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Pressure groups and inflation: A cyclical model

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"Este texto apresenta argumentos segundo os quais as pressões de grupos organizados — mas que atuam de forma descoordenada — sobre as decisões de governo relacionadas a questões fiscais, provocam aumento da inflação, ao mesmo tempo em que propiciam a desorganização da economia. Esse último efeito impõe limites ao comportamento desses grupos. Um modelo do tipo "presa-predador" é utilizado para descrever a correção cíclica entre o nível de organização de tais grupos e a inflação.".

1. INTRODUCTION

The cases of persistent high inflation have a paradoxical aspect. Although inflation has serious effects on economic efficiency, some countries have tremendous difficultieis in stabilizing their economies[1], as in Latin America in the 80s. This suggests that the economic agents have chosen a positive inflation rate to fulfill their desired goals (Heymann, Navajas & Warnes, 1988).

Given such a picture, it is hard to consider economic agents as atomized and as taking economic policies as exogenous. In fact, considering agents as organized in groups with common objective functions allows us a better understanding of the situation. As Olson (1965) points out, the interest groups' action may have negative economic effects. These groups appropriate any allocative improvement which their collective action can create. On the other hand, literature on new corporatism (e.g., Calmfors & Driffill, 1988) associates degree of coordination with macroeconomic effects. The larger the degree of coordination, the

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[1] See Tabellini (1987), and Alesina & Drazen (1991) for a discussion of the general difficulties of implement a stabilization program and Camargo (1994) for the Brazilian case.

better the macroeconomic performance. Here, we assume Olson's notion of interest groups, and analyze the effects of their uncoordinated actions in the public realm. It could be broadly related to the action of wage bargains in an intermediate-centralized bargaining structure in the Calmfors and Driffill's inverted U curve.[2]

We are assuming here that there are some groups in the economy who create mechanisms (in an uncoordinated way) to extract benefits from the public budget, which maximise their respective objective functions.[3] Such groups do this through their capacity of organization, and their ability to gather information. The power of these groups grows according to their capacity to extract desired benefits from a weak government.[4] The central point of this paper is that there is a dynamic relationship between interest groups' actions and inflation.

The behavior of the groups is similar to the behavior of the free-rider in public finance theory. The groups try to extract benefits from the government without necessarily contributing in the same proportion, thus generating inconsistent demands on the government expenditure. The recognition by the representative group of the negative effects caused by its demand has a negligible effect on its own decisions. This is because each group appropriates, in a private way, an exclusive part of the public transfers, without any kind of punishment. In this way, while the benefits are appropriated by the representative group, the costs are distributed among the whole society.

If the groups within the economy are not accessible to all economic agents the scenario outlined above is possible. In the same vein, such a situation is possible if the organization occurs through different degrees of influence on the relevant decision variables (Becker, 1985). Economic agents would exhibit inconsistent behaviour in attempting to obtain benefits from the government, if all agents have the same capacity to extract benefits from the government. If there are many groups demanding benefits from a government which has a given and limited capacity to extract real resources from the economy, the benefits received would be less than the costs incurred. The limit on the extraction of resources is given by the maximum level of inflation which does not prevent the proper working of the economy. Therefore the groups' incentive is the extraction of benefits, and the constraint is the social cost of inflation.

Obviously, this mechanism cannot be mantained indefinitely. The costs which are generated (high inflation) by this behavior lead to its own wearing away, and hence disorganizing and weakening these groups, which causes a subsequent reduction in their demands and thus a fall in inflation. However, the process tends to reproduce itself, as in a cycle.

In the next section, we present a dynamic model capturing the main features of the relationship between pressure groups and inflation. Then, we conclude with a few economic policy implications.

[2] On the role of interest groups in different bargaining structures, see Carneiro (1996).

[3] Arbache (1993) describes this type of behaviour as new corporatism.

[4] There is an extensive literature relating political instability, weak government, fiscal debts and inflation. See for example, Alesina & Tabellini (1990) and Grilli, Mascianaro & Tabellini (1991).

2. MODEL

Assume the growth rate of inflation ($\hat{p} = \dot{p}/p$, where p is the inflation rate), rises directly with the growth rate of nominal wages ($\dot{w}/w$, where w is the nominal wage):

$$\dot{p}/p = f(\dot{w}/w), \quad f' > 0 \tag{1}$$

In equation (1), increases in the nominal wage leads to increases in the cost of production and hence in prices. The growth rate of the nominal wage rises with the degree of new corporatism (N), which proxy can be the degree of organization of syndicates:

$$\dot{w}/w = g(N), \quad g' > 0 \tag{2}$$

Organized workers become more powerful to demand higher wages. Substituting (2) into (1) , we obtain :

$$\dot{p}/p = f[g(N)] = F(N), \quad F' = f'g' > 0 \tag{3}$$

The explicit functional form of *F* could be:

$$F(N) = eN - c \tag{4}$$

where *e* is the marginal effect of an increase in the degree of new corporatism on the growth rate of inflation. *e* and *c* are positive constants.

The degree of new corporatism *(N)* is reinforced by the gains that it can generate through an increase in the national income share of organized groups, *aY*, where $a \in [0,1]$. *a* is a proxy for the benefits that organized groups extract from the public realm. However, high inflation rates destimulate the growth of *N* because high inflation rates make it more difficult for the pressure groups to satisfy their demand. We can then describe the growth rate of new corporatism as:

$$\dot{N}/N = (a - bp)\, Y \tag{5}$$

where *a* and *b* are positive constants. We could see that the last term *(-bpY)* on the right hand side of equation (5) is a proxy for the social cost of inflation, which weakens new corporatism arrangements.

We assume a negative effect of inflation rate acceleration on the growth rate of the output:

$$\dot{Y}/Y = m(\dot{p}/p), \quad m' < 0 \tag{6}$$

Equation (6) means that an acceleration of inflation rate disorganizes the economy and affects negatively its growth rate.

Equations (4) and (5) form a dynamic system of the Lotka-Volterra[5] or predator-prey kind[6]:

$$\dot{N} = N(a - bp)Y \tag{7}$$

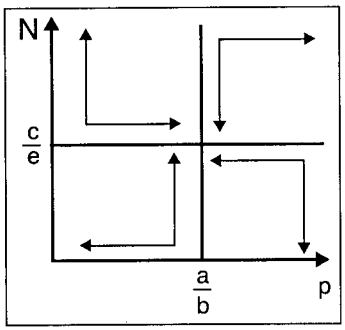
$$\dot{p} = p(-c + eN)$$

[5] See Gabish & Lorenz (1989) on cycles in economic models.
[6] See Hirsch Smale, 1974.

where $a,b,c,e > 0$, and $N(0) > 0$, $p(0) > 0$ are the initial conditions. If we consider a as a function of government expenditure and deal with the public sector dynamics, our system will have three dimensions, which could generate chaotic motion and other complex solutions (Hofbauer & Sigmund, 1988), without bringing valuable insights onto our viewpoint. In the system (7) we can consider Y constant, and equal to the unity, since the equation (6) has been defined to separate Y from p and N.

The solutions of this system, for $\dot{p} = \dot{N} = 0$, *are: (i)* $N = p = 0$; *(ii)* $p = a/b$ *and* $N = c/e$. The phase diagram is easily described: $\dot{N} > 0 \Leftrightarrow p < a/b$ *and* $\dot{p} > 0 \Leftrightarrow N > c/e$. Graphically, we have:

FIGURE 1



Thus, the trajectories move clockwise.

If the Liapunov function (see Beavis & Dobbs, 1990) is considered:

$V(N,p) = g$, where g is a constant for a closed trajectory, then:

$$V = V_N N + V_p p = V_N N\,(a - bp) + V_p p(-c + eN) = 0 \qquad (8)$$

And rearranging terms:

$$\frac{NV_N}{-c + eN} = \frac{-pV_p}{a - bp} \qquad (9)$$

Making (9) equal to a constant, which we can choose to be unity, and integrating, we obtain:

$$V_N = \left(-\frac{c}{N} + e\right) \Rightarrow V = \left(-c \ln N + e N\right) + f(p)$$

$$V_p = \left(-\frac{a}{p} + b\right) \Rightarrow V = \left(-a \ln + bp\right) + g(N) \qquad (10)$$

where f and g denote arbitrary functions.From (10) it follows that:

$$V = -c\ln N - a\ln p + eN + bp \qquad (11)$$

where (11) satisfies (9) and = 0 at the equilibrium point E= (a/b, c/e).

Considering the Hessian matrix:

$$\begin{pmatrix} V_{pp} & V_{pN} \\ V_{Np} & V_{NN} \end{pmatrix} = \begin{pmatrix} a/p^2 & 0 \\ 0 & c/N^2 \end{pmatrix}$$

As $a/p^2 > 0$ and $(a/p^2)(c/N^2) > 0$, the Hessian matrix is positive definite at point E. Then, E is a minimum point, it is a stable-Liapunov equilibrium.

For any other point W = (p,N), p,N > 0, with $W \neq E$, if it is not in a closed orbit, then there is a sequence t_n such that a solution $\theta(t_n/W)$ would lie above the line p=a/b when $t_n \to \pm\infty$ when $n \to \pm\infty$. Thus, $\theta(t_n/W) \to E \Rightarrow V(W) \to V(E)$ but this is absurd because V(W) is constant. So, W is in a closed orbit.

This closed orbit is defined given the initial conditions N(0), p(0). Graphically, the system is a family of closed orbits around E (Figure 2), and, consequently, there is a cyclical relationship between inflation and new corporatism (Figure 3):

FIGURE 2

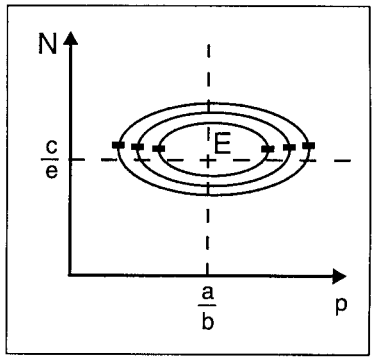
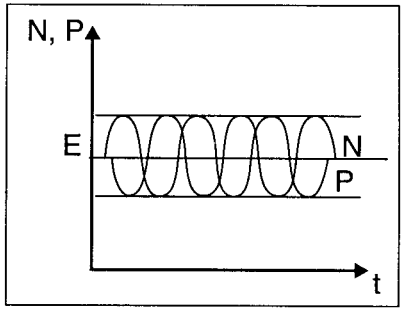


FIGURE 3



It has to be stressed that the amplitude of the cycle depends on the initial conditions, because the closer they are to point *E*, the smaller the amplitude, and the further they are, the larger the amplitude. Another important feature is that the equilibrium point, given by *E*, is the gravity centre of the whole cycle (as shown in

Figure 3). If E could be shifted exogenously, we could have a new level of inflation. Notice that it could occur if parameters a or b could be changed by exogenous decisions. If we could change the initial conditions to (the stable) point E, by any kind of exogenous control, the cyclical relationship between N and p would disappear. Therefore, we can have a situation with a low, stable and acyclical inflation rate.

We can also analyze the relationship between output (Y) and the new corporatism (N) following the same steps above in the dynamical system defined by the equation formed by substituting equation (4) into equation (6) and equation (5), since the function m in equation (6) is specified.

3. CONCLUSION

The organization of pressure groups causes inflationary demands which gradually disorganize the economy. This strengthens their existence to a point where their demands become counterproductive. The disorganization of the economy discourages the creation or strengthening of the groups, and leads to a decompression around their interests. This causes a fall in the inflation rates.The reduction in inflation makes the behavior of the pressure groups less noticeable, and thus strengthens them and encourages the formation or rebuilding of other groups. From this point, the whole cycle is repeated.

Thus, the model shows that inflation and new corporatism rekindle themselves in a cyclical manner, and that the oscillations in their values will depend on the initial conditions. Another interesting result is that there are maximum and minimum values of inflation and new corporatism beyond which the economy will not go, due to the existing rekindling mechanism.

The policy implications given from the model to reduce inflation are:(i) increasing the social cost of inflation (parameter b), which means that the inflation rate tolerated by society should be lower; (ii) a reduction in the group's benefits (parameter a) is advisable. In this way, through institutional arrangements to regulate the transfers, subsidies and the supply of exclusive public goods, pressure on public expenditure should be avoided; (iii) the model shows the importance of creating mechanisms to change the initial conditions in order to move toward the equilibrium point (which is given by the level of inflation and new corporatism, which the cycle turns on). Thus the cyclical pattern will be removed by a perfect modification of initial conditions. In other words, by initially coordinating all decisions involved in the process described by our model, such that the equilibrium point can be achieved.

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