8

The political economy of democracy

One of the major developments in the public choice literature in the past two decades has been the construction and empirical testing of models that consider the interaction of the preferences of government and electors and the behaviour of the economy.

Important early examples of this work are the papers by Nordhaus (1975), MacRae (1977) and Frey and Schneider (1978a, b). A key assumption of this work is that expectations are formed in an error learning or adaptive manner. The purpose of this chapter is to consider the implications that the rational expectations hypothesis has for the behaviour or role of the authorities; we assume that both the authorities and the voters have rational expectations. This raises the interesting issues of whether there is scope for differences in economic policy between different political parties and of how voters will react to differences in policy and economic performance.

We begin by outlining the early work in the public choice literature, which is based on adaptive expectations. We then consider the rational expectations alternative.

THE NORDHAUS MODEL

Perhaps the most interesting model of the adaptive expectations vintage is Nordhaus (1975). The Nordhaus model is based on the Downs (1957) hypothesis that governments have an over-riding goal of winning the next election. Hence they obey the 'median voter theorem' (namely, that their policies will be designed with maximum appeal to the floating voter who will decide the election) and are consequently concerned to maximize their popularity over the period of office. This has the implication that both parties will offer identical policies, since they will be driven by competition for the median voter to offer a policy which will win him or

her over: identical policy will give each party an equal chance of winning, which is the equilibrium.

Their popularity is assumed to depend on a number of key economic variables, notably the rate of inflation and unemployment. It is further assumed that voters, in evaluating the history of inflation and unemployment, give highest weight when voting to the current rates of both then current. The government is assumed to maximize its popularity subject to the constraint that the rate of inflation, the rate of unemployment and the expected rate of inflation are linked via an expectations-augmented Phillips curve. Finally it is assumed that price expectations are formed adaptively. The Nordhaus model thus has the following mathematical structure (in continuous time).

Maximize

$$P = \int_0^T G(u,p)(1+r)^t \tag{1}$$

subject to the constraints:

$$p = g(u) + p^e \tag{2}$$

$$Dp^e = \phi(p - p^e) \tag{3}$$

where p is the rate of inflation (p^e the expected rate), u is the rate of unemployment, r is the discount rate (*positive* to reflect voter myopia), G and g are functions, ϕ is a positive constant, and D is the differential (rate of change) operator such that, e.g. $Dx = dx/dt$. Equation (1) is the government's objective function.

Popularity, P, is maximized between the time of arrival in office (0) and the time of the next election (T). Equation (2) is the augmented Phillips curve and equation (3) the adaptive expectations mechanism.

Clearly the optimal paths of unemployment and inflation will depend on the precise choice of functions $G(.)$ and $g(.)$. Nordhaus specifies an objective function:

$$G(.) = -\alpha p - \frac{\beta}{2} u^2 \tag{4}$$

and a linear augmented Phillips curve:

$$g(u) = a - bu \tag{5}$$

where α, β, a, b are positive constants.

The mathematics required to solve this problem is outside the scope of this book (see e.g. Cass and Shell, 1976). It turns out that the path of the unemployment rate between elections implied by its solution has the form shown in figure 8.1.
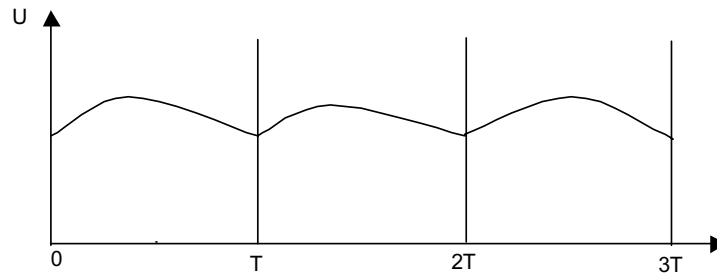
Figure 8.1: The Political Business Cycle

The essential implication then of this work is that governments deliberately cause a business cycle so that, at the date of election, they are in the most favourable position with respect to voters' preferences; hence on arriving in office, they raise unemployment to initiate a reduction in inflation, then after two years or so they stimulate the economy to reduce unemployment in time for the election date, leaving their successor to cope with the rise in inflation that is the lagged result of this policy.

While the optimal pattern of inflation or unemployment does depend on the precise choice of functional forms, the essential insight of Nordhaus, that governments may have a vested interest in creating business cycles, will survive these and other changes (such as the length of the electoral period T; see Chappell and Peel, 1979). The assumption that government popularity depends on variables such as the rate of inflation or unemployment has received some empirical support. In particular Frey and Schneider (1978a, b) have reported empirical work for a variety of different countries, such as the United Kingdom, the USA and West Germany, in which a measure of government popularity, typically based on opinion polls, is found to be significantly related to such economic variables.

Subsequent work (e.g. Borooah and Van der Ploeg, 1982; Chrystal and Alt, 1981; Pissarides, 1980; Minford and Peel 1982a; Harte et al., 1983, Gartner,1994), showed that the work of Frey and Schneider is not statistically robust with respect to changes in the sample period or the economic variables chosen. This is perhaps not too surprising. Economists, when analysing agents' choice between alternatives, are concerned to stress the appropriate relative prices. This point has typically been neglected in the empirical work on government popularity. The alternative hypothesis is best outlined by Tullock (1976), who writes: 'Voters and customers are essentially the same people. Mr. Smith buys

and votes; he is the same man in the supermarket and in the voting booth. There is no strong reason to believe his behaviour is radically different in the two environments. We assume that in both he will choose the product or candidate he thinks is the best bargain for him.'

When we also recognize that voters are expressing preferences for different policies over the life-time of a government, it is clear that the relevant choice should reflect expectations of future policy differences between parties. From this perspective the conventional work is implicitly assuming that expectations of the future paths of economic variables under the party in power are formed adaptively and that the paths of economic variables under the alternative parties are considered by electors as fixed.

RATIONAL EXPECTATIONS AND REPUTATION

It is possible to motivate a political business cycle by reference to the new literature on reputation and partial information, discussed in earlier chapters. Suppose that before the run-up to the election, the government has acquired a good reputation for monetary prudence and that there is partial information about current events, with people observing current economic activity but not observing current policy variables, such as the money supply and government spending. Votes are cast according to people's assessment of the equilibrium levels of output and inflation as rationally expected, but they have a signal extraction problem.

In this vein, let election popularity (the voting balance) be given by:

$$P_t = -(Ey_t - k\overline{y}_{t-1})^2 - f(Eg_t - \pi^*)^2 \tag{6}$$

where $\overline{y}$ is equilibrium output ($k > 1$ reflects the people's desire for a better supply side), and g is the equilibrium level of inflation and also of policy levers (money supply growth and the fiscal deficit behind it).

Let

$$\overline{y}_t = \overline{y}_{t-1} + \epsilon_t \tag{7}$$

ϵ_t is random, partly the result of past policies whose fruits cannot be accurately forecast. Actual output (observed) is given by a Phillips curve where g_t^e is the people's expectations of government policy based on its reputation:

$$y_t = \overline{y}_t + \theta(g_t - g_t^e) \tag{8}$$

But

$$g_t = g_t^e + m_t \tag{9}$$

where m_t is the unforeseen policy change unobserved by the public but known by government.

The public's signal extraction gives

$$E\overline{y}_t = \overline{y}_{t-1} + \phi(y_t - \overline{y}_{t-1}) = \overline{y}_{t-1} + \phi[\epsilon_t + \theta(g_t - g_t^e)] \qquad (10)$$

$$Eg_t = g_t^e + Em_t = g_t^e + \frac{(1-\phi)(y_t - \overline{y}_{t-1})}{\theta} =$$
$$g_t^e + \frac{(1-\phi)}{\theta}(\epsilon_t + \theta(g_t - g_t^e)) \qquad (11)$$

The government now maximizes P_t (subject to g_t^e, ϵ_t, $\overline{y}_{t-1}$ given) with respect to g_t in the election run-up by setting $0 = \frac{\partial P_t}{\partial g_t}$ and this first-order condition yields

$$g_t = \frac{\{\phi(k-1)\theta\overline{y}_{t-1} - (1-\phi)f(g_t^e - \pi^*) - [\phi^2\theta + \frac{f(1-\phi)^2}{\theta}]\epsilon_t\}}{\phi^2\theta^2 + f(1-\phi)^2} + g_t^e$$
$$(12)$$

g responds positively to target output ($k\overline{y}_{t-1}$), and positively to a bad supply shock (negative ϵ_t), although it is restrained by 'bad reputation', high g_t^e. So there is a tendency for monetary policy to expand pre-election, especially if the supply side is bad.

The government would in this model aim to build up its reputation after an election; then in the run-up it would 'use up' some of this reputation. Clearly there are strict limits to the policy boost that can be delivered in this way; these fall far short of the crude swings in policy optimal under the Nordhaus model. Nevertheless, there is still a basis here for a political business cycle under rational expectations. Models of a similar structure are to be found in Cukierman and Meltzer (1986 a, b), Alesina and Sachs (1988) and Alesina et al. (1997) for example.

The intuition behind this and other such models can be appreciated if one asks: would any government like to go into an election during a recession? Clearly no one can be sure of what is truly the reason for the economy's bad performance; and some blame is bound to rub off on the government. Yet the very transparency of this motivation could undermine even this limited political business cycle model. Suppose that everyone knows the government will maximize P_t in the run up to an election. Then reputation-building is useless and the policy unravels.

First, take the model as at present set up. People would form their expectation g_t^e not by observing past actions but by taking expectations of (12) and setting $E_{t-1}g_t = g_t^e$. The result is

$$g_t^e = \pi^* + \frac{\phi(k-1)\theta}{(1-\phi)f}\overline{y}_{t-1} \qquad (13)$$

When the government comes to maximize (6) knowing ϵ_t but initially supposing the public does not know it, it would choose in general:

$$g_t = g_t^e + q\epsilon_t \tag{14}$$

But the public will know that this is the government's current policy because it knows the government's preferences. Therefore it will know that

$$y_t = \overline{y}_{t-1} + (1 + \theta q)\epsilon_t \tag{15}$$

where q is the government's known response to ϵ_t. So the public will in fact be able to infer the value of ϵ_t and so $Eg_t = g_t$, $E\overline{y}_t = \overline{y}_t$.

(The only case where this will not be so is if $q = -\frac{1}{\theta}$; in this case the public will be unable to judge the size of the shock at all because the government is deliberately stopping output from reacting to the supply-side shock at all. However, should the government choose this then the public will know that, although there will in general have been some shock to the supply side they are unable to know what it is; their best guess in this case is any value at all, a completely flat distribution. We should assume therefore that the popularity function is undefined at this point and by implication worse than one that is defined.)

This being so, the whole problem changes. Now there is no signal extraction problem; instead,

$$P_t = -(\overline{y}_t - k\overline{y}_{t-1})^2 - f(g_t - \pi^*)^2 \tag{16}$$

The government's maximizing strategy is simple: $g_t = \pi^*$. There is no political business cycle again: straightforward honesty is the best policy.

Clearly this argument implies an extraordinarily perceptive voting public and clear knowledge of the government's motivation. Both must be in doubt. Given the paradox of voting (see next section), let alone the costs of investing in good information extraction as a voter, there are reasons to doubt such rationality. Government motives may be obscure, given the ideological factor; or they may deliberately be obscured as in the Backus and Driffill (1985 a, b) model.

Nevertheless, this case of unravelling at least serves to show that full rational expectations with known government objectives does remove the political business cycle. It provides a useful benchmark, and cautions that the political business cycle, at least if practised too vigorously, is likely to self-destruct.

We now turn to the central issues of what might determine voting and party policies if voters have this full (benchmark) rationality.

A RATIONAL EXPECTATIONS MODEL OF VOTERS AND PARTIES

We proposed a model (Minford and Peel, 1982a) in which the expectations of voters and the authorities are both assumed to be rational. We argue that the marginal costs of information gathering can be regarded as sufficiently low for the representative voter to develop an informed opinion of the future path of economic variables. One simple mechanism (and there are probably some others) by which this can occur is via public forecasts. Forecasts of inflation and output from forecasting groups (for instance, in the UK the Treasury, the National Institute of Economic and Social Research, and the Liverpool Research Group, besides a plethora of City of London institutions) will represent informed opinion and are given widespread publicity by newspapers and television, which the voters obtain at negligible marginal cost. While these public forecasts will differ to some extent, they will tend to be correlated and voters' expectations, as conditioned by them, will more closely approximate rational expectations than some mechanistic adaptive alternative.

Although the typical voter may face low costs of gathering information and opinions this does not explain why he votes. The direct marginal benefits of voting, in the sense that an individual vote will influence the electoral outcome, appear a priori to be less than the marginal costs of voting. Indeed, the 'paradox of voting' is that, because the effect of one vote on the election outcome is negligible, the voter obtains no expected marginal gain from voting. However, the most attractive rationale for rational voting is the 'civic' recognition by voters that democracy cannot function unless many people vote (see Mueller, 1979, for a fuller discussion of these issues). In game-theoretic terms, democratic behaviour is a game with rules, one set of which governs voting; such games evolve from social discovery processes (for a discussion of such evolutionary processes see Sugden, 1986). Voters are expected to vote according to their own preferences; since most have only the vaguest idea of the 'nation's good' and little ability to evaluate it, they are expected to evaluate the effect of party policies on their own individual or household interests, where they should have a keen and accurate perception. Then the electoral process aggregates these votes into a popular preference for one party's policies. A number of authors (e.g. Meltzer and Richard, 1981, 1983) have emphasized that such 'voting with one's pocket' opens up the possibility of 'rent-seeking' by voter coalitions with a vested interest: politicians then have to weigh up their ability to attract (organized) votes from vested interests against their chance of appealing to the (disorganized) votes of the ordinary voters. We return below to the effects this choice may have

on party platforms.

Controversy, into which we cannot enter here, surrounds what sort of process delivers the better results. Anglo-Saxon systems of first-past-the-post deliver strong mandates, which notably Popper (1988, 1945/66) has defended as providing a strong capacity of electorates to get rid of governments. Continental systems of proportional representation deliver governments which can only survive by consensus between coalition partners. The Anglo-Saxon systems have produced large-scale swings of policy, with 'experiments' on a grand scale. The continental systems have produced a slowly changing compromise set of policies, which never became as socialist as, say, the UK when socialism was fashionable in the 1960s but neither moved so rapidly towards deregulation and free markets as the socialist tide receded in the 1980s.

Given our assumptions about the information set of agents, we follow a number of different authors in supposing that political parties in part pursue economic policies which are broadly in accordance with the objective economic interests and subjective preferences of their 'class', defined as their core political constituency. For instance, Johnson (1968) writes: 'From one important view, indeed, the avoidance of inflation and the maintenance of full employment can most usefully be regarded as conflicting class interests of the bourgeois and proletariat, respectively, the conflict being resolvable only by the test of relative political power in the society.'

Robinson (1937) also writes: 'In so far as stable prices are regarded as desirable for their own sake, as contributing to social justice, it must be recognised that justice to the rentier can be achieved only by means of the injustice to the rest of the community of maintaining a lower level of effective demand than might otherwise be achieved. We are here presented with a conflict of interests...and actual policies are largely governed by the rival influences of the interests involved.'

While clearly we do not accept the assumption made in both these comments that output is demand-determined, they do usefully highlight the importance of rival organised interest groups in the political process.

VOTERS

We assume that there are three relevant sets of voters: Labour (Democrats), Conservatives (Republicans) and floating voters. The supporters of each party come from different parts of the electorate (for example, 'labourers' and 'capitalists', see Hibbs, 1978). The stylized assumption is that Labour voters primarily hold human capital and the Conservatives

primarily financial capital, while floating voters have large amounts of both.

The current utility function of the voters is written in quadratic form as:

$$C_t = c_1 p_t + c_2 p_t^2 + c_0 \qquad \text{(Conservative)} \qquad (17)$$

$$V_t = v_1 p_t + v_2 p_t^2 + v_3 y_t + v_4 y_t^2 + v_0 \qquad \text{(Floating)} \qquad (18)$$

$$L_t = l_1 y_t + l_2 y_t^2 \qquad \text{(Labour)} \qquad (19)$$

where c_1, c_2, v_1, v_2, v_4, l_2 are negative and c_0, v_0, v_3, l_1 positive constants; y is disposable labour income.

The floating voter who determines the election outcome is assumed to express his voting intentions (up to and including the time he votes in the election) according to which party is expected to give him greater utility from the time of the next election onwards. Formally he takes the expectation $E_t V_T$ (which is taken as a proxy for his expected utility for all time beyond the election) conditional on each party's policies in turn, $E_t V_T^L$, $E_t V_T^C$ (Labour and Conservative respectively); he casts his vote for Labour if $E_t V_T^L > E_t V_T^C$ and vice versa. In aggregate it is assumed that voters are distributed around the typical floating voter, yielding a cumulative voters' balance function of the form:

$$B_t = b(E_t V_T^G - E_t V_T^O) + h_t \qquad (20)$$

where G denotes 'government' and O 'opposition'; h_t is an error process for non-economic omitted variables. Taking expectations of (19) for the government yields:

$$E_t V_T^G = v_1 E_t p_T + v_2 E_t p_T^2 + v_3 E_t y_T + v_4 E_t y_T^2 \qquad (21)$$

these being the expected outcomes (that is, under the current government).

Doing the same (a 'counterfactual' expectation) for the opposition and subtracting from (21) gives:

$$E_t V_T^G - E_t V_T^O = \beta_1 (E_t p_T - \overline{p}) + \beta_2 (var_T p - \overline{varp}) + \beta_3 (E_t y_T - \overline{y})$$
$$+ \beta_4 (var_T y - \overline{vary}) \qquad (22)$$

where $varp$, $vary$ are the variances of p and y around their expected values and $\overline{p}$, $\overline{y}$, $\overline{varp}$, $\overline{vary}$ reflect the relevant expectation and variances of the opposition.

Unlike previous voting functions, this formulation is explicitly forward-looking in inflation and income and it includes variances of the relevant economic variables. In their related empirical work Minford and Peel (1982a) use the perhaps unsatisfactory proxy of time trends for the opposition party's policies and there is clearly scope for the use of more subtle alternatives. Using Gallup data for the United Kingdom over the period 1959-75, they produce evidence that (22) performs in a more satisfactory manner than the conventional Frey-Schneider alternative. However, in later empirical work on the UK, West Germany and Sweden, Harte (1986) finds that these voting functions are as unstable as their non-rational predecessors. Similar instability is found, with alternative functions under rational expectations, by Borooah and Van der Ploeg (1982). This instability is not difficult to explain in terms of Lucas's (1976) critique. These voting functions are, in spite of their forward-looking, terms 'reduced-form' expressions in which the effects of voter preferences, the model and the exogenous processes linking policy (in each party), as well as the economic environment, are jointly solved out. Even if preferences are unchanged, then other elements will change and shift the voting functions. The instability does not necessarily invalidate the theory but it should make us modest in our expectations of estimating it.

A side implication of this approach is that voter preferences will gradually change with their economic interests. For example, '*embourgeoisement*', carrying with it the wider accumulation of non-human capital (including home and share ownership), will increase the size of the 'capitalist' class relative to the 'labour' class. Strong evidence of this change has been produced for the UK (Crewe, 1988). There is also evidence in opinion poll data from 1987, at a time when Labour policies were still designed to appeal to traditional labour voters, that share ownership was significantly correlated with voting Tory; with privatization having greatly extended share ownership (from 8 to 25 per cent of the population), this could have been an important electoral factor.

EMPIRICAL EVIDENCE ON POPULARITY

The empirical evidence on the relationship between political popularity, as measured in opinion polls, and economic variables is, as we have seen, clearly suggestive that the relationships are unstable. Besides the Lucas critique, this instability could also be due to omission of key variables: for instance social issues such as health or education are omitted from the regressions, and could often be important. In addition variables that

measure the opposition's policies are difficult to operationalise and as a consequence rarely formally considered in the econometric analyses, but again must be relevant to the voting decision. For these types of reasons it is perhaps not surprising that the estimated functions display such marked instability. Recent work by Box-Steffensmeier and Smith (1996), Byers, Davidson and Peel (1997, 2000) points to a different statistical reason for the instability. Employing popularity data for a large number of different countries and political parties, they obtained the striking result that popularity could be parsimoniously modelled as a fractionally integrated process, ARFIMA process (Granger and Joyeaux, 1980) — see the Time-Series Annex at the end of the book for statistical background to this and the following discussion.

The ARFIMA (p, d, q) process is given by:

$$x_t = (1 - L)u_t \qquad (23)$$

where u_t is a stationary ARMA (p, q) process, and d is non-integer.

ARFIMA processes have the property that the autocorrelation function exhibits hyperbolic decay rather than the eventually exponential decay of the stationary ARMA, or I(0), process, and enables ARFIMA processes to model dependence between observations at long range. But at the same time and in contrast with the I(1) or unit root case, these processes exhibit eventual mean reversion. In fact Byers, Davidson and Peel (1997, 2000) found a remarkable similarity between the estimated d for different countries; they were all around 0.7 and the error term was, in most cases, white noise. An estimate of d that lies between 0.5 and unity carries the implication that the series is non-stationary but ultimately mean-reverting. The finding of such a process has important implications for trying to 'explain' popularity by conventional regression analyses using economic variables. It has been shown (Tsay and Chung, 1996; Marmol, 1998) that the 'spurious regression' phenomenon best known in connection with unit root processes extends to fractional processes. Variables such as inflation and interest rates have also been shown to be fractional, if not unit root processes, see for example Baillie, Chung and Tieslau (1996). Therefore, simple regression t values may be misleading.

Byers, Davidson and Peel (1997) explained the fractional result in the following manner. They hypothesised for simplicity that voters fall into two stylized categories: the committed and the uncommitted. The committed individuals are those with strong party allegiances. They are motivated by conviction or group solidarity, and their voting intentions are generally insensitive to news. They will support their party of choice through good times and bad. The uncommitted individuals, in contrast, who are usually called 'floating voters', tend to award their votes on

the basis of performance. Newspaper headlines can sway their voting intentions considerably, although, by the same token, the effect of news is typically transitory and will tend to average out in the long run. The current voting intentions of the floating voters are on the whole a poorer predictor of future voting intentions than those of the committed voters. These features of the voting population are captured in the model by assuming that the logarithm of the odds in favour of an individual expressing an intention to vote for a particular party evolves as a first-order AR process, with a parameter that takes a value close to 1 for committed voters, and substantially below 1 for the floating voters. Consider a population of voters, each characterized by a particular value of the AR coefficient on the interval $[0, 1]$. If the distribution of these coefficients is as they hypothesize, a result due to Granger (1980) implies that the average of a large sample of individual voting intentions (after a logistic transformation) should behave similarly to a fractionally integrated process. This means that it should exhibit long memory, unlike a stationary ARMA process, in spite of being eventually mean-reverting.

The Byers, Davidson and Peel explanation of the fractional property of popularity data is not based on a formal theoretical model with explicit utility underpinnings. It is suggestive that a model that can capture the fractional property of popularity data may need to acknowledge differing degrees of 'habit' amongst heterogeneous voters. In their interpretation it is news about economic variables that drives popularity changes, not their actual values. They report empirical evidence consistent with this interpretation. Their empirical findings may be consistent with alternative underpinnings but at the least are a challange to the 'traditional' models explaining popularity. The fractional property of voting responses implies they are stable and predictable in the long run but respond to news in the short run.

One extraordinary regularity survives in all models (certainly for the UK): the mid-term swing of polled opinion away from the governing party, and back again as the election approaches. This quasi-seasonal effect is routinely incorporated into voting functions, but no explanation for it exists. The usual rationalization is in terms of a 'costless protest': the electorate use polls (and by-elections) to signal their preferences for modifications of government policy. This does not amount to a desire to change the government, so that as the election approaches, true preferences re-emerge.

EXPLAINING PARTY POLICY

We would like to explain differing party policy within a rational expectations framework. According to Downs' median voter theorem noted above, party policies should be the same: however, a party is formed by activists with strong views on policy and it is faced with a choice of a likely win by giving these views up or a less likely win while keeping the chance of implementing them now or later when the public may have been persuaded. We can think of this as maximizing expected utility over the future where the utility from implementing policies rises as they get closer to the party's principles but the short-term chances of winning (and therefore of implementing them) rise as the platform gets closer to the centre. Hence each party will choose some compromise electoral manifesto but measurably to the 'left' or 'right' of the median voter.

We can tie these ideas in with another strand of the public choice literature: this considers the power of vested interests, distinguished by their high motivation and efficient organization. Olson (1965, 1982) argues that they are more effective than ordinary voters, including median or floating ones, whose interests are less intensely affected by general tax or expenditure changes; hence ordinary voters devote less attention (costly information gathering and assessment) to the issues and vested interests prevail over policy. Such vested interests will attempt to influence all parties but because of their 'class interest' will have most influence with one party typically. Such influence tends to reinforce the tendency for party policies to differ.

We assume that the authorities are faced with an economy in which there is no long-run trade-off between inflation and output, but where, in the short run, fiscal and monetary policy can stabilize the economy by appropriate choice of feedback rules; these are assumed to be effective on the grounds of, for example, contracts, as discussed in chapter 4. The absence of a long-run trade-off does not, however, avoid a choice of the long-run budget deficit and, of course, the implied monetary growth rate. It might seem that all parties would have as their long-run target zero inflation, and hence choose targets for the budget deficit and money supply growth to go with this. This is clearly not the case, however, once we recognize that a budget deficit with inflation implies a different incidence of the existing tax burden from one with zero inflation, since an unanticipated shift to high inflation on the accession of a new government will lower the capital value of nominal government debt. This will expropriate debt holders to the advantage of the general taxpayer, who now pays less tax.

We assume for formal purposes, very simply, that each party maxi-

mizes the expected value at the next election date of a weighted average of the utility of its own supporters and that of the floating voter. The expectation is formed at time $t = 0$, the time of strategy choice, and it is supposed that this choice occurs only once in each period between elections and then cannot effectively be changed. We suppose that a party has had its 'honeymoon' period, has had to react to the pressures of office and after about half a year of its term has settled down and then chooses its strategy. The other party has by this time settled in opposition and also chooses its strategy. Once chosen the parties cannot with credibility change them.

Formally then, for example, the Conservative party maximizes:

$$\mu E_0 C_T + (1 - \mu) E_0 V_T \tag{24}$$

where μ is the weight given to its own supporters. The function will be expected to be maximized at time T, the time of the election. In principle it ought to be expected utility from this date onwards, with a suitable discount factor, but, for empirical purposes this is considered needlessly complicated, given that we have ruled out expected future changes in policy programmes.

Equation (24) is maximized subject to the voters' preferences and their model of the economy. The formal mathematics of this is somewhat complicated (see Minford and Peel, 1982a). However, the implication of the analysis is important. This is that different political parties, who represent different class interests, will pursue different policies. In particular party policies will differ significantly, not only in budget and money supply targets but also in feedback coefficients according to the interaction between voter preferences and the model structure. Labour reaction functions will, relative to Conservative reaction functions, embody a higher steady state budget deficit and be more responsive to real rather than nominal shocks.

Quite clearly the precise form of reaction function will be dependent on the true model of the economy and the nature of voter preferences. However, the point of our study remains valid, namely that in an economy with rational expectations on the part of both government and voters, there is scope for systematic policy differences between different political parties.

Empirical results on UK reaction functions for the period 1959-75 support the model in that significant differences between the political parties were discovered. Harte et al. (1983) also confirmed the fruitfulness of the approach, and found significant statistical differences in reaction functions between the parties in the UK, Sweden and West Germany. Differences in reaction functions with respect to political vari-

ables have also been found in a number of other countries (e.g. Alesina, Roubini and Cohen, 1997).

These results conflict with the median voter theorem, which predicts the same policies for each party. This theorem is therefore rejected by the data for first-past-the-post democracies, for which it was constructed. For proportional representation systems, the theorem would apply to the parliamentary party holding the balance of power; for these democracies, there is stronger evidence of party policy convergence, with the differences in Sweden and Germany appearing less marked than in the UK and USA.

Although there are party differences in policy, nevertheless the median voter (or party) theorem embodies an important principle: of policy convergence towards the centre. This principle has inspired a number of studies investigating how far the interests of this median or 'swing' group of voters (or their party) influence particular, as opposed to general economic, policies. Are particular taxes designed to shift the tax burden away from these voters? Are government expenditures fixed to benefit them? Models which answer 'yes' include that of Meltzer and Richard (1981, 1983), who also find evidence for these forces.

RELATED ISSUES AND CURRENT RESEARCH

Political economy, the topic of this chapter, is a burgeoning area of research, for two reasons. First, the government is an agent with objectives, whose actions are of obvious importance: modelling them should be superior to treating policy as exogenous or a fixed feedback rule. Secondly, analytical and computational tools have improved to the point where it is feasible to compute the equilibria in games between governments and the public or other governments.

Much of this research has already been discussed. But two topics deserve emphasis.

In chapter 5, we discussed the issue of time-inconsistency and the incentives both to cheat on promises if believed and, once people realize this incentive, to find a mechanism which ensures promises are carried out. Models of reputation under imperfect information are attempts to explain variations in credibility between total public gullibility on the one hand and total cynicism on the other; such models can produce a political business cycle, as we have seen.

They may also produce strategies to bind successor governments into policies which benefit the current government. A high inherited level of public debt, for example, may restrain a future socialist government

(when it comes to re-optimize) from increasing public expenditure; a conservative government might then push tax cuts further than otherwise in order to reduce tax rates and public spending in the long term, should it lose power. Models supporting such strategies are to be found in Alesina and Tabellini (1989, 1990) and Persson and Svensson (1987).

The question of how policy promises can be enforced, by voting behaviour or by other parties or by constitutional structures, is also important, since good policies typically involve making promises which are then kept. Rogoff and Sibert (1988) consider voters punishing the government, although this involves the difficulty of why individual voters should bother, given their lack of power to influence anything individually (as in the voting paradox above). Alesina (1987) considers strategies where the other party deters promise-breaking in an inter-party pact ('bipartisan policy'): this may not apply well to controversial policy areas, such as public spending and inflation. Tabellini (1987) considers the role of independent, overlapping governors in an independent central bank. A good survey of all these issues is to be found in Alesina (1989).

The second topic concerns the source of inflation itself. Much existing literature assumes inflation is motivated by governments needing inflation revenue or seigniorage to finance exogenous public spending, with the extent of the inflation tax being determined by an optimizing choice across tax patterns, to minimize the welfare and collection costs of taxation. Yet this approach is at variance with the considerations of political interest suggested in this chapter. Instead, inflation may serve the interests of the dominant voter and the party that represents him — as explored in Minford and Peel (1982a) and Minford (1988). On this view, inflation and its associated high interest rates, high inflation variance and expansionary public spending-cum-deficit programmes, is not an accident or the result of Keynesianism, but a deliberate strategy. The elimination of these policies will occur, not through better understanding nor through constitutional devices (which can always be over-ridden by a democratic majority) but through the formation of a new dominant voter coalition with different interests. This effect on macroeconomic policies parallels the effects explored by Meltzer and Richard (1981, 1983) and Olson (1965, 1982) on distributional and micro policies.

CONCLUSIONS

Recent work in the public choice literature has considered the interaction of the preferences of the government and electors and the behaviour of the economy. This early work assumed that expectations are formed

adaptively and generated one key conclusion, namely that the authorities may deliberately create a business cycle. When expectations are formed rationally, the authorities may still be able to generate a political business cycle, provided there is imperfect information and uncertainty about their objectives; however, the scope is more limited and can disappear altogether as information improves.

Another key result of the public choice literature is the median voter theorem, according to which party policies should be essentially the same, because they are designed to capture the floating voter. However, there is more empirical support for an alternative theory in which parties attempt to maximize the expected future utility, not only of floating voters but also of their own class-based supporters and associated vested interests. This will give rise to systematic differences in the parties' reaction functions.

We also considered the way in which government popularity and voting behaviour has been modelled. We suggested that the conventional approach based on past economic indicators was deficient in ignoring expectations of future economic variables and the behaviour of the opposition. However, because of the importance of non-economic factors, it is unlikely that functions based solely on economic variables will generate statistically robust results; the evidence to date confirms this lack of robustness.

Finally, we considered research on how voter coalitions and vested interests may influence the strategies of political parties towards a whole range of variables — inflation, public spending, public debt and subsidies, to name but a few. Modern analytical and computational tools offer us the chance of a better understanding of the causes of government strategy.

APPENDIX 8A: DIFFERENCES IN ECONOMIC POLICIES OF POLITICAL PARTIES AND CENTRAL BANK INDEPENDENCE

We analysed above the implications of a model in which it was assumed that different political parties, who represent different class interests, will pursue different policies. This assumption may also have implications both for the operation of an independent central bank (see chapter 5) and the interpretation of the empirical evidence on the impact of independent central banks on economic outcomes as pointed out by e.g. Waller (1989) and Alesina and Gatti (1995).

Essentially if economic policies differ between parties then rational expectations of future economic variables will reflect electoral uncertainty. For example inflation expectations for a period in which there is an election will be given by

$$Ep = jEp^l + (1-j)Ep^c \tag{1}$$

where j is the (assumed exogenous) probability of election of party l and Ep^c and Ep^l are expected inflation under the two parties.

To illustrate formally some implications we employ the model of Alesina and Gatti (1995) as set out in Alesina, Roubini and Cohen (1997).

They assume that the utility functions of the two parties have a standard quadratic form and are given by:

$$U^l = -0.5p^2 - 0.5b^l(y - y^*)^2 \tag{2}$$

and

$$U^c = -0.5p^2 - 0.5b^c(y - y^*)^2 \tag{3}$$

where y^* is the target level of output, assumed equal for the two parties to make the algebra simpler. Similar considerations apply to the target rate of inflation, assumed to be zero for each party b^c is assumed to be smaller than b^l so that the Conservative party gives relatively less weight to output stabilization and more to inflation than the Labour party.

The supply function is given the simple form

$$y = p - Ep + u \tag{4}$$

where u is a random shock. The natural rate of output is set to zero. Thus y is the output gap.

Assume that expectations are formed over a period that includes an election.

Employing the same methodology and timing of events as outlined above we obtain the first-order conditions for maximising U^l, and U^c given the supply function and Ep as

$$-p^l - b^l(p^l - Ep + u - y^*) = 0 \qquad (5)$$

and

$$-p^c - b^c(p^c - Ep + u - y^*) = 0 \qquad (6)$$

Substitution for Ep from (1) gives two simultaneous equations that can be solved for p^c and p^l respectively as

$$p^l = \frac{b^l(1 + b^r)y^*}{1 + b^l(1 - j) + jb^c} - \frac{b^l u}{1 + b^l} \qquad (7)$$

and

$$p^c = \frac{b^c(1 + b^l)y^*}{1 + b^l(1 - j) + jb^c} - \frac{b^c u}{1 + b^c} \qquad (8)$$

When party l is in power output is given by

$$y = p^l - Ep + u \qquad (9)$$

so that output under party l, substituting for p^l and Ep from (7) and (1) respectively is given by

$$y^l = \frac{(1 - j)(b^l - b^c)y^*}{1 + b^l(1 - j) + jb^c} + \frac{u}{1 + b^l} \qquad (10)$$

The same procedure gives the output for party c as

$$y^c = \frac{-j(b^l - b^c)y^*}{1 + b^l(1 - j) + jb^c} + \frac{u}{1 + b^c} \qquad (11)$$

The variance of output, σ_y^2, is given by

$$\sigma_y^2 = jE(y^l - Ey)^2 + (1 - j)E(y^c - Ey)^2 \qquad (12)$$

since $Ey = 0$ substitution yields the solution for σ_y^2 as

$$\sigma_y^2 = \frac{j(1 - j)(b^l - b^c)^2(y^*)^2}{(1 + b^l(1 - j) + jb^c)^2} + \left[\frac{j}{(1 + b^l)^2} + \frac{(1 - j)}{(1 + b^c)^2}\right]\sigma_u^2 \qquad (13)$$

where σ_u^2 is the variance of u.

The variance of inflation, σ_p^2, is given by

$$\sigma_p^2 = jE(p^l - Ep)^2 + (1 - j)E(p^c - Ep)^2 \qquad (14)$$

Substitution from (1), (7) and (8) gives

$$\sigma_p^2 = \frac{j(1-j)(b^l - b^c)^2(y^*)^2}{(1 + b^l(1-j) + jb^c)^2} + [\frac{j(b^l)^2}{(1 + b^l)^2} + \frac{(1-j)(b^c)^2}{(1 + b^c)^2}]\sigma_u^2 \qquad (15)$$

Finally expected inflation is given by

$$Ep = \frac{b^c(1 + b^l) + j(b^l - b^c)}{1 + b^l(1-j) + jb^c} \qquad (16)$$

Equation (13) is the essential insight of Alesina and Gatti. The variance of output is decomposed into two parts. The first is the result of electoral uncertainty. Naturally it disappears when $j = 0$ or 1; the variance is also increasing in $b^l - b^c$, so that the greater the difference in policies between the two parties the greater the variance of output. It is also interesting that the variance of output is not independent of the target level of output as is the case when there is no political uncertainty. The second term reflects the impact of the variance of the economic shock.

It is also interesting to note from (10) and (11) that the average value of the output gap is no longer zero under the different regimes. The conservative regime will experience a negative output gap on average whilst the labour regime will experience a positive one.The result of Alesina and Gatti is important for interpretation of empirical work. We showed above how appointment of a conservative central banker would result in a higher variance of output than the first best. However in comparison to the outcome under political uncertainty the variance of output could be lower, depending upon the various parameters. This point is important both as a potential argument for the introduction of an independent central bank and when interpreting the empirical evidence on the economic effects of central banks.

Alesina and Gatti (1995) also consider the interesting issue of whether both parties could be better off appointing an independent central banker with a given b rather than the non-cooperative outcomes defined by equations (13), (15) and (16). They suggest that this can be the case.