasing number of transactions being made in a foreign stable currency or through payments in kind). Thus, even if a rise in the inflation rate tends by itself to increase the variance of relative prices, the latter must eventually fall as the indexation interval shrinks to zero and price changes become continuous (in domestic currency, prices being fixed in foreign currencies).

The model has another interesting implication, already suggested in section II. When the time interval between successive price changes shrinks to zero, so does the dispersion of relative prices away from its average values (equation 1). The stabilization of the general price level becomes then a relatively easy task, for it involves successfully pegging a single price in terms of money. The model suggests, therefore, an abrupt end to a process of hyperinflation,[1] which in the classic cases after World War I took place by pegging the nominal exchange rate. Since transactions were made in foreign currencies and the general price level became tied to the exchange rate, hyperinflation stopped abruptly, provided that the associated real exchange rate could be maintained.

[1] See Lopes (1984) and Arida and Lara Resende (1985) for interpretations of the end of hyperinflations within models of inertial inflation.