

## MACROECONOMIC POLICY AND ELECTIONS: THEORIES AND CHALLENGES \*

Marco E. Terrones

GRADE

*Resumen:* Este trabajo reseña algunos desarrollos recientes en la literatura sobre política económica, poniendo énfasis en la relación existente entre elecciones y política macroeconómica. Se destaca también que a pesar de los grandes avances en el área, aún quedan muchos problemas por resolver. En particular, los aspectos normativos y empíricos requieren con urgencia de más estudios.

*Abstract:* This paper reviews recent developments in the literature of economic policy-making. It focuses in particular on the relation between elections and macroeconomic policy. It should also be noted that in spite of tremendous advances in the area, there are still many important unresolved issues. In particular, both the normative and empirical areas are the ones in most urgent need of study.

### 1. Introduction

In the last few years, we have seen interesting developments in the theory of economic policy. Economic policy is no longer considered to be the result of some exogenous process, but rather the rational decision of a policymaker who has an objective function and who is engaged in a strategic interaction with the electorate. In this context, the time consistency problem of economic policy has been the dominating topic.<sup>1</sup> Recently, many researchers have studied the scope and relevance of this problem for fiscal and monetary policy, and a variety of suggestions have been made.

\* I am very thankful to Ken Rogoff and Carlos Urzúa for their continuous advice and help. Obviously, I am responsible for all omissions or errors.

<sup>1</sup> See Rogoff (1987) for a survey on this topic.

Other researchers, taking a different tack, have further explored the objectives and incentives of the policymakers and, by doing so, have *rediscovered* the political-economic models. Indeed, in most democratic societies, policymakers are elected officials who have to face elections on a regular basis. Because of this, the objectives and incentives of these policymakers are affected by their interest in being reelected. Moreover, since policymakers tend to favor their constituencies, they also tend to be partisan.

The purpose of this paper is to present the most recent developments in this area. In order to avoid a long discussion, I center my attention on those works that have been the most influential. I also deal with some of the issues that require further analysis. It should be noted that most of the theoretical models I will discuss are positive in the sense that they are constructed to explain some observed empirical regularities. However, a few of them can be usefully applied to study normative issues such as the optimal design and reform of political and economic institutions.

This paper is organized as follows: First, I review the partisan theory of economic cycles. Next, I introduce the influence groups approach to the theory of economic policy. After that I briefly review the literature on electoral policy cycles. Then, I present some issues on elections in open economies. Finally, I review some of the unresolved issues still remaining in this area.

## 2. Partisan Theories of Economic Cycles

It has long been argued that policymakers tend to implement macroeconomic policies to favor their constituencies. For instance, Hibbs (1977), based on some observations about the American and British economies, postulated that political parties have different preferences regarding the unemployment-inflation combination. More precisely, he argues that the unemployment rate (inflation rate) is lower (higher) under a liberal (Democratic or Labor) administration than under a conservative (Republican or Conservative) one. Behind Hibbs' argument, there is a stable Phillips curve that can be readily exploited by different policymakers. Moreover, each unemployment-inflation combination has a different effect over income distribution: a low unemployment-high inflation combination tends to reduce income inequality; in contrast, a high unemployment-low inflation combination tends to increase income inequality. Alt (1985) studies 14 Western industrial countries during the 1960-1983 period. He finds that changes of political parties in the government display some of the effects suggested by Hibbs.

Obviously, Hibbs' argument can not be sustained in the context of the recent rational expectations models where there is no possibility of an exploitable Phillips curve. Alesina (1987) develops a rational expectations model that

yields some (but not all) of the empirical "regularities" discussed by Hibbs. In Alesina's model, the electoral uncertainty of which political party is going to be elected to office causes a short-lived unemployment-inflation trade-off only in election years. To make this more precise, we will now briefly discuss a simplified version of the model.

2.1. *Alesina's Model*

Alesina analyzes an intertemporal two-party model. He argues that political parties are different because they pursue the economic interest of different constituencies. Because of this, policymakers with different political affiliations would generally differ in their macroeconomic policy choices.

Alesina's model is a two party version of the Barro-Gordon (1983) model. The two parties are called party *D* (for Democratic) and party *R* (for Republican) respectively. Each political party's preferences are given by:

$$W^i = \sum_{t=0}^{\infty} \beta^t U(y_t, \pi_t) \tag{1}$$

where  $i \in \{D, R\}$ ,  
 $\pi_t$  = rate of inflation,  
 $y_t$  = rate of growth of real output,  
 $\beta$  = discount factor,  $\beta \in (0,1)$ .

Thus, political parties have preferences regarding the rate of growth of real output and the inflation rate. Here the rate of growth of real output is a proxy for the rate of unemployment. This is so since, by Okun's Law, growth and unemployment are inversely related. In order to further simplify matters, let

$$U(y_t, \pi_t) = [y_t^2 - (\pi_t - \eta^i)^2] / 2, \tag{2}$$

where  $\eta^i$  is a constant,  $\eta^D > \eta^R = 0$ . So that the *R* party's inflation bliss point is smaller than that of the *D* party.

The structure of the economy is very simple and can be represented by an expectations augmented aggregate supply curve (EAS). This curve is the result of some rigidities in the labor market: workers sign non-contingent labor contracts yearly. Elections (if any) take place after the labor contracts have been signed. Therefore, the only source of uncertainty is the electoral outcome itself; more concretely, the economic policies that the new government will follow. The EAS curve is given by the following expression:

$$y_t = y^* + \tau(\pi_t - \pi_t^e), \tag{3}$$

where  $y^*$  = "natural" output rate of growth,  
 $\tau$  = constant,  $\tau \in (0,1)$ ,  
 $\pi_i^e$  = expected rate of inflation.

Thus, the output rate of growth of the economy will differ from its natural level only when the expected rate of inflation is different from the actual one.

In the absence of reputational effects, we can simplify party  $i$ 's problem, in *off-election* years, to the following static problem:<sup>2</sup>

$$\max_{\pi_i} \{ [y^* + \tau(\pi_i - \pi_i^e)]^2 - [\pi_i - \eta^i]^2 \} / 2 . \quad (4)$$

Here,  $\pi_i^e$  is taken as given. The first order condition for this problem requires that

$$\tau y^* + \tau^2(\pi_i - \pi_i^e) - (\pi_i - \eta^i) = 0 . \quad (5)$$

Moreover, the second order condition is readily satisfied since  $\tau^2 < 1$ . In a rational expectations equilibrium, the following must be true

$$\pi_i^e = \pi_i .$$

Using this expression in (5), we obtain:

$$\pi_i^i = \tau y^* + \eta^i ; i \in \{D, R\} . \quad (6)$$

This equation describes the workers' rational expectation of the inflation rate in *off-election* years (given that party  $i$  is in office).

If  $t$  is an *election* period, workers are uncertain about the electoral outcome. Suppose voters assign a probability  $P$  that party  $D$  would be elected; then the voters' rational expectation of the inflation rate is:

$$\pi_i^e = \tau y^* + P\eta^D . \quad (7)$$

Next, suppose that party  $i$  is elected into office; then the optimal inflation rate that this party would choose is given by:

$$\pi_i = \begin{cases} \tau y^* + (1 - \tau^2 P)\eta^D / (1 - \tau^2) & \text{for } i = D \\ \tau y^* - (\tau^2 P)\eta^D / (1 - \tau^2) & \text{otherwise.} \end{cases} \quad (8)$$

<sup>2</sup> We assume that an administration can effectively control the inflation rate. This is a shortcut commonly used in this kind of model.

Expression (8) differs from (6) because the electoral uncertainty is affecting voters' expectations of the inflation rate.

In summary, this model predicts that in off-election years, the real output rate of growth does not depend on which party is in office, so that

$$y_{t+1} = y^* .$$

Moreover, it predicts that the inflation rate is higher under a *D* administration than under an *R* administration

$$\pi_{t+1} = \begin{cases} \tau y^* + \eta^D & \text{for } i = D \\ \tau y^* & \text{otherwise.} \end{cases}$$

This model also predicts that in election years, there will be an expansion under a *D* administration and a recession under a *R* administration, thus

$$y_t = \begin{cases} y^* + \tau(1 - P)\eta^D / (1 - \tau^2) & \text{for } i = D \\ y^* - \tau(1 + \tau^2)P\eta^D / (1 - \tau^2) & \text{otherwise.} \end{cases}$$

From expression (8), it is clear that a *D* administration is always more inflationary than an *R* administration. Furthermore, it is easy to verify that

$$\pi_{t-}^D > \pi_{t+1}^D > \pi_{t+1}^R > \pi_t^R .$$

One undesirable feature of Alesina's model is the assumption that *P* is exogenously given. Alesina (1988b) recognizes this problem and makes the determination of *P* endogenous. In order to accomplish this, he assumes that voters' indirect utility function (which is similar to that of the political parties) is stochastic. In particular, he assumes that each voter's inflation bliss point,  $\eta$ , is a random variable with known cumulative probability function,  $F(\eta)$ , and density function,  $f(\eta)$ , and with support on  $Y = [\eta^l, \eta^h]$ , where  $\eta^l < \eta^R (=0) < \eta^D < \eta^h$ . Under these conditions, Alesina shows that each voter would choose, at election time, the party that has an  $\eta$  closest to his own. Moreover, in this context, policy convergency is not possible.<sup>3</sup>

Alesina and Sachs (1988) and Alesina (1989) present evidence in favor of this theory. Alesina and Sachs focus their study on the U.S. case. In contrast, Alesina (1989) presents evidence for 12 industrialized countries (including the U.S.). These two studies find evidence that macroeconomic fluctuations are

<sup>3</sup> Alesina also shows that if the interaction between voters and political parties is modeled as an infinitely repeated game, complete or partial policy convergency may be possible.

associated with changes of the political party in office. Moreover, they find that left-wing parties tend to be more expansionary than their counterparts from the right-wing only in the early part of their tenure in office.

## 2.2. *Weakness of Alesina's Model*

Elsewhere, Rogoff (1988) discusses some of the theoretical and empirical limitations of Alesina's model. At a theoretical level, Rogoff finds the following problems:

- i) The timing at which contracts are signed seems unnatural in a world with rational agents. Indeed, voters can benefit from signing their labor contracts after the electoral outcomes are known.
- ii) By assuming a fixed number of political parties, Alesina avoids elaborating on a theory that would explain why other political parties cannot appear in the system.

Some other deficiencies in Alesina's framework are the following:

- i) Partisan fiscal policy is not considered. By design, the Barro-Gordon model was constructed to address time-consistency problems in monetary policy. However, there is strong evidence that transfers, government expenditures and taxes are frequently used to favor the incumbent's constituencies.<sup>4</sup>
- ii) The assumption that political parties do not care about their political survival appears to be rather extreme. Political parties are flexible enough to locate themselves in a strategic position to increase their chances of being elected.
- iii) The assumption that the incumbent has total control of the inflation rate needs some caution. In countries like the U.S.A. in which there is a relatively independent monetary authority, there is an important strategic interaction between the incumbent and the monetary authority that can lead to some surprising outcomes. Alesina (1988a) informally discusses how the independence of the monetary authority may reduce the level of political influence in the economy. Further complications appear in the case of an open economy where, as is well known, the money supply may be endogenously determined (depending upon the exchange rate regime).

<sup>4</sup> Hibbs and Dennis (1988) study the income distribution effects of partisan theory of macroeconomic policy. They point out two channels through which economic policy may affect income distribution:

- i) A global channel. Economic policy, by affecting cyclical economic activity, indirectly affects income distribution.
- ii) A local channel. Related to the effects of taxes and transfers on income distribution.

### 3. Theories of Pressure Groups

This literature is related to the partisan theory of economic cycles. Here, it is assumed that economic policies are influenced by the efforts of individuals and economic groups aimed at furthering their specific economic interests. Competition among pressure or influence groups produces an equilibrium set of taxes, transfers, government expenditures, and other policies which are socially suboptimal. Moreover, the time and resources allocated to influence activities are wasteful for society.

The main contributors in this area are Olson (1965), Krueger (1974), Becker (1983), and Brock and Magee (1984), among others. Initially, most of the attention in this area was focused on the issue of trade policy and protectionism. More recently, this focus has been shifted towards fiscal policy and economic growth. In this section, we briefly review these latest developments.

It is assumed that pressure groups are powerful enough to influence electoral outcomes. For instance, Becker (1983) argues that voters are easy prey for the different pressure groups since they have weak incentives to become informed about political issues. Indeed, voters realize that their individual actions have insignificant (if any) effects on electoral outcomes. Because of this, pressure groups can influence electoral outcomes through an effective use of (mis) information. Moreover, elected officials are assumed to implement the outcome of the competition among interest groups. Failure to do so would cause their removal from the government.

#### 3.1. *A Model of Pressure Groups Competency*

This model is a modified version of Becker's (1983), and Brock and Magee's (1984) models. Assume that each individual's utility function is linear with respect to his/her real income. Assume also that there are two groups ( $A$  and  $B$ ) in this society. Each of these groups is composed of  $N_A$  and  $N_B$  identical members, respectively. These two groups are pitted against each other in a fight for income distribution. One group has to pay taxes and the revenues of these taxes goes to the other group as transfers.

Every period, each particular member of group  $A(B)$  receives an endowment of  $\epsilon_A(\epsilon_B)$  units of a final good. Moreover, each individual has a fixed time endowment of  $\phi$ . This time endowment can be allocated into productive activities—or labor ( $L$ )—and redistributive activities ( $R$ ). There is a linear technology to transform labor into final products, so that each unit of labor produces  $w_A(w_B)$  units of the final good. Here,  $w_A \neq w_B$ .

The amount of taxes (transfers) that a particular group pays (obtains) is determined by an *influence* function which depends on the redistributive (i.e. lobbying) activities of each interest group. Thus

$$N_A \tau_A = \Lambda(N_A R_A, N_B R_B) \quad (9)$$

and 
$$N_B \tau_B = -\Lambda(N_A R_A, N_B R_B) . \quad (10)$$

where  $\tau_A$  and  $\tau_B$  are lump-sum taxes or transfers per individual,<sup>5</sup>  $\Lambda(\dots)$ , the influence function, is a twice continuously differentiable function, and

$$\Lambda_1 > 0, \Lambda_2 < 0, \Lambda_{11} < 0, \text{ and } \Lambda_{22} > 0 .$$

From (9) and (10) it should be clear that we have a *zero-sum* game on income distribution.

All the individuals that belong to each of the influence groups have the same common objectives; therefore, they constitute a team. Then, team  $A$ 's problem is:

$$\begin{aligned} & \max_{L_A, R_A} N_A [\epsilon_A + w_A L_A - \tau_A] \\ & \text{s.t. } N_A [L_A + R_A] = N_A \phi \text{ and} \quad (11) \\ & N_A \tau_A = \Lambda(N_A R_A, N_B R_B) \end{aligned}$$

taking  $N_B R_B$  as given (Nash equilibrium). Similarly, team  $B$ 's problem is

$$\begin{aligned} & \max_{L_B, R_B} N_B [\epsilon_B + w_B L_B - \tau_B] \\ & \text{s.t. } N_B [L_B + R_B] = N_B \phi \text{ and} \quad (12) \\ & N_B \tau_B = -\Lambda(N_A R_A, N_B R_B) \end{aligned}$$

taking  $N_A R_A$  as given.

Assuming that an interior solution exists, the first order conditions for the above problems are:

$$w_A = -\Lambda_1(N_A R_A, N_B R_B) \quad (13)$$

and 
$$w_B = \Lambda_2(N_A R_A, N_B R_B) . \quad (14)$$

Equation (13) is team  $A$ 's reaction function and equation (14) is team  $B$ 's reaction function. These two equations imply that individuals should allocate their time between labor and lobbying in such a way as to equalize their

<sup>5</sup> This analysis can easily be generalized to consider distortive taxes and subsidies.



marginal returns. Solving these two equations, we can determine  $R_A^*$  and  $R_B^*$ . Depending upon the values of  $N_A$  and  $N_B$ , the more productive team (that with a higher  $w$ ) may end up allocating more of its time endowment to redistributive activities than to productive ones. For this reason, the levels of economic activity may suffer. Also, the more conflictive a society is, the less productive it becomes.

In the analysis above, it is clear that influence activities affect the economic performance of a society. However, the macroeconomic effects of these activities are not yet clear. Brock and Magee (1984) – see also Magee, Brock and Young (1989) – provide a partial answer to this issue. They construct an intertemporal equilibrium model in which agents are locked in battle for income distribution. In this world, they find the following results:

- i)* The wealthier an economy is, the higher the amount of resources allocated to redistributive activities. Wealth in their model is measured by the level of capital stock.
- ii)* The higher the wage rate is, the lower the time allocated to influence activities.
- iii)* In the long-run, there is no association between growth rates of the different macroeconomic variables and redistributive activities.

This last result is a consequence of the assumption of exogenous technological change.

In a closely related work, Terrones (1990) develops a dynamic macroeconomic model with influence activities and endogenous growth. In this model, economic growth results from the endogenous accumulation of human capital. Individuals allocate their time to the accumulation of human capital, to productive activities, and to influence activities. Individuals, by engaging in influence activities, affect the amount of transfers (direct and indirect) that the government makes to them; thus, the distribution of government transfers among different agents is endogenously determined. Clearly, agents are engaged in a dynamic non-cooperative game for income redistribution.

In the context of this model, Terrones is able to show that influence or redistributive activities may have important effects on the short-run and long-run performance of an economy. In particular, the levels and rates of growth of output, consumption and capital (physical and human) are inversely related to the amount of influence activities in which economic agents engage. Moreover, the long-run behavior of the capital rental rate and skill-weighted wages are inversely related to these influence activities. As certain societies are more successful than others in generating conditions that take their members away from influence activities, the model predicts a complete spectrum of growth experiences across different countries.

### 3.2. *Weakness of the Pressure Groups Theory*

Obviously, the main problem of this theory is the lack of a more developed theory of voting behavior. The assumption that pressure groups can buy votes is not in keeping with the experience of most democratic societies. In most cases, voters do their homework because the economic costs of doing so are negligible.

Another problem with this theory is the assumption that policymakers implement the outcome of the competition between influence groups. Obviously, this is not necessarily so since policymakers may have their own objectives and incentives. Thus, influence groups have to look for ways of disciplining the policymakers. Evidently, the equilibrium one may get from considering all these factors may be different from the one predicted by the influence group theory.

Finally, one would like to learn more about the microfoundations of the political influence function. Milgrom (1988) makes some progress in this direction. However, further work is necessary.

## 4. Political Business Cycles

The development of this theory is in the tradition of Schumpeter (1947), Downs (1957), Nordhaus (1975), and Tufte (1978). Downs (1957) postulated that political parties are mainly interested in winning elections. As a result, he argues that in a two party-system, parties choose the policies that are preferred by the *median voter* so that there is policy convergence. Clearly, these predictions are in sharp contrast with those reached under the partisan theory previously discussed.

Most people recognize that the performance of an economy has a major effect on the electoral fate of the incumbent government going for reelection. In these circumstances, it is expected that the incumbent would promote economic growth and stability at election time. Nordhaus (1975) constructed the first formal model that delivers these types of predictions and behavior of the incumbent. The model used by Nordhaus is composed of myopic economic agents and an exploitable Phillips curve. Under these conditions, the incumbent, regardless of his party affiliation, would always generate temporary booms at election time, thus generating political business cycles. Nordhaus' work, after enjoying a brief period of popularity and acceptance, was criticized theoretically since with the rational expectations revolution the major features of Nordhaus' model have become questionable. Moreover, only weak empirical evidence was found in favor of Nordhaus' model. This situation generated disenchantment in the area and, as a consequence, very limited theoretical work was conducted until the mid-eighties.

Recent research, using a game theoretical framework, has focused on the study of the strategic interaction of rational voters and the government incumbent. For instance, Ferejohn (1986) develops a dynamic model in which voters' strategies affect the incumbent's incentives, since it is assumed that voters base their voting behavior on evaluations of the incumbent's performance in office.<sup>6</sup> Therefore, voters may be able to motivate the incumbent not only to pursue his own objectives but, more importantly, the objectives of the electors. Ferejohn shows that the strength of this influence weakens as a society becomes more heterogeneous. The problem with Ferejohn's analysis is that voting is retrospective and that the model he uses is not a macroeconomic model.

More recently, Cukierman and Meltzer (1986), Rogoff and Sibert (1988), and Rogoff (1990) have made significant contributions to our understanding of the design of economic policy in the context of democratic systems. In their view, political parties are *managerial* teams in charge of the provision of public goods and services. In this context, governments are characterized by their competence level in making timely decisions concerning economic policy.

For instance, Cukierman and Meltzer (1986) develop a model in which policymakers are distinguished by their ability to accurately forecast the future, and thus adequately set economic policy. In their model, voters prefer governments with better forecasting abilities because they produce higher welfare levels. Voters are rational, but they are uncertain about the state of the economy and the government's actions. In contrast, the government incumbent is better, but not fully, informed about the state of the economy. Moreover, the incumbent has no incentives to make this information public because he can benefit from it at election time, since voters use the welfare generated by the incumbent (during his tenure in office) as an indicator of his forecasting ability and thus future performance. Economic policy in this setup affects not only the present but also the future level of welfare. As a result, any incumbent facing an election would suboptimally set economic policy to increase the level of welfare in that period even at the cost of generating substantial losses of welfare during the following period. For this reason, a democracy is costly. It should be noted that the main limitation of Cukierman and Meltzer's analysis is the lack of a well-developed model economy.

In Rogoff's (1990) –see also Rogoff and Sibert (1988)– analysis, different administrations are characterized by their competence in the provision of public goods and services. A competent administration delivers a higher amount of public goods at a lower cost (taxes) to private individuals. In these conditions, voters prefer competent administrations to incompetent ones. In Rogoff's model, there is a temporary information asymmetry about the

<sup>6</sup> This model resembles a dynamic principal-agent framework. See also Barro (1973).

incumbent's competence level. The incumbent learns about his own competence level, which evolves stochastically, before he chooses economic policies and faces elections (when elections are due). In contrast, voters learn about the incumbent's competence only during the following period. As a result, any incumbent would generate political budget cycles in which taxes are set suboptimally low and government spending suboptimally high. The incumbent finances these budget deficits by reducing the level of public investment and (in some cases) by generating higher levels of inflation. What does the incumbent gain from behaving this way? The incumbent enjoys being in office, thus, at election time, he attempts to transfer his private information to voters: competent incumbents need to distinguish themselves in order to successfully face the electoral process.<sup>7</sup> Next, a stripped down version of Rogoff's (1990) model is discussed.

#### 4.1. A Simple Version of Rogoff's Model

##### a) Preferences

There is a large number of identical voters. At a given period, one of the voters is the leader of this society. Each voter's utility is assumed to be an increasing function of his consumption of private goods ( $c_t$ ) and public goods ( $g_t$ ). Thus, voters preferences are given by:

$$U_t = \varphi c_t + (g_t - \kappa g_t^2 / 2) \quad (15)$$

where  $0 < \varphi < 1$  and  $0 < \kappa < 1/2$ ,  
 $c_t$  and  $g_t > 0$ .

The incumbent ( $I$ ) and the opposition candidate ( $O$ ), who is drawn at random from the population, additionally derive ego rents ( $R$ ) from being in office. Thus, they have the following preferences:

$$U_t^i = U_t + 1_{(i=I)} R . \quad (16)$$

Here,  $1_{(i=I)}$  takes value one if the statement inside the parenthesis is true and zero otherwise,  $i \in \{I, O\}$ .

For simplicity, let's assume a two-period problem, so that  $t \in \{1, 2\}$ . At the middle of the first period, the incumbent has to face mandatory elections. At the beginning of the second period, the winner of the election takes office.

<sup>7</sup> In this model, promises are not credible. Hence, a competent incumbent has an advantage over the opposition candidate: he has a record to make an impact on voters.

With this timing convention, voters' expected discounted utility in period 1 is then

$$\Gamma_1 = E \left\{ \sum_{t=1}^2 \beta^{t-1} U_t \right\}, \quad (17)$$

where  $\beta$  is the subjective discount factor,  $0 < \beta < 1$ ,  
 $E \{ \cdot \}$ , is the conditional expectations operator.

Voters condition their expectations with respect to their period 1 information set.

Likewise, the incumbent's and the opposition candidate's expected discounted utility in period 1, are

$$\Gamma_1^i = E^i \left\{ \sum_{t=1}^2 \beta^{t-1} U_t^i \right\}, \quad i \in \{I, O\} \quad (18)$$

where  $E^i \{ \cdot \}$ , as above, is the conditional expectations operator.

However, the incumbent's information set is different from the opposition candidate's and voters' information sets.

*b) Endowments and Technology*

Every period, each voter gets a fixed amount of a nonstorable good,  $\tilde{y}$ . A fraction,  $\tau_t$ , of this endowment is used to pay lump-sum taxes, and the remainder is consumed. Thus

$$c_t = \tilde{y} - \tau_t. \quad (19)$$

The incumbent's only role is to provide public goods. Nobody else in this society can take up the leader's role until he is voted out of office. The production technology for public goods (in per-capita terms) is linear and given by:

$$g_t = \tau_t + \varepsilon_t \quad (20)$$

where  $\varepsilon_t$ , is the incumbent's administrative competence and  $\tau$  and  $\varepsilon$  are perfect substitutes in production. Moreover, the total level of  $g_t$  is observable only after elections have been held. Competence is a stochastic characteristic that evolves as follows:

$$\varepsilon_t = \alpha_{t-1} + \alpha_t \quad (21)$$

where  $\alpha$  is an independent random variable with the following probability distribution:

$$\alpha_t = \left\{ \begin{array}{l} \alpha^h \text{ with probability } \rho \\ \alpha^l \text{ with probability } 1 - \rho \end{array} \right\} \text{ and } t \in \{0, 1, 2\}.$$

Moreover,  $\alpha^l < \alpha^h$  and  $\alpha_0$  is known. The competence of an administration is modeled as a random variable to reflect the world changing conditions. Indeed, an administration could be fit to deal with certain kinds of problems but unfit to deal with others.

*c) Elections and Equilibrium in the Full Information Case*

Elections take place at the end of period 1. If voters were able to observe the incumbent's competence level, their decision would be straightforward: reelect the incumbent only if his last competence shock,  $\alpha$ , is  $\alpha^h$ . This is so since their expected welfare level of keeping the incumbent in office is higher than the one they would obtain from electing the opposition candidate (who may have a competence shock of  $\alpha^h$  only with a probability  $\rho$ ).

In order to see the above result, let's solve the incumbent problem as of period  $t$ . An  $i$ -type incumbent (i.e.  $\varepsilon_t^i = \alpha_{t-1} + \alpha_t^i$ ,  $i \in \{l, h\}$ ) sets taxes,  $\tau_t$ , to

$$\max_{\tau_t} W(\tau_t, \varepsilon_t^i) = \varphi[\tilde{y} - \tau_t] + (\tau_t + \varepsilon_t^i) - \kappa(\tau_t + \varepsilon_t^i)^2 / 2 \quad (22)$$

The optimal level of taxes is then,

$$\tau_t^*(\varepsilon_t^i) = \eta - \varepsilon_t^i \quad (23)$$

where  $\eta = (1 - \varphi) / \kappa \gg 0$ .<sup>8</sup>

The level of welfare in period  $t$ , when the type  $i$  incumbent sets his optimal level of taxes, is

$$U_t^*(\varepsilon_t^i) = \varphi(\tilde{y} + \varepsilon_t^i) + (i - \varphi) / 2. \quad (24)$$

Clearly, as  $\varepsilon_t^i$  it rises so does  $U_t^*(.)$ .

Assume that  $\alpha_t^i$ ,  $i \in \{l, h\}$  is observed in period  $t$ , then the  $t+1$  voter's expected welfare conditional to this observation is:

$$\Omega^i = \varphi(\tilde{y} + \varepsilon_{t+1}^i) + (1 - \varphi) / 2, \quad (25)$$

<sup>8</sup> It is assumed that  $\tilde{y} > \eta$ . This assumption is helpful in ruling out extraneous results.

where  $\epsilon_{t+1}^0 = \rho \epsilon_{t+1}^h + (1 - \rho) \epsilon_{t+1}^l$ .

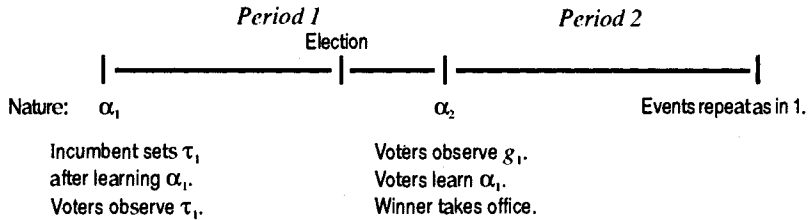
Moreover, 
$$\Omega^0 = \rho \Omega^h + (1 - \rho) \Omega^l \tag{26}$$

is the expected welfare if the incumbent's type is not observed in period  $t$ . Obviously,  $\Omega^h > \Omega^0 > \Omega^l$ .

*d) Equilibrium in the Asymmetric Information Case*

Any incumbent in off-election periods finds it optimal to set taxes at their full information levels. This is so since there are no gains from deviating from these tax levels. However, this is not true for the case of an incumbent facing an election. Below we develop this case in more detail.

The events in this economy have the following sequence:



Thus, at the beginning of each period, nature determines the incumbent's latest competency shock  $\alpha_t, t \in \{1, 2\}$ . There is a probability  $\rho$  and  $1 - \rho$  that  $\alpha^h$  and  $\alpha^l$  be drawn respectively. The incumbent observes  $\alpha_t$ , then he announces (and implements) the level of taxes. Voting, if any, occurs before the end of the period. Early in the following period, voters can observe the values of  $\alpha_t$  and  $g_t$ . Moreover, the winner of the election (if any) takes office. Then the information cycle starts again.

In period 1—the election period—, voters, after observing  $\tau_1$ , form beliefs about the value of  $\alpha_1$ . Define  $\hat{\rho}(\tau_1)$  to be the conditional probability that voters assign to the event  $\{\alpha_1 = \alpha^h\}$ . Voters with inference  $\hat{\rho}(\tau_1)$  elect the candidate that provides them with the highest expected discounted utility. Thus, if  $v(\hat{\rho}(\tau_1))$  is voters' electoral action (so that  $v(\cdot) = 1$  means vote for the incumbent), then

$$v^*(\hat{\rho}(\tau_1)) = \begin{cases} 1 & \text{iff } \hat{\rho}(\tau_1)\Omega^h + [1 - \hat{\rho}(\tau_1)]\Omega^l \geq \Omega^0 \\ 0 & \text{otherwise.} \end{cases} \tag{27}$$

The incumbent knows  $\hat{\rho}(\tau_1)$ . In particular, he knows how this function changes when  $\tau_1$  changes. Therefore, he knows that by changing the level

of taxes, he can influence voters' expected welfare and thus their voting actions. Then the incumbent's conjectures of voters' electoral actions are equal to (27):

$$\tilde{v}(\hat{\rho}(\tau_1)) = \begin{cases} 1 & \text{iff } \hat{\rho}(\tau_1)\Omega^h + [1 - \hat{\rho}(\tau_1)]\Omega^l \geq \Omega^0 \\ 0 & \text{otherwise.} \end{cases} \quad (28)$$

With this information, a type  $i$ -incumbent's problem in period 1 is:

$$\max_{\tau_1} \{R + W(\tau_1, \epsilon_1^i)\} + \tilde{v}(\hat{\rho}(\tau_1)) \chi^w + (1 - \tilde{v}(\hat{\rho}(\tau_1))) \chi^n, \quad (29)$$

where  $\chi^w = \beta\{\Omega^l + R\}$ , is next period's expected welfare if he is reelected,  $\chi^n = \beta\{\Omega^0\}$ , is next period's expected welfare if he is not reelected.

Also assume that  $\chi^w - \chi^n > 0$  for all  $i \in \{l, h\}$ .

In a *separating sequential equilibrium*, the following is true:  $\tau_1^l \neq \tau_1^h$ . Thus, an  $l$ -type incumbent never finds it optimal to mimic an  $h$ -type incumbent. So, by observing the level of taxes, voters become informed about the incumbent's type before they go to the polls. Moreover, in these circumstances a low-type incumbent finds it optimal to choose his full information level of taxes. Thus  $\tau_1^l = \tau^*(\epsilon_1^l)$ .

The remaining problem is to determine the level of taxes that a high-type incumbent would choose. Under the assumption that voters always think they have a low-type incumbent, unless they observe the equilibrium choices of a high-type incumbent, the following holds:  $\hat{\rho}(\tau) = 0 \forall \tau \neq \tau_1^h$ . This assumption is helpful in characterizing the separating equilibria, but unfortunately there is still a myriad of them.

However, if we further require that voters do not have the unsophisticated belief that an incumbent has played dominated strategies, we can achieve a unique equilibrium. In an *undominated separating equilibrium*, an  $h$ -type incumbent sets  $\tau_1$  so that:

$$\tau_1^h = \delta - \epsilon_1^l, \quad (30)$$

where  $\delta = \eta - [(2 / \beta\kappa)\chi^w - \chi^n]^{1/2}$ .

It is easy to show that  $\tau_1^h < \tau_1^*(\epsilon_1^h)$ . Thus, at election time, an  $h$ -type incumbent will set the level of taxes (and public goods!) below their optimal level in an amount enough to make mimicry for the  $l$ -type incumbent unprofitable.<sup>9</sup>

<sup>9</sup>In the discussion above we have not considered the possibility of *pooling equilibria*. Under certain conditions, pooling equilibria may be ruled out by using the intuitive equilibrium refinement. See Rogoff (1990) for more details.



In the formulation of the model above, only economic factors determine the outcome of an election. But this need not be so. For instance, Rogoff's (1990) model includes factors such as the popularity and looks of the candidates. In equilibrium, these factors would affect the results quantitatively; however, they do not greatly change the results reported above.

Note also that in the analysis above it was assumed that there were only two types of incumbents. This assumption resulted in a limited variability of taxes and government expenditures. Rogoff and Sibert (1988) meet this criticism by developing a model with a continuum of types. As one would expect, in the equilibrium of their model, taxes fluctuate in a continuum range.

#### 4.2. *Problems with Rogoff's Model*

One important omission in Rogoff's analysis is the consideration of redistributive issues. Obviously, in order to address these redistributive issues in a sensible way, we need a model with heterogeneous agents. The extension of Rogoff's analysis to address these issues may be very important given the strong microfoundations of his analysis.

In Rogoff's formulation there is no fundamental state variable linking different administrations and generations over time. In his model, a particular incumbent does not have incentives to deviate from socially optimal policies, except at election time. This characteristic of the model limits its usefulness in addressing issues such as the burden of the debt and intergenerational equity; moreover, the strategic interaction between the current incumbent and future administrations in his model seems trivial. However, with all fairness one should note that the introduction of such a state variable (i.e. capital) would tremendously complicate the solution of the model and thus overshadow any potential gains from addressing such issues in the context of this model.

### 5. Elections, Macroeconomic Policies and the Open Economy

All of the previous studies we have reviewed center their attention on the closed economy case. This situation could be misleading, since one of the most striking developments of the last fifty years has been the international integration of national economies. This fact opens the possibility of what Tufte (1978) calls an international electoral-economic cycle. Below we review some of the works that address the issue of elections and the international economy.

### 5.1. *Exchange Rate Dynamics and Elections*

There is some evidence that the behavior of exchange rates is sensitive to electoral processes, because elections may bring about a change in economic policy. Hansson (1988), building upon the partisan theory of economic cycles described before, studies the effects of political events on the behavior of exchange rates. With this purpose, he uses a two-party version of Buiter and Miller's (1983) framework. Hansson assumes that political parties are characterized by different tastes regarding monetary growth (and inflation). As a result, he is able to generate a partisan cycle in which the election of a *tight money* (*loose money*) government would generate a period of appreciation (depreciation) of the domestic currency.

Hansson's results are not surprising since, by construction, the long-run exchange rate is determined by monetary factors only. Thus, any difference in the long-run rates of growth of the money supply would generate those kinds of effects. Hansson omits from his analysis, however, the study of the effects of fiscal policy over exchange rates. Obviously, one needs to develop a model in which the current account is determined in more detail. New capital asset pricing models have these features and should be used to address these issues.

### 5.2. *International Policy Coordination and Elections*

There is wide interest in studying the desirability or undesirability of international policy coordination. Domestic economic policy may have some external effects in other countries. Depending upon the nature of these effects, macroeconomic policy coordination may have positive effects on world welfare. The issue of policy coordination has been discussed in the literature under the assumption that policymakers do not have to face electoral processes. This assumption can be misleading since (as we have seen) elections may change the incentives and objectives of the policymakers currently in office. Therefore, the analysis of policy coordination in the context of political-economic models can provide us with some important insights about the relevance (or irrelevance) of this problem. Indeed, Tabellini (1987) and Lohmann (1988) provide us with two examples of this kind of analysis.

Tabellini (1987) studies the desirability of fiscal policy coordination in the context of consecutive administrations. In his model, the incumbent administration knows that there is a positive probability that it will be replaced by another administration which represents other interest groups. Because of this, the incumbent will try to influence the future administration's policies by generating current budget deficits (and thus debt) above socially optimal levels.<sup>10</sup>

<sup>10</sup> See, for instance, Persson and Svensson (1989).

In an open economy, higher deficits imply a suboptimal path for the real exchange rate; therefore there is an endogenous mechanism that puts a limit on the magnitude of the budget deficits. International policy coordination, in this context, allows the policymakers of the different countries to relax this limit. Indeed, current policymakers of the different countries can form a coalition with no participation of future policymakers. The coalition's goal is to eliminate or reduce the adverse effects of budget deficits on real exchange rates.<sup>11</sup> Thus, international policy coordination can be socially undesirable. Obviously, Tabellini's finding hinges upon the particular kind of externality resulting from political competition: his analysis centers only on the case of a positive externality.

Lohmann (1988) analyzes policy coordination in the context of a monetary model. She finds that international cooperation aggravates the amplitude of political business cycles; therefore, the pursuit of policy coordination may not be socially desirable. Let's take a closer look at Lohmann's analysis.

The model she uses incorporates partisan competition to Rogoff's (1985) model. In her model, there are two countries in the world economy: home and foreign. Both countries are identical in everything except in their political configuration. Lohmann assumes that the foreign country is ruled by a benevolent dictator, whereas home is ruled by elected policymakers. At home, there are two political parties and elections take place on a regular basis (i.e. every-other period). Political parties at home have preferences regarding *inflation* and *terms of trade*. One party dislikes inflation more than the other one. Under these conditions Lohmann shows that, in the one-shot Nash equilibrium, the loose money (tight money) government has to set the money supply growth rate at a higher (lower) level than in the case in which elections are never held.

In the above context, international coordination has two opposite effects: it reduces the deflationary bias resulting from the terms of trade objective, but it also increases the international transmission and amplitude of the electoral cycles. Therefore, international cooperation could be counterproductive.

Are these findings surprising? No, because they are a direct result of the objective functions assumed for the policymakers. Indeed, Canzoneri and Henderson (1988) show that most of the results obtained in the policy coordination literature are very sensitive to these objective functions. Lohmann's and Tabellini's studies are not free of this problem. In order to avoid such

<sup>11</sup> Tabellini's findings have a direct antecedent in Rogoff's (1985) analysis. Rogoff found that policy coordination can be counterproductive, and that competition (rather than coordination) between governments may have some positive effects on mitigating each government's credibility vis-à-vis the private sector.

problems, one would like to see the microfoundations of the models fully spelled out (instead of assuming ad-hoc objective functions). This issue is even more important when one desires to do normative analysis.

## 6. Whither Now?

The models we have reviewed above make empirical predictions that could be readily implemented. There has been some work in this direction; in particular, Alesina (1988a and 1989) makes some tests for the partisan theory as well as for the budget cycles theory. He finds that neither theory is rejected by the tests he conducts. However, there is a problem in conducting empirical studies in this area since elections are very infrequent events, and hence there are small data sets. For this reason, the empirical results tend to be nonrobust.

One way to get around this problem is to conduct cross-country studies. However, countries have different political systems. In particular, countries differ with respect to the *timing* of elections, that is the number of times an incumbent can run for reelection, and the (length of) *tenure* of the incumbent in office. The introduction of these issues in the models we have surveyed can bring about equilibria (and thus predictions) different from the ones we have described. For instance, Terrones (1989) –using Rogoff’s framework– studies the macroeconomic equilibria for two countries that are identical except for the timing of elections. He shows that macroeconomic policy cycles are more *pronounced* in an electoral system with fixed-term elections (such as in the U.S.A. and Mexico) than in one with endogenous elections (such as in Japan, U.K., and most parliamentary democracies). The intuition behind this result is that, in an endogenous elections time framework, calling for an early election constitutes a partial signal about the incumbent’s competency. Because of this, incumbents tend to manipulate economic policy in a lower magnitude than in the fixed-term election case. An implication of this analysis is that incumbents (in an endogenous elections system) tend to behave opportunistically: elections tend to be held in good times (i.e., when economic conditions are good). Empirically there is strong evidence of such behavior for the Japanese case (see, for instance, Ito, 1989 and Terrones, 1989). These results suggest that conducting comparative studies without paying due attention to the institutional differences of each country could be misleading. These issues aside, there is agreement that progress in the political-economic literature has to come from the systematic testing of the diverse theoretical models we have surveyed.

Another area awaiting development is the *normative* one. It has been argued that elections are costly for societies since they provide incentives to the policymakers to set suboptimal economic policies. But elections also bring

some economic benefits. They provide voters with an efficient means of eliminating incompetent policymakers. Moreover, elections provide different groups with the opportunity to further their economic interests without resorting to violent means. Thus, one would like to know how to improve the economic performance of a democracy. In particular, one would like to determine the costs and benefits of the different institutional arrangements. For instance, when one compares a society with fixed-term elections to one with endogenous elections, one finds that in the latter macroeconomic policy cycles are less pronounced but more frequent. From this, can we say that a society with an endogenous elections system is better off than one with fixed-term elections? Like the previous question, there are many other unresolved issues. A review of the political constitutions of the major democracies in the Western hemisphere shows great variation with respect to the length of time that a particular administration can stay in office. Is there any economic reason for this? What are the economic effects of changing the length of tenure of an administration? Finally, is there any economic reason for putting limits on the number of times an incumbent can run for reelection?

Answers to the above issues are important not only to improve the design of political institutions of existing mature democracies, but, more importantly, they could be very useful for designing political institutions in countries without any (or with little) electoral experience, such as the newly born democracies of the East, and the infant democracies of Latin America and Africa.

## References

- Alesina, A. (1987). "Macroeconomic Policy in a Two-Party System as a Repeated Game", *Quarterly Journal of Economics*, vol. 102, pp. 651-678.
- (1988a). "Macroeconomics and Politics", in S. Fischer (ed.), *NBER Macroeconomics Annual*, pp. 13-52.
- (1988b). "Credibility and Policy Convergence in a Two-Party System with Rational Voters", *American Economic Review*, vol. 78, pp. 796-805.
- (1989). "Politics and Business Cycles in Industrial Democracies", *Economic Policy*, vol. 8, pp. 55-98.
- , and J. Sachs (1988). "Political Parties and the Business Cycles in the United States, 1948-1984", *Journal of Money, Credit and Banking*, vol. 20, pp. 63-82.
- Alt, J. (1985). "Political Parties, World Demand, and Unemployment: Domestic and International Sources of Economic Activity" *American Political Science Review*, vol. 79, pp. 1016-1040.
- Barro, R. (1973). "The Control of Politicians: An Economic Model", *Public Choice*, vol. 14, pp. 19-42.
- , and D. Cordon (1983). "Rules, Discretion, and Reputation in a Model of Monetary Policy", *Journal of Monetary Economics*, vol. 12, pp. 101-122.
- Becker, G. (1983). "Competition Among Pressure Groups for Political Influence", *Quarterly Journal of Economics*, vol. 98, pp. 371-400.

- Brock, W., and S. Magee (1984). "The Invisible Foot and the Waste of Nations: Redistribution and Economic Growth", in D. Colander (ed.), *Neoclassical Political Economy: The Analysis of Rent Seeking and DUP Activities*, Cambridge, Mass., Ballinger.
- Buiter, W., and M. Miller (1983). "Real Exchange Rate Overshooting and the Output Cost of Bringing down Inflation: Some Further Results", in J. Frenkel (ed.), *Exchange Rates and international Macroeconomics*, Chicago, Ill., University of Chicago Press.
- Canzoneri, M., and D. Henderson (1988). "Is Sovereign Policymaking Bad?", *Carnegie Rochester Conference Series on Public Policy*, vol. 28, pp. 93-140.
- Cohen, D. (1988). "What Caused the Rise of Conservatism: A French View", *Economic Policy*, vol. 8, pp. 196-219.
- Cukierman, A., and A. Meltzer (1986). "A Positive Theory of Discretionary Policy, the Cost of a Democratic Government, and the Benefits of a Constitution", *Economic Inquiry*, vol. 24, pp. 367-388.
- Downs, A. (1957). *An Economic Theory of Democracy*, New York, Harper and Row.
- Ferejohn, J. (1986). "Incumbent Performance and Electoral Control", *Public Choice*, vol. 50, pp. 5-26.
- Hansson, A. (1988). "Partisan Monetary Policy and Exchange Rate Dynamics in a Two-Party Democracy", manuscript, University of British Columbia.
- Hibbs, D. (1977). "Political Parties and the Macroeconomic Policy", *The American Political Science Review*, vol. 71, pp. 1467-1487.
- , and C. Dennis (1988). "The Politics and Economics of Income Distribution in the United States", manuscript.
- Ito, T. (1989). "Endogenous Election Timing and Political Business Cycles in Japan", *NBER Working Paper No. 3128*.
- Krueger, A. (1974). "The Political Economy of a Rent Seeking Society", *American Economic Review*, vol. 64, pp. 291-303.
- Lohmann, S. (1988). "Political Business Cycles and International Policy Coordination", manuscript.
- Magee, S., W. Brock, and L. Young (1989). *Black Hole Tariffs and Endogenous Policy Theory: Political Economy in General Equilibrium*, Cambridge, Cambridge University Press.
- Milgrom, P. (1988). "Employment Contracts, Influence Activities, and Efficient Organization Design", *Journal of Political Economy*, vol. 96, pp. 42-60.
- Nordhaus, W. (1975). "The Political Business Cycle", *Review of Economic Studies*, vol. 42, pp. 169-189.
- Olson, M. (1965). *The Logic of Collective Action: Public Goods and the Theory of Groups*, Cambridge, Harvard University Press.
- Persson T., and L. Svensson (1989). "Why a Stubborn Conservative Would Run a Deficit: Policy with Time-Inconsistent Preferences", *Quarterly Journal of Economics*, vol. 104, pp. 325-346.
- Rogoff, K. (1985). "Can International Monetary Policy Cooperation Be Counterproductive?", *Journal of International Economics*, vol. 18, pp. 199-217.
- (1987). "Reputational Constraints on Monetary Policy", *Carnegie Rochester Conference Series on Public Policy*, vol. 26, pp. 141-182.
- (1988). "Comment to Macroeconomics and Politics", in S. Fischer (ed.), *NBER Macroeconomics Annual 1988*, pp. 52-56.
- (1990). "Equilibrium Political Budget Cycles", *American Economic Review*, vol. 80, pp. 21-36.
- , and A. Sibert (1988). "Elections and Macroeconomic Policy Cycles", *The Review of Economic Studies*, vol. 55, pp. 1-16.

- Schumpeter, J. (1947). *Capitalism, Socialism, and Democracy*, 2nd. Edition, New York, Harper and Brothers.
- Stigler, G. (1975). *The Citizen and the State*, Chicago, University of Chicago Press.
- Tabellini, G. (1987). "Domestic Politics and the International Coordination of Fiscal Policies", manuscript.
- Terrones, M. (1989). "Macroeconomic Policy Cycles under Alternative Electoral Structures", University of Western Ontario, Working Paper No. 8905.
- (1990). "Influence Activities and Economic Growth", University of Western Ontario, Working Paper No. 9006.
- Tufte, E. (1978). *Political Control of the Economy*, Princeton, Princeton University Press.
- Waller, C. (1988). "The Politics of Monetary Policy: A Game Theory Model of Signaling, Coercion, and Bashing by the Administration", manuscript.

