The Political Business Cycle [1,2]

WILLIAM D. NORDHAUS
Yale University

There are many ways in which today's political choices affect future well-being. Future capital stocks, structures and machinery and roads, depend on the extent to which present generations invest instead of consume. Stocks of natural resources depend on past conservation efforts. There are perhaps more subtle ways in which we bequeath our tastes, consumption patterns, and folkways to the future and determine future welfare. Recently, economists have concluded that we also pass on the inflationary (or deflationary) consequences of current policies.

All such aspects of our economic life, and many more, are influenced by government policies. All involve choosing between present welfare and future welfare. In short, they are public investment decisions. Although the normative aspects of public investment criteria have been extensively studied, there is very little theory predicting government investment behaviour when governments are constrained by political realities.

The present work investigates a simple model of public intertemporal choice where decisions are made within a political framework. The particular problem analysed is the choice between inflation and unemployment because this conflict has been very prominent in recent decisions and controversies. The conventional macro-economic wisdom is that there is a trade-off between the rate of inflation on the one hand and the level of employment and output obtainable by an economy on the other. (This is the famous " Phillips curve ".) Some recent investigations of voter behaviour indicate that voters are sensitive to both these variables in their electoral choice. We investigate the policies which would be chosen in a stylized democratic system. The model can also be directly applied to other problems of choice, such as public investment in capital goods or balance of payments policies.

1. THE MACRO-ECONOMIC FRAMEWORK

We are concerned with political choice between economic objectives over time. For concreteness, we examine the dynamic relation between inflation and unemployment, but the analysis holds equally well for many kinds of economic systems with time dependence.

It is generally agreed by economists that there is a trade-off between the level of utilization and employment in the economy and the rate of inflation.[3] The reason for this phenomenon is that in both competitive labour markets and in unionized sectors a low unemployment rate means higher demand relative to the labour force and a higher

---

cost of strikes. This leads employers to settle for a higher than usual increase in money wage rates.[1]

A second proposition which is widely accepted is that there is more of a trade-off in the short-run (a quarter or a year) than in the long run; a given change in unemployment will lead to less inflation in the short run than in the long run. There are two basic reasons for the difference: first, the usual presumption is that unemployment affects money wages and money wages then affect prices. To the extent that there are lags in the relation between unemployment and inflation, the short-run effect will be less than the long-run effect. Second, there is a feedback from prices to wages. Higher inflation leads agents to *expect* higher inflation in the future. This higher expected rate of inflation leads unions and workers to escalate their wage demands by some fraction (that is, workers consider real wages rather than simply money wages). This also leads to a long-run relation which is steeper than the short run.[2]

In Figure 1 we have drawn a long-run Phillips curve (LL) and a (first quarter or impact) short-run Phillips curve for points around a 4 per cent unemployment rate ($S_4 S_4$). This curve is drawn from econometric estimates prepared for the MIT-FRB model for the United States. The graph indicates the significant difference in slopes of the two trade-offs.[3]

In the analysis which follows we will take this simple description as comprising the political alternatives. It is assumed that unemployment is a control or policy variable of the economic system which the policymakers can set at any level they wish.[4] The question of what the level will be under different systems, and how this compares with the optimal choice, is the problem we will examine.

---

[1] We are oversimplifying slightly. The usual formulation is that *wage* inflation is a function of unemployment and price inflation, and that prices are a markup over wages:

(i) $\pi_w = f_0(u) + \lambda v$

(ii) $\pi = \pi_w - a$

(iii) $\dfrac{dv}{dt} = \gamma(\pi - v)$,

where π_w is the rate of change of wages, u is the unemployment rate, v is the expected rate of inflation, π is the rate of change of prices, and a is the rate of productivity growth. Solving we get:

(iv) $\pi = f(u) + \lambda v$

(v) $\dfrac{dv}{dt} = \gamma(\pi - v)$,

where $f(u) = f_0(u) - a$. There is no loss of generality in considering the simpler system (iv) and (v).

[2] Continuing the system in footnote 1, above, we know that comparing two stationary points, the actual rate of inflation (π) must equal the expected:

(vi) $v = \pi$.

Substituting this into (i) and (ii) we have

(vii) $\begin{cases} \pi = \dfrac{f(u)}{1-\lambda} & \text{if } 0 \leq \lambda < 1 \\ u = \bar{u} & \lambda = 1 \end{cases}$

Thus the long-run curve with price expectations adjusting has a slope $f'(u)/(1-\lambda)$ which is greater than the long-run slope with price expectations constant, $f'(u)$.

[3] This is from George de Menil and Jared J. Enzler [8]. It should be noted that the ratio of slopes is the fraction of the long-run response which occurs over the period. Estimates of the fraction for different time periods are as follows (from de Menil and Enzler [8], Table 4.1):

Quarters	Average response as fraction of long-run
1	0·09
4	0·42
8	0·68
12	0·78
16	0·85

[4] The assumption that unemployment is a control variable is unrealistic in a decentralized, capitalist economy. It is generally agreed, however, that through judicious choice of fiscal and monetary policy the government can (within a margin of error) set unemployment rates at any desired level.

Percentage change, Private
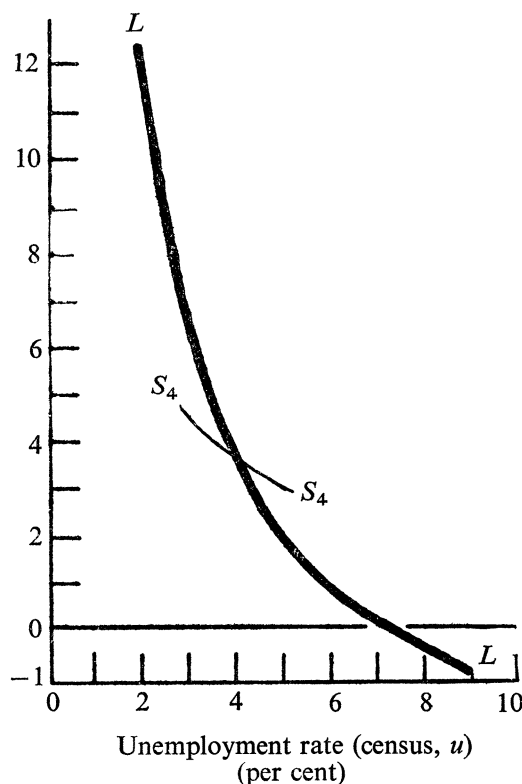Nonfarm Deflator (π)

FIGURE 1

Estimated trade-off curve for US (from de Menil and Enzler [8])

In summary, our macro-economic system is

$$\pi_t = f(u_t) + \lambda v_t \qquad \qquad ...(1)$$

$$\dot{v}_t = \gamma(\pi_t - v_t), \qquad \qquad ...(2)$$

where variables are defined in footnote 1, p. 170.

2. INDIVIDUAL PREFERENCES AND AGGREGATE BEHAVIOUR

Having established the macro-economic framework in which policymakers operate, we now turn to the preferences of individuals among different states of the economy.

In the analysis which follows, we assume individuals have the aggregate unemployment and inflation rates in their preference functions and that individuals prefer stable prices and low unemployment rates to high inflation and unemployment rates. We first discuss the reason for such an assumption.

First, why do individuals care about the aggregate unemployment rate? It is patently more plausible to assume that individuals pay attention to *their own experience* rather than to the aggregate experience. The main reason for focusing on aggregate indicators is that individual experiences are highly correlated with cyclical movements in the economy. Moreover, the unemployment rate is probably the best single indicator of cyclical conditions. As the unemployment rate rises, some families suffer a drastic decline in income as they

lose jobs. Many others are affected as hours and overtime pay decline, as there is more part-time work, and as profits drop off drastically. In short, a movement in the aggregate unemployment rate will be felt, directly or indirectly, by a very large fraction of households.

The reasons why households are averse to inflation is less apparent. There can be little doubt that households prefer periods of stable prices (or perhaps, stable inflation rates) to situations of accelerating inflation. This has been demonstrated in surveys as well as scattered studies on electoral behaviour.[1] Three reasons are usually mentioned for aversion to inflation: inflation may cause balance of payments problems, inflation leads to inefficient resource allocation, and inflation introduces an arbitrary redistribution of income. The evidence on these assertions is not conclusive, but we will accept for this analysis the proposition that individuals have a pronounced and rational taste for stable prices.[2]

Finally, we assume that while households are rational in their preferences, they are ignorant of the macro-economic trade-off. Given that they do not know how well or badly policy makers are doing relative to objective possibilities, households rely on past experience in their political decisions.

These decisions take the form of periodic voting between alternative political parties. In the usual models of voting between alternatives, citizens are presented with a menu of alternatives, each alternative representing the position of a party or candidate.[3] If the citizen can be assured that a party's platform is feasible and sincere, the choice can then be made from among the alternatives presented.

Since an individual's knowledge about the objective or feasible policies is assumed to be negligible, it seems unreasonable to assume that voters take the platforms of parties seriously in their voting behaviour. A more reasonable approach would be for households to form a set of expectations of what is the *usual* behaviour of political parties, this expectation based on past behaviour. A voter then compares an incumbent party's behaviour with *usual* behaviour in order to evaluate the incumbent. If economic conditions have deteriorated relative to expectations, this leads to votes against the incumbent, and vice versa.[4]

It should be stressed that ignorance of the structure of the economy is extremely important for the behaviour we are about to describe.

We now turn to a discussion of individual preferences. The economy is composed of a large number of individuals. Individuals are assumed to have well-behaved ordinal preference orderings over economic variables, $z = (z_1, z_2, ..., z_m)$.

$$z_1 = -\pi = -\text{rate of inflation}$$

$$z_2 = -u = -\text{rate of unemployment}$$

$$z_3, ..., z_m = \text{other economic variables.}$$

[1] Kramer [6], Rees, Kaufman, Eldersveld, and Freidel [20].

[2] It is possible that the aversion to inflation is a rational process for individuals, but irrational for society as a whole. An analogy is that individuals think inflation is a " tax " on income while in the aggregate the " tax " nets out to zero. (Indeed, it is difficult to find any effect of inflation of the magnitude experienced in recent years in advanced countries on the level of productivity or the growth of potential output.) For example, the price rises might be visible, while the offsetting effect of price rises on income—flowing through higher wage rates, dividends, and transfer payments—might not be associated with the inflationary process in an individual's perception.

[3] See for example Schumpeter [21] or Downs [3]. Kramer characterizes this process as follows: " One might picture the voter as a rational, information-processing individual who proceeds by collecting information of various kinds—party platforms and policy pronouncements, legislative voting records, and perhaps expert or authoritative opinions on these matters. Such a voter analyses this information in light of his own self-interest and decides which party presents the ' best ' package of positions. He then votes accordingly. This view of the voting decision appears in classical democratic theory, and has been subjected to empirical tests in various voting studies (*where it generally does not fare very well*)." Kramer [6], pp. 133-134. Emphasis added.

[4] This is the behaviour postulated by Kramer [6], p. 134: " The past performance of the incumbent party in particular gives some indication of what it would do if returned to office. . . ." This kind of model is implicit in the study by Pearson and Myers [16].

We will represent the preference orderings of the ith individual by the real-valued function, $U^i = U^i(z)$. U^i is assumed to be quasi-concave (i.e. diminishing marginal rate of substitution) and indexed such that U^i is positive and an increasing function of the z's.

We are concerned with individual voting behaviour. We will index time so that elections occur at points (0, 1, 2, ...), and that economic variables z_t refer to the suitable weighted average value of z over the period from $(t-1)$ to t.[1]

Individual voting behaviour proceeds as follows: there are two parties. At time t, each voter compares the economic performance of incumbents during the last electoral period (z_t) with the voter's subjective standard for performance $(\hat{z}_t)$. If the incumbent did better than the standard, the individual votes for the incumbent; if the incumbent did worse than the standard, he votes for the opposition.

There are many ways that the subjective standard of performance might be determined. We will choose to interpret this as the *expected* performance of the party in power. In this view, voters don't know much about economics but they know what they like. If politicians are always trying hard to get the economy to its utility possibility curve, then voters can judge the competence and tastes of parties by how current economic performance compares with past performance. In the absence of *convincing* explanations, a deterioration in the level (or growth) of real income will be blamed on the party in power. Since there is no objective standard by which to measure performance, it may be that voters fall back on a simple comparison of actual and expected performance.

It is obvious that a simple comparison of actual and expected performance misses several important aspects of voting behaviour. There is, for example, nothing to distinguish one party from the other, no persistent party line. It may be that in a two-party system the parties tend to converge—and perhaps Labour and Tories or Republicans and Democrats are indistinguishable. Nevertheless, voters do tend to assume and retain party affiliation in a way that belies the supposed identity of views.

How can we rationalize the persistence of party affiliation in our model? It can come either from the party's principles or voter's perceptions. Consider first the possibility that political parties have a consistent ideology; or, in the particular policy considered here, that parties differ in their rankings of points on the Phillips curve. It is probably accurate to say that in the United States Republicans have consistently been more concerned about inflation and Democrats about unemployment. If this is so, then each voter can align himself in a natural way with the party whose tastes most coincide with his own. This leaves the " swing voters " to control the election outcomes, and what follows can be interpreted as concerning only the swing voters. The problem with this behaviour is that if one party holds to its principles through thick and thin while the other is more " adaptive ", then the principled party will never be in power. As politicians know, pure principle is dysfunctional.

An alternative view of persistence of party affiliation which does not rely so heavily on dysfunctional party behaviour is that the parties have differed in past behaviour, and that voters have come to expect these differences. Thus, for a given voter, Party A has in the past had a level of performance $U^i(z_A) = 90$, while Party B has $U^i(z_B) = 110$, so the average or standard performance is $U(z) = 100$. Now the ith voter might be *surprised* if Party A would run a performance with $U^i(z_A) = 105$, this being better than expected. But unless the voter were convinced that Party A has somehow reformed, or that Party B had been very lucky, he might continue to vote for Party B. Put differently, if voters think that parties behave differently, they may use past behaviour to predict future performance. This kind of voting behaviour will mean that different standards are applied to different parties, where the standards are a function of past behaviour. The result is that past as well as current performance of a party enters the evaluation. If the lag is long, then there will be considerable continuity in a voter's party affiliation.

[1] Exactly how variables should be averaged is discussed below, p. 182.

In what follows we will ignore the separate identity of parties. Although it would be desirable to consider that problem, our focus is on the behaviour of a system where parties behave rationally and where voters do not affiliate with parties for non-economic reasons. In this sense, the parties are then " neo-classical " rather than " managerial ". Parties are interested in political " profits "—that is, pluralities—rather than the easy life on ideology. It is interesting to speculate on whether party " takeovers " will provide the same discipline on parties as stock market takeovers do to managerial firms.

Expected performance is determined by adaptive expectations. Thus

$$\hat{z}_t = \delta z_{t-1} + (I - \delta)\hat{z}_{t-1}, \qquad \qquad ...(3)$$

where δ is a $(m \times m)$ non-negative square matrix of adjustment coefficients and I the $(m \times m)$ identity matrix. (Normally δ is diagonal with diagonal elements $0 \leqq \delta_{ii} \leqq 1$.) We assume δ is the same for all voters.[1]

Voting behaviour can be succintly described as follows. The voting function for the ith individual is V^i:

$$V_t^i = \phi^i(z_t, \hat{z}_t) = \begin{cases} 1 & \text{if} \quad U^i(z_t)/U^i(\hat{z}_t) > 1 \\ 0 & \text{if} \quad U^i(z_t)/U^i(\hat{z}_t) = 1 \\ -1 & \text{if} \quad U^i(z_t)/U^i(\hat{z}_t) < 1 \end{cases}. \qquad ...(4)$$

Thus a vote for the incumbent registers as $+1$ and a vote for the opposition as -1.

The aggregate vote function is then

$$V_t = V(z_t, \hat{z}_t) = \sum_{i=1}^n V_t^i = \sum_{i=1}^n \phi^i(z_t, \hat{z}_t). \qquad ...(5)$$

We will call V the *aggregate voting function*. This function is positive if the incumbents win, negative if the opposition wins, and zero in the event of a tie.

The role of political parties is thus easily outlined. Parties are assumed to be interested only in election outcomes. They want to win elections. It is assumed they know voters preferences (as represented in V) perfectly. *The government therefore chooses economic policies during its incumbency which maximize its plurality at the next election.*[2] Since $\hat{z}_t$ is given, the policy is simply to maximize V with respect to z_t:

$$\max_{\{z_t\}} V(z_t, \hat{z}_t). \qquad ...(6)$$

The general function $V(z, \hat{z})$ is quite difficult to solve analytically. In what follows, we simplify the problem by making two assumptions. First,

$$\delta = 0. \qquad ...(7)$$

This means that there is no change in the expected level and we can therefore rewrite our aggregate voting function as:

$$V_t = g(z_t) = V(z_t, \hat{z}_t) |_{\hat{z}_t = \hat{z}}. \qquad ...(8)$$

Thus the aggregate voting function is a function only of current policies.

[1] This allows aggregation in (5) below.
[2] The assumptions are slightly inconsistent. If political parties completely know the voting function, then the incumbents can pick a policy which yields $(50 + \varepsilon)$ per cent of the vote. Unless further goals enter into the party's preference function, there is an indeterminacy. The slack may allow a public-spirited party to move towards the social optimum and still win, or a selfish party to do some nasty business on the side. One obvious further goal is to win the election after the next.

To be realistic, however, we should realize that there is uncertainty about the voting function. The objective of maximizing the expected number of votes retains its appeal if there is additive uncertainty. Moreover, political parties appear to be quite myopic.

The second assumption is that our voting function is well behaved:[1]

$$g(z_t) \text{ is quasi concave.} \qquad \qquad \qquad ...(9)$$

This assumption is further discussed in Section 6 below.

3. OPTIMAL INFLATION AND UNEMPLOYMENT

The first problem we consider is the question: *in the absence of political contraints what are the optimal levels of unemployment and inflation?* [2]

Let us view the problem as that of a planning agency constructing a medium-term plan for a mixed economy. The only constraint on the planners is to conform to the macro-economic system described above [see equations (1) and (2)]. The important question we must consider is what to use as an appropriate criterion, or social welfare function. Aside from using the planners' preferences, a reasonable alternative would be to use the observed aggregate voting function described in equation (8) as the appropriate social welfare function: [3]

$$V_t = g(u_t, \pi_t). \qquad \qquad \qquad ...(10)$$

We take this approach because the observed voting function is a way of using individual (and presumed rational) preferences to help make policy decisions. There may be other ways of gaining similar information—such as using survey data—but it is not clear whether these will give significantly different preferences. At the same time, it must be recognized that the derivation of social welfare functions from observed data is an especially treacherous problem.

Figure 2 shows the contours of the aggregate voting function. Each contour represents the line along which a constant fraction of the electorate would vote for a given policy. Thus our criterion function is indifferent between points A and B, as they lie on the same contour (51 per cent agreement) of the aggregate voting function. Both points A and B are preferred to point C, which lies on a lower contour (49 per cent agreement). By our assumption of regularity in statement (9) above, the curves have the general shape in Figure 2.

We thus construct as our social welfare function the discounted value of our aggregate voting function:

$$W = \int_0^\infty g(u_t, \pi_t) e^{-\rho t} dt. \qquad \qquad \qquad ...(11)$$

Thus a plan is evaluated by the fraction of the electorate voting for it, discounted over time at rate ρ.

The macro-economic constraints are

$$\pi_t = f(u_t) + \lambda v_t \qquad \qquad \qquad ...(12)$$

$$\dot{v}_t = \gamma(\pi_t - v_t). \qquad \qquad \qquad ...(13)$$

The problem is to construct a plan $\{u^*(t)\}$ which maximizes the welfare function (11) subject to the constraints (12) and (13).

Using standard techniques, we have the following results: [4]

$$\frac{f'(u)}{1-\lambda} = -\frac{g_1}{g_2}\left(\frac{\rho+\gamma(1-\lambda)}{(\rho+\gamma)(1-\lambda)}\right) \quad 0 \le \lambda < 1 \qquad \qquad ...(14)$$

[1] Susan Lepper has shown that regularity of the individual preference functions does not lead to regularity of the aggregate vote function. (See Lepper [7].)

[2] For a more complete discussion of the macro-economic problems involved, see Phelps [18].

[3] For reservations to using this as a social welfare function, see Section 4.2 below.

[4] The detailed proof is given in Nordhaus [12].

$$f'(u) = -\frac{g_1}{g_2}\left(\frac{\rho}{\rho+\gamma}\right) \quad \lambda = 1. \qquad \qquad ...(15)$$

We can best interpret the nature of the long-run optimal solution geometrically. In Figure 2 we have drawn the aggregate voting function, which is also assumed to be the criterion function. We have superimposed the long-run Phillips curve (the heavy black line, LL) onto the preference structure in Figure 3.
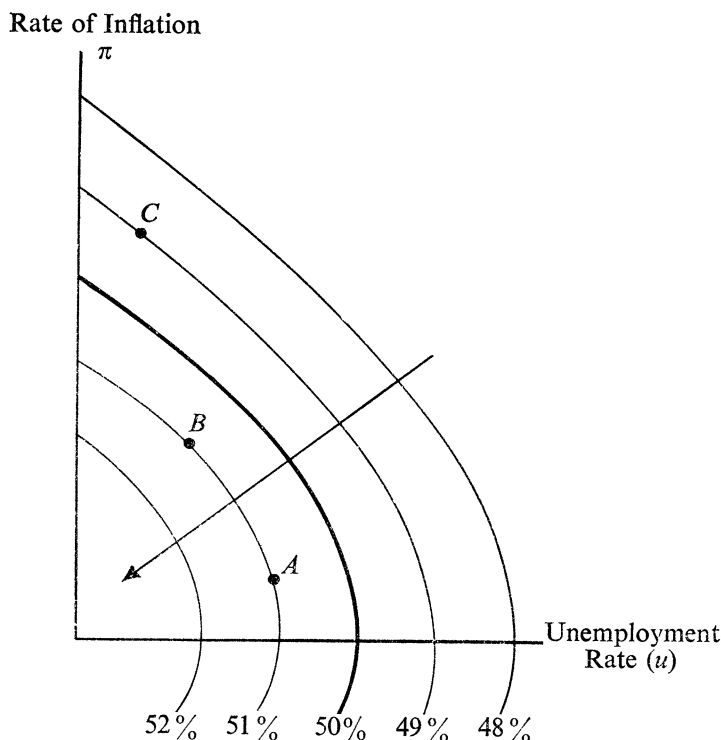
Rate of Inflation

FIGURE 2

Contours of aggregate voting function

We can now show the different possibilities. Consider the case where $0 \leq \lambda < 1$.[1]

(1) First assume that the planners do not use discounting in allocating resources between future and present generations. In this case $\rho = 0$ and:

$$\frac{f'(u)}{1-\lambda} = -\frac{g_1}{g_2}. \qquad \qquad ...(16G)$$

This solution will be labelled the *golden-rule policy* (U^G, π^G) for there is no differentiation between generations. *The outcome is where the long-run Phillips curve is tangent to the aggregate voting function.* This is shown as point G in Figure 3.

(2) The opposite extreme is where planners apply infinite discount rates in evaluating policy. Manipulating (20) we see that

$$f'(u) = -\frac{g_1}{g_2}\left(1-\frac{\lambda\gamma}{\rho+\gamma}\right).$$

[1] The case of a vertical long-run Phillips curve makes no difference in principle. If $\lambda = 1$ the long-run trade-off is vertical. If the social rate of discount is zero (the golden-rule policy) the optimal policy is to have stable prices. No other set of assumptions leads to stable prices. The general welfare optimum occurs when the short-run trade-off curve has a slope less than the aggregate voting curve by the fraction $\rho/(\rho+\gamma)$.
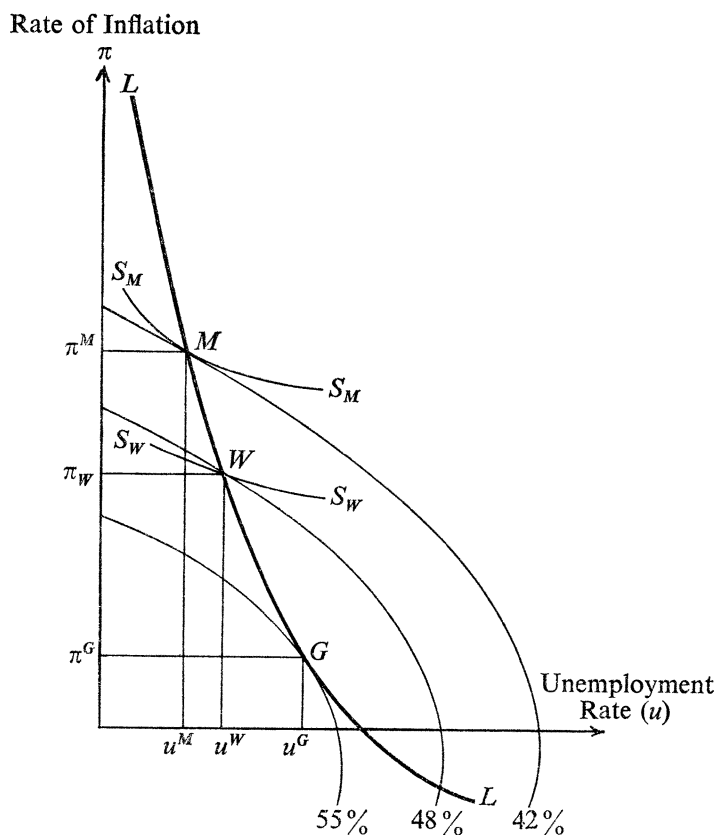
Rate of Inflation

FIGURE 3

Long-run policies

Thus as ρ becomes large, we have

$$'(u) = -\frac{g_1}{g_2}.$$
...(16M)

This is the *purely myopic policy*, where future generations are ignored. This comes at point M where the short-run Phillips curve ($S_M S_M$ in Figure 3) is tangent to the aggregate voting function. It is easily seen that the point M lies to the north-west of G: that is, myopic policies have higher inflation and lower unemployment than golden-rule policies.

(3) The *general welfare optimum* (W) is easily seen to lie between M and G, for example at point W in Figure 3. As can be verified by equation (15), the optimum comes at a point where the slope of the aggregate voting function is intermediate between the long-run trade-off (LL) and the short-run trade-off ($S_W S_W$).

4. LONG-RUN CHOICE IN DEMOCRATIC SYSTEMS

This section analyses the general trend and asymptotic behaviour of the system over the course of many electoral regimes. The next section discusses optimal policy for a political party when in power.

The fundamental long-run result is the following: [1]

Under conditions where voting is an appropriate mechanism for social choice, democratic systems will choose a policy on the long-run trade-off that has lower unemployment and higher inflation than is optimal.

Referring back to Figure 3, we show that the actual choice in democratic systems will be further up the trade-off curve than the optimal point *W*.

1. *Geometric Analysis*

To show the basic proposition, we call upon the concepts introduced above. Figure 1 above shows short-run and long-run trade-off curves, while Figure 2 shows the aggregate voting function. Recall that we are concerned with democratic policy determination, where the choices are induced by periodic voting on the performance of incumbent parties. In a two-party system the incumbent party chooses economic policies consistent with the current short-run trade-off, but it cannot move the short-run trade-off substantially in its incumbency. At the end of its term in office voters evaluate the performance of the incumbent party. Incumbents are assumed to maximize the number of votes in the next election and to know the preference of voters.[2] The percentage of votes is a decreasing function of both the unemployment and inflation rates. Figure 2 shows the *iso-vote lines* for the incumbents, where all combinations of inflation and unemployment rates along a given line will obtain the same percentage for the votes for the incumbent party. The heavy black line divides the region of incumbent victory (lying to the south-west) from the region of incumbent defeat (lying to the north-east).

By combining these two figures we can show both the policy outcome and the election outcome. First superimpose the iso-vote lines (or polical structure) on the trade-off curves (or economic structure), as in Figure 4. At a given time, the policies open to a party in power are described by the relevant short-run curve, for example S_1S_1 in Figure 4. Maximizing votes, the incumbent will choose the point on the short-run trade-off curve tangent to the highest iso-vote line. In this case, the point E_1 is the outcome, and it obtains 53 per cent of the votes. Thus in this situation the outcome has led to victory.

By performing this experiment for all the different short-run curves (S_1S_1, S_2S_2, etc.), and joining all the outcomes, we get the *election outcome line, OO* in Figure 4. [3]

To get the flavour of the dynamics of the system, let us consider what happens after E_1 has been chosen. Because the point chosen (E_1) is to the south-west of the long-run curve, the short-run curve must move up. Thus by the time the next election comes around, the short-run curve will have moved up, say to S_2S_2 in Figure 4. The new economic conditions will inevitably be less popular, and probably have higher unemployment *and* inflation.

---

[1] This proposition holds only for situations when use of the aggregate voting function is appropriate. Sufficient conditions for this are very stringent. Reservations on the proposition are given in Section 4.2 below.

[2] Although we assume parties are " myopic " and do not look beyond the next election, it might be argued that a more realistic assumption would have parties maximize the discounted expected value of the number of years in power. This presents some interesting paradoxes. If they are sure of losing, they will sabotage the opposition party by leaving it with a high inflationary " inheritance ". This means they will do as *badly* as they can from the point of view of future inflation. On the other hand, if they are sure of victory, they may have a policy which is deflationary so that their chances at the next election are favourable.

[3] We have assumed that the election outcome line slopes generally from south-west to north-east. The reason for this is as follows. It is fairly clear that the choice line will hit the vertical axis not far from the origin: this is a result of the general preference for roughly stable price levels (we have drawn the vote functions as if preferences are for exactly stable prices). Moreover, we assume that at a given unemployment rate, the slope of the vote function becomes flatter as the rate of inflation increases, indicating that, for given unemployment, inflation becomes more important as its magnitude increases. Under the conventional assumptions about the relation between long-run and short-run Phillips curves, this set of assumptions will guarantee that the choice line slopes in the appropriate way.

If the choice line did not intersect the long-run curve in Figure 5 the system would head off for an inflationary or deflationary spiral. With suitable reinterpretation we can explain the political motivation for hyperinflation.
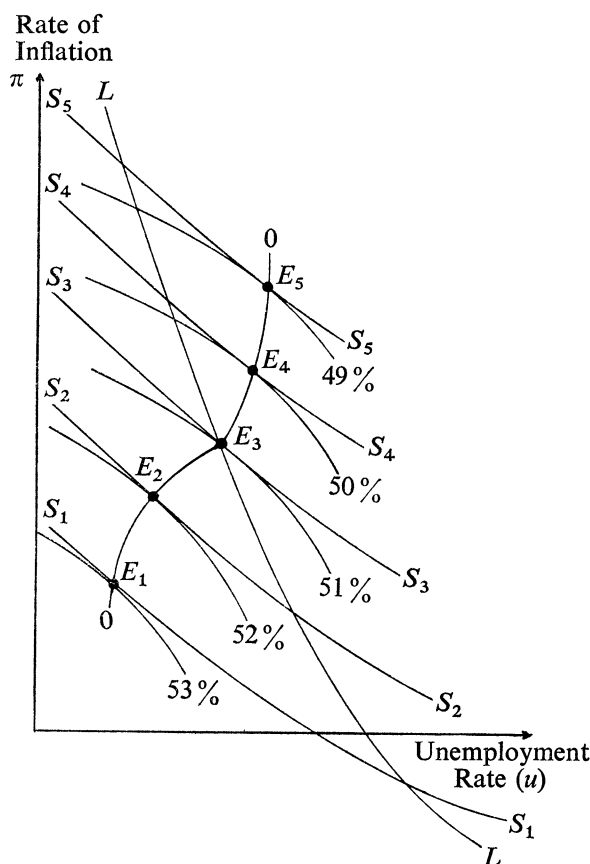
Rate of
Inflation

π

S_5 L

S_4

S_3

S_2

0

E_5

S_5
49%

E_4

S_4

E_3

50%

E_2

S_1

S_3

E_1
0

51%

S_2

52%

53%

S_1

L

Unemployment
Rate (u)

FIGURE 4

The short-run election outcome

Similarly, if the outcome is to the north-east of the long-run curve, say at E_5, the next election would lead to a policy choice somewhere below E_5 and this choice would be more popular.

The important propositions about the dynamics can be shown in Figure 5. Here OO is the election outcome line derived in Figure 4 and LL is the long-run trade-off curve. First consider our initial equilibrium at E_1. Because inflation at E_1 is lower than that which would in the long run be consistent with that level of unemployment, the short-run curve will move up. This means that the system will move up the election outcome line OO as shown by the arrows. *Where the election outcome line intersects the long-run trade-off* (at E^* in Figure 5) *the system is in equilibrium.* At E^* the iso-vote line is *tangent* to the short-run Phillips curve and is *on* the long-run Phillips curve. This implies that the incumbent party cannot improve its performance by moving along the *short-run* trade-off curve and that the system is at rest at E^*.

We can now show the central proposition we stated at the beginning of this section. We have shown the following:

The democratic outcome corresponds to the policy which was found in Section 3 to be purely myopic. That is, it comes at the point where the implicit rate of time preference is infinite.

Thus the point E^* in Figure 5 is the myopic point U_M. Glancing back at Figure 3, we see that the myopic point lies higher up the trade-off curve than the optimal point U_W. Thus we have established that the democratic outcome has lower unemployment and higher inflation than the optimum.

The outcome in Figure 5 is not the only possible situation, although it may be the most likely. Figure 6 shows the case of multiple solutions. In this case it can be shown
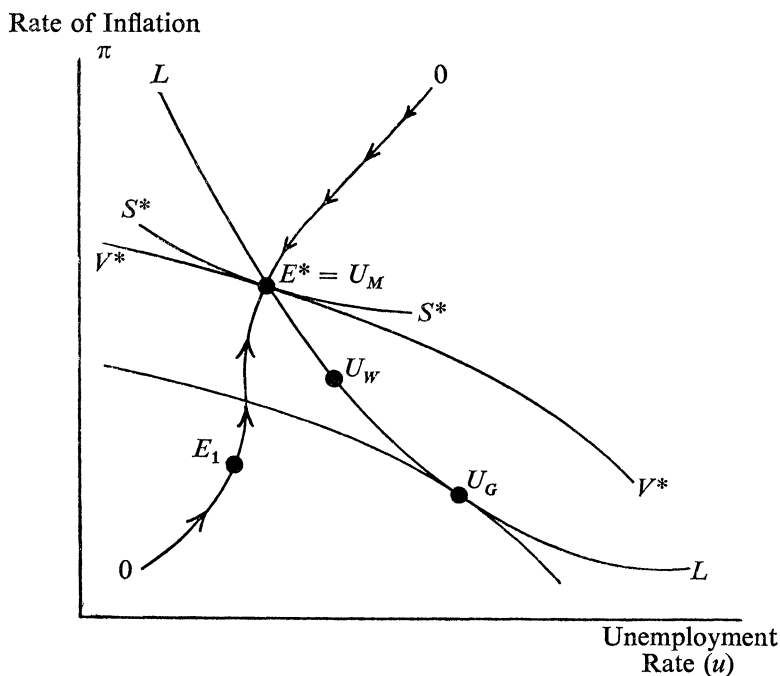

FIGURE 5
Long-run solution

that E^* and E^{***} are stable, while E^{**} is unstable. That is, if the system is displaced from E^{**} by a slight amount, it will not return to E^{**} but will move to E^* or E^{***} depending on initial conditions. It is easily seen by referring to Figure 5 that the welfare optimum must lie to the right of any, and therefore all, equilibria (as is shown in Figure 6).

Note that the long-run solution may come with either a stable or an unstable *political* system, since E^* may lie above or below the 50 per cent locus depicted in Figure 2.[1]

It is inessential whether the long-run trade-off is vertical. In this case the LL line is vertical and the proposition is simply that the political system chooses a point on the long-run curve with a higher than optimal rate of inflation.[2]

2. *Reservations*

The conclusion about the long-run choice in democratic systems outlined above may not be acceptable if either of the following conditions hold.

---

[1] The theory proposed here suggests that empirical work on election outcomes should use the difference between the incumbent's performance and " accustomed " performance rather than simply the actual performance.
[2] A formal analysis of these results is given in Nordhaus [12]

(1) If individuals have an " irrational " aversion to inflation, the use of individual preferences as revealed in the aggregate voting function is *not* proper for social policy. Thus if individuals think of inflation as a " tax ", while in fact that there is no real social loss from inflation, the optimum will have lower unemployment and higher inflation than the optimum described in Section 3.
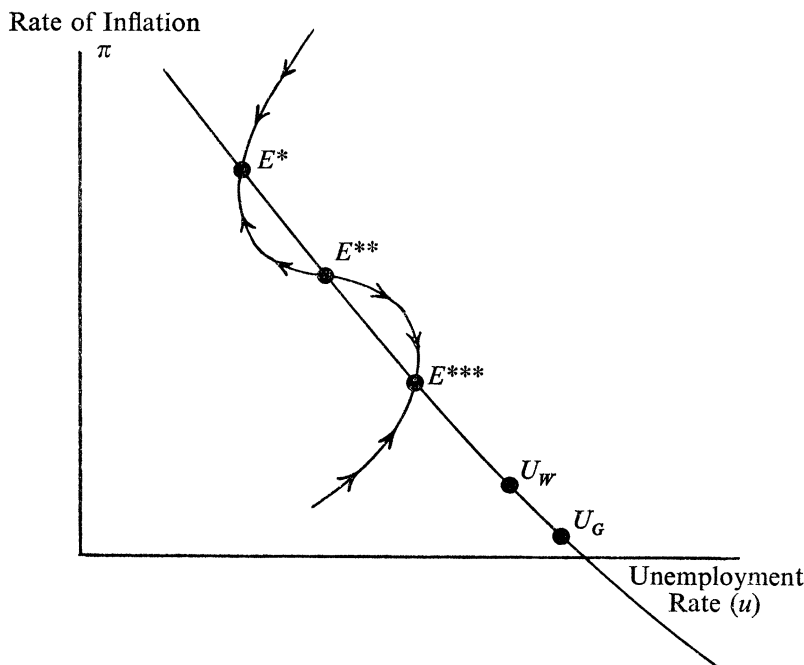
Rate of Inflation
π

FIGURE 6
Multiple solutions

(2) If income is more unequally distributed than is optimal and if a lower unemployment rate redistributes income to poor families, then choice on the basis of an aggregate voting function will bias the choice toward a higher unemployment rate than is optimal.

It may be that both these reservations hold for most of the postwar period in the United States. The most compelling reason for thinking that unemployment rates in the United States have been too high rather than too low is that most evidence indicates that a clear majority of households would have benefited from tighter labour markets than those experienced over most of the post-war period.[1] European countries, on the other hand, customarily have had considerable lower unemployment rates and higher inflation rates, so the theoretical predictions may be applicable for these countries.

5. SHORT-RUN BEHAVIOUR: THE POLITICAL BUSINESS CYCLE

We have considered the behaviour of our simple political economy as it moves from one electoral regime (or term in office) to another and as it eventually settles into a stable outcome. Up to now a single electoral regime was considered to be a homogeneous period, posing no complicated policy choices for the incumbent. We now examine the possibility of politically induced cycles.

Although economists have from time to time made some casual remarks about political causes of the business cycle, the only serious theory is that of M. Kalecki [5].

[1] See Mirer [10], Metcalf [9], and Nordhaus [11].

At the dawn of the era of The New Economics, Kalecki argued that the rentier interests and business leaders would collude to sabotage the Keynesian revolution ([5], p. 329):

> . . . lasting full employment is not at all to their [the business leaders'] liking. The workers would " get out of hand " and the " captains of industry " would be anxious to " teach them a lesson ". Moreover the price increase in the upswing is to the disadvantage of the small and big rentiers and makes them " boom tired ".

As a result of the fatigue, political pressure would be applied, " orthodox " (i.e. deflationary) policies would be revived, and a slump would follow.

Kalecki's model assumes, implicitly, that business leaders and capitalists have a disproportionate control of the political mechanism. It is the unrepresentative nature of the political system which causes Kalecki's political trade cycle.

The suggestion in the present paper is that vesting decision-making in a representative government will lead to a similar phenomenon, although the timing and causes are quite different.[1] The theory examined below extends the model of political and economic choice to include differing economic policies during the term of office of an incumbent (call this the " electoral period ").

There are two added dimensions in short-term policy choice. First, we have assumed up to now that within an electoral period there is a fixed economic trade-off and therefore a fixed policy. We now employ the more realistic continuous model introduced in equations (1) and (2) above. Second, we introduce the possibility that voters do not take simple averages of economic variables over the last electoral period, but have a decaying " memory " of past events. On election day, the memory of recent events is probably more poignant than that of ancient ills. If this is the case, then the vote function can be described as:

$$V_\theta = \int_0^\theta g(u_t, \pi_t) e^{\mu t} dt. \qquad \qquad \ldots(17)$$

Where $g(u, \pi)$ is the vote function used in the static case, μ is the rate of decay of voters' memories, and θ is the length of the electoral period. Note two important features of the vote function in (17). First, the decay rate, μ, functions exactly like a discount rate except that it is backward-looking rather than forward-looking. In this sense it is like Pigou's " defective telescopic faculty ". Second, the implicit weighting of outcomes extends only for the length of the electoral period and might therefore be called " myopic ".[2] The result of this kind of decision-making is that the implicit weights for political choices are very different from the conventional weights for economic decisions. This difference is shown graphically in Figure 7. Looking *forward* from the beginning of an electoral period, the standard set of weights on an economic decision, using discount rate ρ, will have a time profile exp $(-\rho t)$ shown as *DE*. The weights on a political decision (*FABC*) will have a weight exp (μt) up to the next election and zero thereafter.[3]

---

[1] It should be stressed that Kalecki's theory relies on the predominance of capitalists' interests in the political mechanism. The model outlined here would hold in any democratic system where intertemporal choice is involved. See Section 7 below.

[2] The voting function described in (17) is " myopic " in the sense that voters evaluate policies only over the electoral period $[0, \theta]$. More sophisticated and perhaps more satisfactory behaviour would also include expected future performance. If expectations are sticky—and voters expect the future to replicate the present—then sophistication will not affect the outcome. On the other hand, if voters can predict future events perfectly and discount the future at the social discount rate, ρ, the system will tend toward the social optimum discussed above.

[3] The effect on decision-making can be easily compared for investment projects with perpetual income streams. An investment (replacing unit consumption) at time t (where $0 < t < \theta$) yielding an annual return of r per unit will be accepted by the economic system if $r > \rho$. It will be accepted by the political system if

$$\int_t^\theta r \exp [\mu(\theta - v)] dv = -r\{1 - \exp [\mu(\theta - t)]\}/\mu > \exp [\mu(\theta - t)].$$

For $\theta - t = 2$ and $\mu = 0.01$, the condition is that r be greater than *fifty* percent. This mechanism would certainly lead to a " social imbalance " between public and private investment.
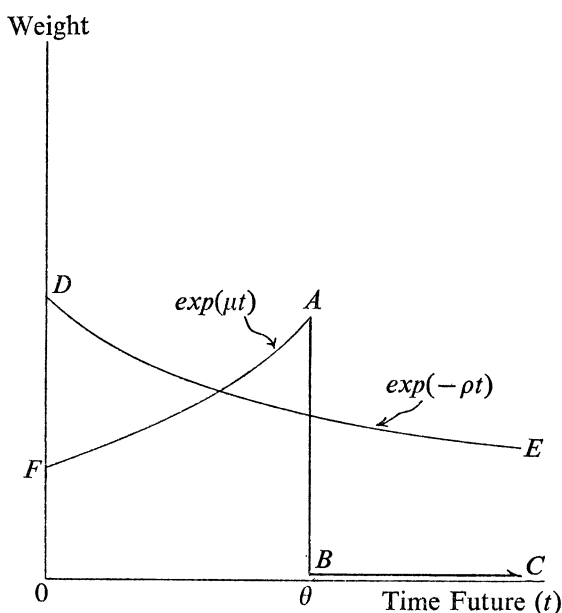
FIGURE 7

Political weighting (*FABC*) and economic weighting (*DE*)

We now consider the policymaker's problem formally. A *politically optimal programme* for the party in power is one which maximizes the vote function in (17) subject to the economic constraints:

$$\pi_t = f(u_t) + \lambda v_t$$

$$\dot{v}_t = \gamma(\pi_t - v_t).$$

The solution is relatively simple if we simplify the system as follows. Let the preference function be [1]

$$g(u, \pi) = -u^2 - \beta\pi, \quad \pi \geqq 0, \quad \beta > 0 \qquad \qquad ...(18)$$

and let $f(u)$ be

$$f(u) = \alpha_0 - \alpha_1 u$$

so

$$\pi = \alpha_0 - \alpha_1 u + \lambda v.$$

We can then rewrite the incumbent's vote function as

$$V_\theta = \int_0^\theta [-\beta\alpha_0 - u^2 + \beta\alpha_1 u - \beta\lambda v] e^{\mu t} dt \qquad \qquad ...(19)$$

with the constraint

$$\dot{v} = \gamma[\alpha_0 - \alpha_1 u - (1 - \lambda)v]. \qquad \qquad ...(20)$$

Using standard techniques for maximization, we set up the Hamiltonian

$$H = e^{\mu t}\{[\beta\alpha_1 u - \beta\alpha_0 - u^2 - \beta\lambda v] + \psi\gamma[\alpha_0 - \alpha_1 u - (1 - \lambda)v]\}, \qquad ...(21)$$

[1] The objective function is simplified in this manner so that the resulting differential behaviour in (18) is linear and so that behaviour during the entire election period can be described. More complicated objective functions are difficult to analyse globally. We restrict the function to the domain $\pi \geqq 0$ as this is obviously where the solution lies.

where

$$\dot{\psi} = [\gamma(1-\lambda)-\mu]\psi + \beta\lambda \qquad\qquad\qquad ...(22)$$

$$\dot{v} = \gamma[\alpha_0 - \alpha_1 u - (1-\lambda)v]. \qquad\qquad\qquad ...(23)$$

The variable ψ is the shadow price of inflation in terms of votes rather than social welfare. The party's optimal policy is given by (22), (23), and the maximum of H:

$$\frac{\partial H}{\partial u} = 0 = \beta\alpha_1 - 2u - \psi\gamma\alpha_1$$

or

$$u = \alpha_1[\beta - \psi\gamma]/2. \qquad\qquad\qquad ...(24)$$

Solve (24) for ψ, differentiate this with respect to time, and substitute for ψ and $\dot{\psi}$ in (22):

$$\dot{u} = Au + B, \qquad\qquad\qquad ...(25)$$

where $A = \gamma(1-\lambda)-\mu$ and $B = -\frac{1}{2}\alpha_1\beta(\gamma-\mu)$.

What is the typical policy? First, note that, as an election approaches, the shadow price on future inflation becomes nil ($\psi \to 0$ as $t \to \theta$) so u tends to $\beta\alpha_1/2$. Integrating (25) backwards from θ we get the optimal policy $\{u^*(t)\}$:

$$u^*(t) = \left(\frac{\beta\alpha_1}{2} + \frac{B}{A}\right)\exp\left[A(t-\theta)\right] - \frac{B}{A}.$$

We can now easily describe the political business cycle. First note that the unemployment rate must be falling over the entire electoral regime.[1] It will fall relatively faster at the end or beginning depending on whether A is positive or negative, respectively. The typical cycle will run as follows: immediately after an election the victor will raise unemployment to some relatively high level in order to combat inflation. As elections approach, the unemployment rate will be lowered until, on election eve, the unemployment rate will be lowered to the purely myopic point.

Figure 8 shows the political business cycle based on approximate magnitudes for the United States.[2] The optimal policy gives a sawtoothed path for unemployment and a slightly smoothed path for inflation.[3]

We can easily compare the cycles which would be obtained under different parameter values. First notice that the length of the electoral period does not enter into equation (25) so the longer the electoral period the larger is the political business cycle. The other important parameters are γ, μ, and $(1-\lambda)$. Take the case where θ is very large so

$$u^*(0) \cong -B/A = u^*(\theta)(\gamma-\mu)/[\gamma-\mu-\gamma\lambda].$$

The item to note is that the initial unemployment rate will be high as $\gamma\lambda$ is large. Note that $\gamma\lambda$ is the rate of feedback of current policies on the long-run values: the larger the feedback the more initial unpleasantness should be substituted for later pleasures. Finally, note that as the rate of decay of memory increases (μ is larger) the slope of the curve in Figure 8 increases downward.

---

[1] This can be seen by noting (i) that $\dot{u}(\theta) = -\gamma\lambda u(\theta) < 0$, (ii) that if $A \geqq 0$ and $\dot{u}$ is positive $\dot{u}$ will always be positive, and (iii) that if $A \leqq 0$ and $\dot{u}$ is positive $\dot{u}(\theta) > 0$. Since (ii) and (iii) are exhaustive and either contradicts (i), $\dot{u}$ must be always non-positive. The solution described is the steady-state solution.

[2] Parameter values are $\beta\alpha_1/2 = 3\cdot0$ per cent, $\lambda = 0\cdot7$, $\gamma = 0\cdot3$, $\mu = 0\cdot03$. The values for γ and λ are consistent with de Menil and Enzler [8].

[3] The sawtooth character of the cycle is a result of our assumption that unemployment can be changed instantaneously. If realistic lags are introduced the cycle will be smoothed.
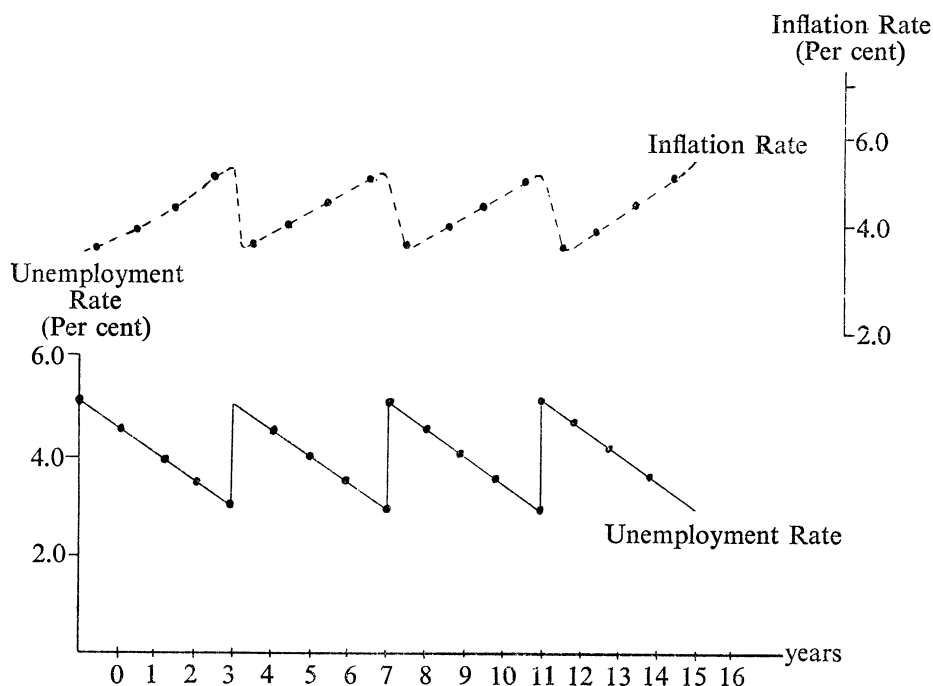
FIGURE 8

The political business cycle

8. HISTORICAL EVIDENCE

The highly simplified model of macro-economic policy outlined above has two important predictions: (I) that the politically determined policy choice will have lower unemployment and higher inflation than is optimal and (II) that the optimal partisan policy will lead to a political business cycle, with unemployment and deflation in early years followed by an inflationary boom as elections approach. Proposition I is not easily tested, but we can look for evidence of II.

Under what conditions would Proposition II be observed? The three important conditions are: (a) that the government be chosen in periodic competitive elections, (b) that the government have sufficient economic control and sophistication to move the economy in the desired direction, and (c) that the voting function be myopic in the sense defined above.[1] A cursory examination of macro-economic policies pointed to the possibility that the three conditions for the political business cycle would be met in nine countries: Australia, Canada, France, Germany, Japan, New Zealand, Sweden, United Kingdom and the United States. The following non-parametric test was run on each country:

Hypothesis. During an electoral period of length θ, the unemployment rate should rise in the first $\theta/2$ years and fall in the second $\theta/2$ years.

Annual data for 1947 to 1972 on unemployment rates were gathered for the nine countries and national elections were determined.[2] In performing the tests we assume that the chance of the unemployment rate rising or falling in any period is one-half, and that

[1] See footnote 2, page 182.
[2] The sources of the data are [13], [14], [15], [22] and [23].

N—42/2

successive occurrences are independent.[1]   We thus calculate the probability of the observed behaviour occurring due to chance as the binomial probability of at least n successes in m trials, where n is the number of successful predictions in Table I, m is the total number of observations in Table I, and the probability of rise or fall is one-half.

The results of the hypothesis are shown in Table I.   The overall results indicate that for the entire period a political cycle seems to be implausible as a description for Australia, Canada, Japan, and the UK.   Some modest indications of a political cycle appear for France and Sweden.   For three countries—Germany, New Zealand and the United States— the coincidence of business and political cycles is very marked.

TABLE I

Unemployment trends before and after elections

	Australia	Canada	France	Germany	Japan	NZ	Sweden	UK	US
Before elections									
Unemployment rate rising	3	4	2	0	4	2	2	2	0
Unemployment rate falling*	4	3	2	5	4	5	4	2	5
p	0·500	0·773	0·688	0·031	0·637	0·227	0·344	0·688	0·031
After elections									
Unemployment rate rising*	3	2	4	2	3	6	3	3	4
Unemployment rate falling	5	4	1	2	4	1	3	3	1
p	0·856	0·891	0·188	0·688	0·773	0·063	0·656	0·656	0·188
Total									
Conforms with theory*	7	6	6	7	7	11	7	5	9
Does not conform with theory	8	7	3	2	8	3	5	5	1
p	0·696	0·867	0·254	0·090	0·696	0·029	0·387	0·623	0·011

Note: The " p's " indicate the probability that the given number of successful theoretical prediction (marked by *) would have occurred by chance if the probability of a rise or fall is one-half and independent.

It is useful to cast a more casual look at the data for the US and the UK.   The US data indicate very strong conformity with the theory for the elections of 1948, 1952 and 1956, with unemployment falling sharply before elections and rising after elections. Moreover, unemployment was falling before the 1964 election, rose sharply after the 1968 election and fell before the 1972 election.   It is interesting to note that the two elections for which the pre-election patterns do *not* fit the theory (1960 and 1968) are years in which the incumbent party lost.

The figures for the UK are less definite.   The elections for 1951, 1964 and 1966 show a rough correspondence to the theory, while the pattern after the 1970 election and before the 1955 and 1959 elections behaves as predicted.   A closer look at the British postwar

---

[1] It must be noted that the assumption of independence is probably not warranted.   Two possibilities have been brought to my attention.   (1) If there is any dynamic structure to the economic system, it is possible that the probabilities would be understated.   For example, if the business cycle were a completely exogenous sinusoidal fluctuation with a period the same length of the election cycle, the probability of perfect prediction for, say, seven electoral periods would be exactly one-half rather than 0·0001.   On the other hand, if the periods are out of phase by the fraction $1/2n$, the prediction for n electoral periods, the probability is exactly zero.   Without having derived exact results it appears that, given the sensitivity of the correlation to the period of the exogenous cycle, it is unlikely that the results in Table 1 are grossly mis-stated.   (2) A second possibility is that the movements of economic conditions are not independent.   Thus let the structure be $u_t = u + \varepsilon_t$, where the ε_t are independent.   In this case our criterion, $u_t - u_{t-1} = \varepsilon_t - \varepsilon_{t-1}$, is serially correlated.   The magnitude of error can be judged by the following example.   Suppose ε takes value $(-1, 0, +1)$, each with equal probability.   The probability that the sign pattern is $(+, -)$ (as is predicted) is $5/27$ in the case of non-independence and $3/27$ in the case of dependence.   Differences of this magnitude (which probably overstate the dependence) will not appreciably change the results.

period, however, indicates why the simplest model might perform poorly, at least prior to the 1967 devaluation of the pound. Before 1967, macro-economic policy was severely constrained by the British balance of payments position. As Samuel Brittan has written [1]:

> In the 1950s and early 1960s the Treasury behaved like a simple Pavlovian dog responding to two main stimuli: one is " a run on the reserves " and the other is " 500,000 unemployed ".

In other words the stimulus of the balance of payments was so urgent that the balance of payments cycle may have swamped the political cycle ([1], chapter 9). It is fairly clear that this factor explains one perverse relation (post-1955) and leaves three others unexplained (pre-1950, post-1959 and pre-1970). It is instructive to note that in two cases where the pre-election behaviour was perverse, in 1950 the election was very close, while in 1970 the incumbents suffered a surprise loss.

The economic programme during the first Nixon administration in the United States was a textbook example of planning for the political business cycle. The Nixon " game plan " called for a recession during the early part of the administration, and unemployment rose from 3·4 per cent in late 1968 to 6·0 per cent in late 1970. Most economists felt that this drastic recession would make substantial inroads on the rate of inflation. The announced plan of the Administration (in the 1971 Economic Report of the President) was then to return to 4·5 per cent unemployment by late 1972, that is by the 1972 election.[1] The " game plan " did not work perfectly, however, for the inflation was more stubborn than anyone had anticipated. This led to the " New Economic Policy " in August 1971 with an expansionary fiscal policy aided by wage and price controls.

Similarly, in the UK the favourable balance of payments after the 1967 devaluation allowed the government to focus on domestic economic affairs—at least for a while. The " game plan " of the Heath Government was identical to that of the Nixon Administration. David Wood, the *Times* political editor, has written :[2]

> Nor are Mr Heath and those closest to him flinching from the certain prospect of a sharp increase in unemployment, as the failure of Rolls-Royce sends repercussions throughout British industry.
> They believe that in the four years of life that remain in this Parliament there will be time for the Government's general economic strategy to evolve, and that an early period of unpopularity over high unemployment figures can be survived. Indeed, senior ministers may think that an increase in unemployment at this stage may force industry and the trade unions to face the realities of Britain's economic position and thereby help to counter inflation.

In sum, given both casual and formal evidence of economic behaviour, and the historical record in the countries examined, it is clear that a political business cycle is a significant factor in the operation of some capitalist democratic economies.

9. CONCLUSIONS AND REMEDIES

In the analysis presented above we have discussed the behaviour of democratic political systems which face choices between present and future welfare. The specific case examined was the trade-off between inflation and unemployment. The general conclusion was that a perfect democracy with retrospective evaluation of parties will make decisions biased against future generations. Moreover, within an incumbent's term in office there is a predictable pattern of policy, starting with relative austerity in early years and ending with the potlatch right before elections.

---

[1] See [4], p. 78. This goal was modified in the 1972 Report to account for the worse-than-expected performance in 1971. For a more detailed description of the personalities and politics, see Burck [2].

[2] *The Times*, February 9, 1971, p. 1.

The analysis applies in a similar way to other choices involving intertemporal choice. One example examined briefly above was balance of payments policy. It is predicted that the concern with loss of reserves and balance of payments deficits will be greater in the beginning of electoral regimes, and less toward the end.

A second and more important example is the process of social investment. To the extent that investment requires a subtraction from present consumption through taxation or inflation in order to raise consumption after the next election, the theory outlined here indicates that the level of such investment will be lower than is optimal. More specifically, in equilibrium the social rate of return on public investment will be higher than for private investment because of the democratic myopia. This result indicates that the famous " theory of social unbalance " of the private and public sector (discussed especially by J. K. Galbraith) is very plausible on theoretical grounds.

The basic difficulty in making intertemporal choices in democratic systems is that the implicit weighting function on consumption has positive weight during the electoral period and zero (or small) weights in the future. This is illustrated and compared with the usual pattern of exponentially declining weights in Figure 7 above.

It should be noted that the conclusions given above hold for either socialist or capitalist democracies. The only difference (as noted below) is that planned economies may show less fluctuation within electoral periods than unplanned economies.

Are there any *remedies* for these biases in democratic systems? Some possibilities for the case of the unemployment-inflation bias and the political business cycle are as follows.

1. An obvious solution (perhaps the " classical " political solution) is to improve the information available to voters so they can judge and condemn the partisan nature of myopic economic policies. When the transmission and reception of information is cheap, this is probably a sound policy; for with proper information about the long-run trade-off, both the long-run bias and the political business cycle disappear. On the other hand, it is clearly unrealistic to ask each citizen to carry a full-scale econometric model of the wage-price-unemployment nexus in his head. We question the practical possibility of the " classical " solution in such complicated matters.

2. It is possible to examine the effect of the electoral period on the decision process. The conclusion is that there is some effect of the length of the period on the level of welfare, with a shorter period reducing amplitude and raising the average inflation rate. In any case, this is only a "second-best" solution: it does not remove the long-run bias and cyclical movement simultaneously. Moreover, there may be more important considerations in determining the length of the electoral period.[1]

3. A third possibility is to entrust economic policy to persons who will not be tempted by the Sirens of partisan politics. This procedure is typical for monetary policy, which for historical reasons is lodged in central banks (as in the independent Federal Reserve System in the US or the Bank of England.) A similar possibility is to turn fiscal policy over to a Treasury dominated by civil servants.[2] It may be objected, however, that delegating responsibility to an agency which is not politically responsive to legitimate needs is even more dangerous than a few cycles. This danger is frequently alleged regarding central banks which pay more attention to the " soundness of the dollar " or the latest monetarist craze than to fundamental policy problems. The costs and benefits of independent policy determination are difficult to weigh.

4. A different kind of solution is an " incomes policy ". This removes the political business cycle by making the underlying trade-off disappear. The first possibility is to shift the Phillips curve to the left by various policies (manpower programmes, wage and

---

[1] It should be noted that non-synchronization of electoral periods (as in the US) should reduce the amplitude of the political business cycle. Since there is no time at which all officials are up for election, the day of potlatch never arrives. The average bias in decisions will, however, be unaffected.

[2] It is interesting to note that monetary policy is generally less closely controlled by representative bodies than is fiscal policy. Since monetary policy is central to allocation over time, this may be more desirable than is usually supposed.

price controls, etc.). It can be shown that the amplitude of the political business cycle is a linear function of its slope, so that by " flattening " the curve we can reduce the political cycle. A second aspect of incomes policy is to reduce the burden of inflation. It is easily verified that by giving comfort to those hurt by inflation the magnitude of the cycle is decreased.

There is little doubt that if we could cure the disease, its symptoms would disappear. Many economists doubt whether the inflation unemployment trade-off can be significantly improved within the traditions of a liberal mixed capitalist system. Even if this ailment were cured the more general problem—scarcity of resources and the need for investment—shows no sign of disappearing. As long as social investment remains a scarce good, the bias of political decision-making will be a serious problem.

5. A final approach is to broaden the base of participation in policy-making, as in the tradition of indicative planning. The planning framework forces governments to set down their policy and negotiate this policy with the opposition, with labour and management, and perhaps with other interest groups. It would be very difficult for a government to persuade the other interest groups to accept a plan which deliberately projects a political business cycle or uses myopic decision rules. Moreover, an agreement by all political parties to abstain from politically induced cycles would lead to a politically preferable state of the economy. As evidence, we note that among advanced countries those countries showing the highest cyclical variability are the unplanned economies of the US, Canada, Japan and West Germany; while those showing the least cyclical variation are the planned economies of France and Sweden.[1]

Of these possibilities, the planning framework seems the most likely to be successful without having undesirable side-effects.

REFERENCES

[1] Brittan, Samuel. *The Treasury under the Tories 1951-1964* (Pelican, 1964).

[2] Burck, Gilbert. " Inflation: Hard Going for the Game Plan ", *Fortune* (May 1970).

[3] Downs, Anthony. *An Economic Theory of Democracy* (1957).

[4] ERP, *Economic Report of the President*, 1971.

[5] Kalecki, M. " Political Aspects of Full Employment ", *Political Quarterly* (October/ December 1943), pp. 322-331.

[6] Kramer, Gerald H. " Short-Term Fluctuations in US Voting Behavior, 1896-1964 ", *American Political Science Review*, 65 (1971), pp. 133-134.

[7] Lepper, Susan J. " Voting Behavior and Aggregate Policy Targets ", Paper delivered at the December 1968 meeting of the American Political Science Association.

[8] de Menil, George and Enzler, Jared J. " Wages and Prices in the FRB-MIT-Penn Econometric Model ", in the *Econometrics of Price Determination* (Washington: Federal Reserve Board, 1972).

[9] Metcalf, C. E. " The Size Distribution of Personal Income During the Business Cycle ", *American Economic Review* (September 1969).

[10] Mirer, Thad W. " The Effects of Macroeconomic Fluctuations on the Distribution of Income ", Institute for Research on Poverty Discussion Paper, University of Wisconsin, Madison (January 1972).

[1] Variation is the variance around a logarithmic growth trend for GNP over the period 1950-67. The order of countries (starting with highest variance) is Japan, Canada, Germany, US, Netherlands, Belgium, Italy, UK, Sweden and France.

[11] Nordhaus, W. D. " The Effects of Inflation on the Distribution of Economic Welfare ", *Journal of Money, Banking and Credit* (February 1973).

[12] Nordhaus, W. D. " The Political Business Cycle ", Cowles Foundation Discussion Paper No. 333 (April 1972).

[13] OECD (Organisation for Economic Co-operation and Development). *Main Economic Indicators: Historical Statistics 1959-1969* (Paris: OECD, 1970), and earlier volumes.

[14] OECD, *Main Economic Indicators*, various issues.

[15] OECD, *Labour Force Statistics*, various issues.

[16] Pearson, F. A. and Myers, W. I. " Prices and Presidents ", *Journal of Farm Economics* (1948), pp. 4210-4218.

[17] Perry, George. *Unemployment, Money Wage Rates, and Inflation* (MIT Press, 1966).

[18] Phelps, Edmund S. " Phillips Curves, Expectations of Inflation and Optimal Unemployment over Time ", *Economica* (NS), **34**, No. 135 (August 1967), pp. 254-281.

[19] Phillips, W. A. " The Relation between Unemployment and the Rate of Change of Money Wage Rates in the United Kingdom 1861-1957 ", *Economica* (NS), **25**, No. 100 (November 1958).

[20] Rees, A., Kaufman, H., Eldersveld, S. J. and Freidel, F. " The Effects of Economic Conditions on Congressional Elections, 1946-58 ", *Review of Economics and Statistics*, **44** (1962), pp. 458-465.

[21] Schumpeter, Joseph. *Capitalism, Socialism and Democracy* (New York: Harper, 1945).

[22] United Kingdom, *Department of Employment Gazette* (London: Her Majesty's Stationery Office), various issues.

[23] United Nations, *Statistical Yearbook*, various issues.