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POLITICO - ECONOMIC
MODELS AND CYCLES

Bruno S. Frey

August 1976

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1. Introduction

A politico-economic model analyses explicitely
- and usually formally - the economic and political
sectors as social institutions and studies their
mutual interaction. The emphasis in this paper lies
on theories which are (or can) be empirically tested;
a complete survey is not intended.

Most of the politico-economic models apply the tools of neo-classical economics. There are, however, interesting exceptions using a different approach. While the work so far undertaken within "Public Choice" is sometimes considered rather peripheral by non-specialist economists, politico-economic modelling deals with substantive problems of the interaction between the economy and polity directly relevant for general (macro-) economics, in particular public economics.

The definition used excludes models covering specific political areas and problems, only, or approaches which are not intended for empirical testing [such as Rothenberg 1965, Morris and Giral 1969]. The median-voter models are not discussed either: They only marginally deal with the political sector by assuming that the voters' preferences are automatically fulfilled by an anonymous political sector. The government is not considered an institutional unit with preferences of its own. There are, however, studies under way which intend to integrate median-voter and politico-economic models [Pommerehne 1976].

Part 2 of this paper deals with the building blocks (the actors, the types of political and economic systems) which the politico-economic models are composed of. The purpose of this section is threefold:

- (a) The specific models discussed in the following parts are put into perspective. It becomes clear for each model which aspects are stressed and neglected.
- (b) Though only a limited number of politico-economic models can be discussed, it becomes evident, that there is a wide spectrum of (actual and potential) models. In particular, politico-economic models

should not be solely identified with the analysis of politico-economic cycles. The many different aspects and assumptions, which can be included characterises a new approach applicable to all sorts of areas and problems in economics.

- (c) The discussion of the building blocks shows that even within a sub-class of politico-economic models, the "political business cycles", there are a great many different approaches possible. It helps to identify which components are able to create or prevent cycles. Serious empirical work on the importance of political business cycles requires a clear theoretical notion of various types in order to be able to isolate from other influences (such as the "pure" economic business cycle) and to take into account that various types may coexist, i.e. may be superimposed. The empirical studies undertaken so far [e.g. Åkerman 1947, Averch, Koehler and Denton 1971, Liefmann-Keil 1971, Llewellyn and Tarling 1974, Tufte 1974, Ben-Porath 1975] as well as the passing remarks of observers of the economic policy scene [especially for the U.K., e.g. Prest 1968, Brittan 1969, Matthews 1969] suffer from an unclear identification of the particular political business cycle studied.

Using the building blocks discussed, part 3 gives examples of some steady state solutions of politico-economic models and of the disequilibrium behaviour due to external shocks. Part 4 applies the building blocks to the study of regular and endogenous cyclical fluctuations, the politico-economic cycles or political business cycles. The accomplishments and future research outlooks in politico-economic modelling are discussed in the concluding part 5.

2. The Building Blocks

Politico-economic models are composed of actors - most importantly the population ("consumer-voters") and the government - within the framework of the political and economic sectors¹⁾.

2.1 The voters

Behavioural and informational assumptions. Following traditional economic theory, it may be assumed that the voters act rationally. It should be noted that rational behaviour may necessitate strategic voting. Due to the public goods effects involved, individual voters have little incentive to become well informed, such that the assumption^{of} "satisficing" [Kramer 1971] may be more appropriate. Schumpeter's (1945) suggestion of irrational voters is not followed by economists.

Individual decision-making. In almost all models the classical assumption of "isolated individuals" is adopted. Only rarely outside interference in the form of political propaganda or mass media is allowed for [Attali 1972, Palda 1973].

Voters' memory. There are widely divergent assumptions about how fast the voters discount the government's performance in the past: The most extreme is to assume that the current election year is considered, only. There is evidence that - at least for the United States - this hypothesis is realistic [Fair 1975]. The analogy to positive finite discounting of the future is to assume

1) In order not to overburden the paper, the building blocks are only attributed to individual authors if the hypotheses are empirically tested, or particularly unorthodox.

that events of the past have a geometrically declining weight in the voters' evaluation. Myopia is also present if the voters consider the current election term in their voting decision, only, even if constant weights are attached.

Most politico-economic models take the rate of discounting of the past as exogenously given. It seems possible, however, to construct theoretical hypotheses which e.g. take into account that outstanding events of the past (e.g. the Depression or the Great Inflation) always remain in the memory of the generation then living, and may actually determine the whole way it looks at the world. An interesting idea is to consider the past as part of an important element in an individual's stock of utility capital [see Wolf 1970].

Arguments in the consumer-voters' utility function. The assumptions made in this respect are of particular importance, as in democratic societies they describe the influence going from the economy to the polity. The effect upon the polity is measured by the governments (or parties') current popularity index (as regularly collected e.g. by Gallup or National Opinion Poll) or election results. The corresponding relationships are called popularity and election function, respectively. Most studies take the general state of the economy as the relevant determinant of voters' utility. As the political indicators, the period and area covered, as well as the specification of the functions differ, there is mixed empirical evidence about which economic variables exert a statistically significant political influence. It may be argued that with rational voters no macro-economic variable has any effect in U.S. Congressional elections [Stigler 1973]. The same negative result is drawn where a variable participation

is allowed for [Arcelus and Meltzer 1975], but both studies are severely criticised on theoretical and empirical grounds [Goodman and Kramer 1975].

In the case of popularity functions the corresponding assertion means that the temporal fluctuations of voters' approval are solely explained by non-economic factors such as the government's popularity "depreciation" and possibly recovery before elections [Miller and Mackie 1973, Stimson 1976].

Various authors maintain that general economic conditions are reflected by one variable only, the growth of disposable income [Tufte 1974, Fair 1975], or the rate of unemployment [Mueller 1970, see the critique by Hibbs 1974]. The most common assumption is to consider two arguments, usually the rate of unemployment and of inflation [the earliest study being by Goodhart and Bhansali 1970]. For American presidential election it is found that a Democratic presidential candidate's vote share is positively influenced by an increase of the rates of unemployment and inflation (and negatively by a rise in transfers). The reverse is found to hold for a Republican presidential candidate [Meltzer and Vollrath 1975]. No explanation is offered, however, for these rather surprising results.

If the popularity and election functions are carefully specified, in particular take into account shifts due to non-economic effects, there is evidence that all three macro-economic variables (rate of unemployment, inflation, and growth of disposable income) are statistically significant for the United States [Goodman and Kramer 1975, Frey and Schneider 1976a] and for other countries [Kirchgässner 1974, Frey and Schneider 1975, 1976b]. Other indicators for the state of the economy may also be of importance, such as the real share prices which reflect changes in wealth as well as expectations about the future course of the economy [Niskanen 1975]. From the point

of view of public economics it is particularly interesting to know whether the government's fiscal activity directly affects its popularity and election success. An increase of public transfers (to private households) has a positive effect on the government's political position [Tufte 1974]. This is implicitly accounted for in all those studies taking (the growth of) disposable income as a determinant. Evidence is reported that the real per capita federal spending has a highly significant negative effect on the candidate for president of the incumbent party in the United States, 1896 - 1972. It is less surprising, that real per capita federal tax revenue also has a highly significant negative effect [Niskanen 1975].

More sophisticated assumptions about the way economic conditions affect voters have also been made: Instead of the level, the change in economic variables, in particular of the rate of unemployment [Lepper 1974], has been found to be significant. It has been argued and empirically tested that economic variables exert a significant effect only if their level crosses a certain threshold; within it their effect is random [Frey and Garbers 1972]. The proposition that the government is "punished" if economic conditions worsen, but does not benefit if they improve, has so far not been substantiated by empirical evidence [see the effort by Bloom and Price 1975 and the critique by Goodman and Kramer 1975].

The possible effect of less easily measurable influences such as the supply of public goods and infrastructure (relative to demand) has not been tested so far.

Disaggregation of consumer-voters. With few exceptions, a uniform body of voters is assumed. One of the differentiations relevant for politico-economic models is with

respect to income groups, [Hibbs 1975, Schneider 1976] or - in the case of approaches in the Marxian tradition - with respect to classes.

Voter's political participation. Influence upon the political process can be exerted either indirectly by "exit", i.e. by voting for (or in case of popularity surveys, naming) a competing party or abstaining altogether, or by substituting to privately supplied goods and services. More direct political influence may be achieved by "voice" [see Hirschman 1970], i.e. by joining social movements, lobbies, and interest groups, and speaking and writing to politicians. Politico-economic models so far concentrate on the classical mode of participation, voting [see Breton 1974].

2.2 Government

Objective function. Politico-economic models consider the parties as competing on the vote-market. Parties and the government seek to maximise votes, plurality or the vote share, either in absolute terms, as an expected number, or as a probability to exceed a certain number. Related is the view that governments maximise the probability to win the next election. If too large a majority involves costs (e.g. that the members of the majority party in parliament are more difficult to control by the leaders) a minimum winning majority may be aimed at [see Riker 1962].

The classical economic assumption of utility maximisation (subject to constraints) is employed surprisingly little. It is informally used when changing weights of idealistic (or personal goals such as pecuniary gains or power) and popularity goals over the term of office are assumed [Lindbeck 1976, Breton 1974]. A more precise formulation

identifies the government's utility with "ideological" goals as stated e.g. in party programmes or with long-run goals, and differentiates between political constraints (the need to be reelected), the administrative constraints (mainly brought about by the public bureaucracy) and the economic constraints ("balance" of the budget and of international payments) [Frey and Lau 1968, Attali 1972, Frey and Schneider 1975, 1976a,b].

The government's time horizon. The party in power is usually taken to have a time horizon extending up to the next election. This assumption may be disputed: If a government is confident to win the upcoming election it would be irrational not to include (at least) the following term into the time horizon. Only if the government is absolutely sure to lose the upcoming election, the next legislative period is of no interest (but possibly later ones). This relationship between reelection probability and the government's time horizon constitutes a theoretical basis for the planning horizon used for public decisions [Frey and Ramser 1976].

Discounting within election periods. If the government's goal is assumed to be solely the concern for reelection, the years before are completely discounted. However, if the government has an interest in promoting its ideological goals, it may use a positive discount rate, which indicates that it wants to realise them as quickly as possible.

State of information and calculation capacity . In some politico-economic models it is assumed that the government is perfectly informed and possesses the required calculation capacities to reach its goals. It seems more realistic to assume imperfections in both respect which may recommend a satisficing or behavioural rather than a maximising approach. Various aspects are in turn considered as "Number

One Problem" by the government [Lindbeck 1976].

Policy instruments. Some models are based on the direct control of the arguments in the voters' utility function by the government [e.g. Nordhaus 1975, MacRae 1975]. More sophisticated approaches explicitly take into account fiscal and monetary policy instruments. The impact of instruments on the state of the economy is, of course, most extensively accounted for in those approaches based on macro-econometric models. The spectrum of policy instruments available to the government should, however, not be considered constant. New instruments are created in response to the problems created through politico-economic interaction [Lindbeck 1976].

2.3 Other Actors

The majority of politico-economic models consists of only two explicit actors, the voters and the government, with the competing parties (or opposition) as a background constraint. The role of the public bureaucracy, the Central Bank, public enterprises and interest groups, as well as the interaction with foreign countries, has so far been neglected.

2.4 Political System

Election Periods. For most models concerned with the sequence of politico-economic interaction, elections constitute the basic break in time. The models of party competition implicitly assume that the government depends on the voters' approval in each instant of time. For most countries this assumption is unrealistic but it may be argued that a government all the time needs at least a minimum support by the electorate in order to be able to act [Attali 1972]. The length of the election period may be fixed (which is assumed in most models) or variable. In the latter case

a theory of election fixing is needed [see Frey and Schneider 1976 for the United Kingdom] and there is an identification problem because it is no longer clear whether the economy is steered in view of elections, or whether the elections are fixed in view of the state of the economy, or both [Lindbeck 1976].

In some variants of politico-economic models changes of government policy are unrelated with the election period; they are brought about by forces so strong that they may take place at any time, e.g. in the case of Marxist class struggle.

Degree of political competition. One class of models assumes that the "competition" between the parties is of no relevance (the Marxist approaches), or that the parties even form a coalition against the electorate [Wittmann 1973]. Most politico-economic models assume a limited amount of competition: The government's behaviour is constrained by the need to win a sufficient number of votes in order to survive. More intensive political competition is assumed if a reciprocal interaction between the parties (or the government and the opposition) is allowed for. Party competition in a dynamic context has so far not been amenable to analysis [an exception is Kramer 1975].

Transmission of voters' preferences. The popularity index may be considered to be the best current indicator of the likely future election outcome. Some models therefore take it as the main "political" explanatory variable for the government's economic policy, particularly over the course of an election period. Other models only consider the determinants of votes at election time, and derive therefrom the optimal time path of economic policy instruments. Under some constitutional arrangements there

may, however, be a considerable difference between votes and seats in parliament received by the various parties [so called "swing-ratio", see Tufte 1973]. In a political system with more than two parties and no majority party, the number of seats is not decisive to determine the government due to the many coalition possibilities. [For a calculation see Rae 1971]. The problem of going from votes to the selection of the government has so far not been taken into account by politico-economic models.

2.5 Economic System

Time. The economy is in some models static, in others dynamic with respect to variables relevant in the voters' utility function and/or between instruments and goals.

Coverage. The economic sector of some politico-economic models is partial in that a specific part of the whole economy is covered, only. Most attention has been given to the trade-off between inflation and unemployment (extended Phillips-Curve). Other areas studied are the inter-temporal trade-off between consumption and investment, the Keynesian IS/LM framework and the regional distribution of disposable income. Only two models so far use a complete macroeconomic model of the economy [Fair 1975 for the US, Frey and Schneider 1975 for Germany].

3. Steady State and Disequilibrium in Politico-Economic Models

3.1 Steady State Equilibrium

The long-run equilibria of various politico-economic models are discussed according to the economic sector they deal with. This enables to contrast the approach and results with the traditional purely economic models.

Trade-off between unemployment and inflation. Using the modern version of the Phillips-curve (in which the rate of inflation depends on both the current rate of unemployment and expected future inflation) the socially optimal steady-state configuration is derived by defining a social welfare function composed of the discounted current utility (or disutility) of inflation and unemployment. If the social welfare function is based on individual preferences, the aggregate of current utility reflects at any given point of time the number of votes the government receives. Assuming that the government maximises its plurality at the next election, knows the voters' preferences and a long sequence of consecutive elections is considered, it chooses a point on the long-run trade-off corresponding to a purely myopic policy, i.e. where the implicit rate of time preference is infinite. If the social time preference is not infinite, the democratic outcome is therefore non-optimal; there is higher inflation and lower unemployment than socially desired [Nordhaus 1975].

This result may be questioned. If a different, but equally plausible, assumption is made about the government's utility function quite different results follow. If e.g. the government is assumed to maximise the length of time which it can expect to remain uninterruptedly in power, the democratic outcome is not necessarily non-optimal, but

may well be socially optimal. It is reasonable to assume that the government which is confident to win the next elections will be concerned with the next legislative period(s), i.e. will have a time horizon extending into the future. A purely myopic policy is not a general characteristic of elected governments [Frey and Ramser, forthcoming].

Regional distribution of aid. President Roosevelt's New Deal spending among American States over the period 1933 - 1940 may be shown to depend on the effects of these income transfers upon the Democratic vote. Each state may be supposed to deliver a higher pro-government vote the higher these transfers are. The induced increase in the Democratic vote share is of little value to a Democratic president if a state votes in any case in his favour or if the votes gained are insufficient to carry the state. The most productive use of such transfers is for states which may be switched from a Republican to a Democratic majority. Such states have indeed received a significantly higher share of New Deal expenditures [Wright 1974].

3.2 Disequilibrium

The following models put a major emphasis on politico-economic interaction out of equilibrium; they analyse the movements to the steady state solution. The initial deviations are due to exogenous shocks.

Keynesian framework. Government expenditures and taxes are endogenised in an IS/LM model including the budget constraint. Government popularity depends solely upon real disposable income and [following Frey and Schneider 1975, 1976a,b] the government increases expenditures and decreases taxes if government popularity is lower

than needed for reelection. If popularity makes a reelection likely, the "surplus" is used for ideological purposes, a "right-wing" government decreasing, and a "left-wing" government increasing, public expenditures. Under these assumptions it is shown that the politico-economic system remains stable if the pure economic system [as analysed by Blinder and Solon 1973] is stable [Fassbender 1976].

Capital accumulation. The adjustments to equilibrium growth paths of an economy with a fixed capital-output ratio when there are exogenous shocks upon government popularity (e.g. foreign policy events) are analysed with the help of computer simulation. Government popularity depends on the difference between actual consumption and public goods output compared to expected values which are in turn a function of past experience. The government is assumed to maximise its utility (i.e. its ideological views with respect to public expenditures and private consumption) subject to the constraint that it receives a sufficient number of votes to secure reelection. Alternatively, it is assumed that the government maximises the length of time being in power, i.e. it uses a "surplus" of votes relative to the reelection constraint in order to increase the economic capital stock thus increasing its future reelection chances. The number of votes received by the government depends on the stock of political capital, which is built up by current popularity and reduced by depreciation (which is taken to proceed at a fixed proportional rate). The government's optimal policy is formally derived by dynamic programming or by stipulating a policy function in the behavioural or satisficing tradition. The simulation models allow to study a wide variety of politico-economic fluctuations as well as the relationship between the stability of the economic and political systems. [Frey 1974 a,c, Schneider 1974].

Unemployment. It may be expected that left-wing governments in democratic countries have a tendency to provide for less unemployment (and higher inflation) either because of their ideological preferences when the reelection constraint is non-binding (as in the model above) or because they want to cater for the special interests of their traditional lower income constituencies. The reverse may be expected to hold for right-wing parties. Time-series analyses (with the Box-Jenkins method) of quarterly unemployment data for the post-war period indicate that Conservative Governments in Britain induce an equilibrium unemployment level about 0.6 percentage points larger than Labour Governments. This steady state difference is fully realized within four years. In the United States, Republican Administrations induce a long-run level of unemployment which is higher by 5.5 percentage points than for Democratic Administration. Convergence to this steady state difference is, however, very slow and would be fully reached only after 25 years. The inter-administration difference in government induced unemployment levels is about 2.4 percentage points [Hibbs 1975].

Choice of politico-economic regime. In the period after the Second World War the dynamics of the Phillips-curve in the United States has resulted in a clock-wise movement in the inflation-unemployment plane. The governments cannot for political reasons tolerate high unemployment. They intervene quickly as soon as unemployment is sizeably increasing which leads to an inflation-unemployment spiral with continually higher average level of inflation. In the median-run there are only two possible steady state solutions to this disequilibrium process: Either the government introduces rigid price and wage controls and the public sector takes the leading role in

the economy which is a regime of socialism within a nation ("socialisme national"); or prekeynesian unemployment is reestablished against the opposition of trade-union and workers which is a regime of authoritarian "national socialisme". These ideas are developed in a style of a grand theory; they are seen as the way the thinking of Marx manifests itself in post-keynesian capitalism [Kolm 1970] .

4. Politico-Economic Cycles

4.1 Characterization

Politico-economic cycles or political business cycles are endogenous and regular fluctuations brought about by the interaction between the economic and the political sectors of society. The completion of each cycle creates the precondition for the start of the next cycle. There are two possibilities why such cycles may arise:

- (a) the government's inability to stabilize the economy due to forecasting error, limited knowledge of the economic system etc. which may under some circumstances lead to regular fluctuations. This aspect has been stressed by optimal control theorists [e.g. Phillips 1954] and by modern monetarists [e.g. Brunner 1970] and will not be considered here.
- (b) the government's unwillingness to stabilize the economy: Cycles are willingly produced in order to increase the government's utility. Only this type is considered here.

The theories of politico-economic cycles are arranged according to their relationship to elections. Election-Cycles are fixed in length, while Election-Related and Election-Independent cycles have a variable duration, but all are characterized by a regular sequence.

4.2 Election Cycles

Election cycles have the length of one legislative period, thus cover usually four or five years. In this section six models are discussed which are typical for the present state of theory and empirical research on election cycles.

Election cycles may originate in two different areas:

- (a) The time perspective of economic actors. Table 1 shows how the six models (identified by the name of their authors) combine various assumptions concerning the government's time horizon and the voters' discounting of the government's past achievements.

Table 1
The government's time horizon and the voters' discounting as election cycle producers

		Government : time horizon	
		next election [vote maximisation]	infinite [utility maximisation s.t. constraint(s)]
voters: discounting of the past	complete (approx. current election year)	Lindbeck(1975, 1975) Fair(1975)	Frey and Schneider (1975, 1976 a,b)
	positive, finite	Nordhaus (1975)	Frey and Lau (1968)
	no discounting	MacRae (1975)	

(b) Time lags in the economic system. This allows the government to make an investment in the early years of the cycle which pays out before the elections, and makes a transfer of costs of policy possible into the following election period. The six models make the following assumptions:

- Absence of time lags [Frey and Lau].
- Time lags exist: The government knows them in general form, only [Frey and Schneider] or exactly. The last assumption is used in the context of the inflation-unemployment trade-off [Nordhaus, MacRae, Lindbeck] and for a macroeconometric model [Fair].

The discussion of election cycles is arranged according to the dynamics of the economic structure assumed and the government's knowledge of it which facilitates a comparison with traditional business cycle theory.

Unspecified economic system. A utility maximising government subject to a reelection constraint controls the economy such as to exactly achieve (if feasible) the necessary number of votes at election time. The votes received depend on the size of political capital stock which is the depreciated aggregate of current government popularity over the course of the election term (see the simulation models of part 3). The control problem is thus not trivial. If the voters discount past achievements, the government may at the beginning of each election period be able to pursue its own ideological ends according to its utility function. The exact shape of the election cycle thus depends on the ideology of the party (parties) in power. When the party in government changes, the cycle takes a new form as long as it remains in power [Frey and Lau 1968].

Incomplete knowledge about the economic system. A utility maximising government which aims at fulfilling the reelection constraint but which does not know exactly the structural relationship in the economy, in particular when and how its policy instruments affect the economic variables entering the voters' utility function, will be forced to pursue a satisficing policy. This is all the more so as the government has simultaneously to meet a set of economic constraints: It must keep within the budget and balance of payment constraints and is restricted in its policy by the public bureaucracy which has an interest in continually expanding public outlays and which opposes sizeable structural changes in expenditure patterns [see Davis, Dempster and Wildavsky 1966]. The government takes the current popularity index as ^{an} indicator of the election outcome. If its popularity is lower than the value considered necessary for reelection it will make an effort to increase its popularity with the voters. This effort will be the stronger, the nearer the elections are because there is less and less time available to raise popularity sufficiently to be reelected. If its popularity is so high that a reelection seems likely, the government pursues an ideological policy: In particular a right-wing party in power will reduce expenditures and a left-wing party will increase them (always compared with the trend). The basic model is depicted in figure 1.

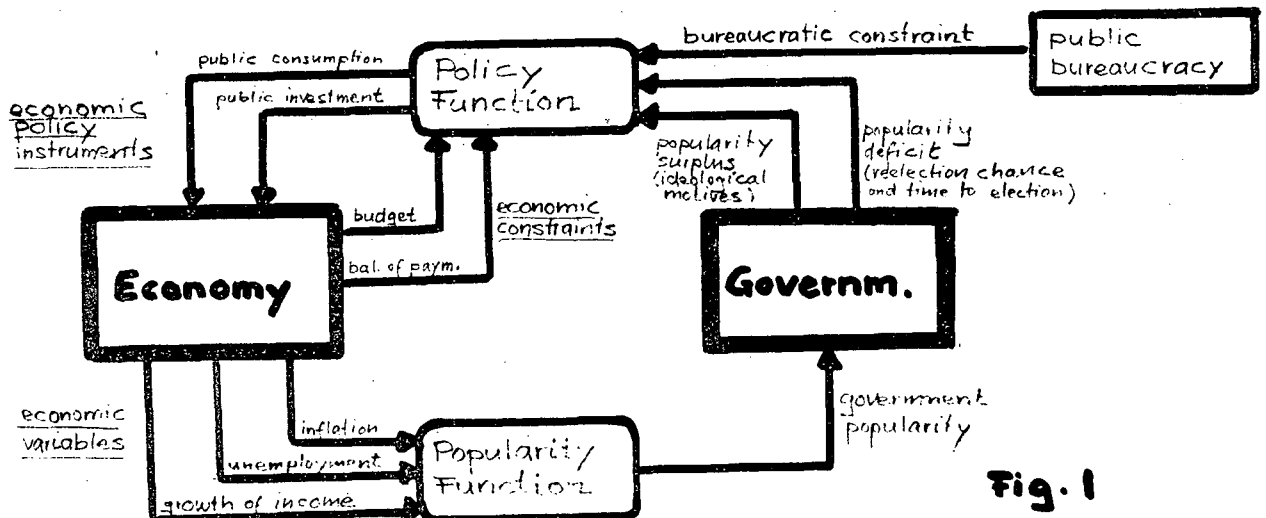


Fig. 1

The figure shows the determinants of the two main interacting links between the economy and the polity (government):

- (a) The popularity function depends on the rate of inflation, the rate of unemployment and the growth in disposable income;
- (b) The policy function depends on economic and bureaucratic constraints, ideological motives (if there is a popularity "surplus") or the need to fulfill the reelection constraint, coupled with the "time to election variable", which indicates the need for increased action the nearer elections are (in the case there is a popularity "deficit").

This politico-economic model and its cyclical behaviour has been econometrically tested with quarterly data for the United States, the United Kingdom and Germany over the past-war period. Each model has, of course, been adapted to the special economic and political system of each of these countries, e.g. that the balance of payments constraint is of little significance in the United States and Germany, but of great importance in the United Kingdom. For that reason, only those sections of the regression estimates of the popularity and policy functions are presented here which are of prime interest for political-economic cycles and which are (up to a point) amenable to inter-country comparisons.

Table 2 presents the estimated coefficients of the government's popularity function, relating to the influence of economic variables (various level and depreciation variables are not reproduced here).

Table 2

Country	Period	economic variables			political variables	Test statistics			
		rate of unemployment (%)	rate of inflation (%)	growth of nominal disposable income (%)		popularity level and depreciation	d.f.	R ²	D.W.
United States	1953:II-1975:II	-4.03 (-5.23)	-1.00 (-1.98)	0.52 (1.69)	specific to each president	76	0.91	1.98	0.29
United Kingdom	1959:IV-1974:IV	-5.13 (-3.71)	-0.62 (-2.86)	0.69 (2.46)	specific to Labour and Conservative government	55	0.75	2.05	0.34
Federal Republic of Germany	1951:I-1974:IV	-1.74 (-4.21)	-1.69 (-2.99)	0.58 (1.85)	specific to Social Democratic or Christian Dem. dominated governments	93	0.98	2.04	0.82

In the case of the U.K. the dependent variable is the government popularity lead relative to the main opposition party. For Germany the economic variables are measured relative to their value at the beginning of each election term. For the U.S.A. the rate of inflation is lagged by one quarter.

The figures in parantheses indicate t-values. The test statistics at the end of the table refer to the ^{complete} estimation equation. df gives the degrees of freedom, D.W. the Durbin-Watson coefficient of autoregression obtained through the Cochrane-Orcutt iteration procedure.

Source: Frey and Schneider (1975, 1976 a, b). The values for Germany have been reestimated using quarterly observations.

This table suggests that the economic variables do influence government popularity. While the rate of unemployment and inflation (except for the US) have a statistically highly significant effect, the influence of the growth of disposable income is less well founded in the case of the US and Germany¹⁾ but still acceptable at a 95% level of security, using the appropriate one-tailed test. The coefficients for the United States and the United Kingdom are of comparable magnitude; the British seem to politically resent unemployment somewhat more and inflation somewhat less than the Americans. The Germans appear to "punish" the government little when unemployment rises which may be due to the fact that there has been rapidly rising employment and since the mid sixties complete full employment. They are more strongly opposed to inflation than both the British and the Americans, probably because the officially declared goal of price stability has often been violated.

The empirical estimates of the popularity functions indicate that a government which aims at increasing its popularity does well to pursue in the short run an expansionary policy which lowers unemployment and raises the growth of disposable income. Only a very rapid and immediate increase of the rate of inflation would prevent an increase in the government's popularity share. The governments of the three countries considered are aware of this possibility: Table 3 shows that according to the empirical

1) This is partly due to multicollinearity between the economic variables. It has been tested for each country that the growth of income coefficient is statistically significant if one of the correlated independent variables is in turn omitted. The relative size and significance of the other coefficients remain essentially unaffected.

estimates the governments increase public expenditures, i.e. pursue an expansionary policy¹⁾, if they have a popularity deficit.

Table 3 presents the estimated coefficients for the policy function for the case of exhaustive expenditures (for transfer expenditures the results are similar). They refer to the government's actions in the case of a popularity deficit and popularity surplus (the economic constraints **and** levels are not reproduced). It should be noted that the change of exhaustive expenditures is used as dependent variable as it is assumed that the government may in the short run marginally (or incrementally) change public expenditures, only.

1) It has been checked that this policy on the expenditure side is not counteracted by actions on the tax side.

Table 3

country	period	dependent variable (absolute change)	popularity deficit		popularity surplus		economic constraints	test statistics			
			size of deficit (squared) (t-2)	time to election	right-wing party in gov.	left-wing party in gov.		d.f.	R ²	D.V.	ρ
United States	1953:II-1975:II	civilian expendit.	0.002 (2.08)	0.26 (2.20)	-	-	budget constraint	80	0.87	1.43	0.91
United Kingdom	1962:II-1974:IV	consumption expenditure	0.007 (2.31)	0.005 (2.19)	-0.007 (-2.29)	0.004 (1.85)	budget and balance of payments constraint	44	0.89	2.04	-
		investment expenditure.	0.005 (2.13)	0.007 (2.39)	-0.008 (-1.94)	0.009 (0.61)		44	0.71	1.71	-
F.R.of Germany	1951:I-1974:IV	exhaustive expenditure.	0.0004 (2.56)	0.09 (2.28)	-0.007 (-2.32)	0.24 (3.81)	budget constraint	94	0.79	2.05	0.93

For a general explanation and sources see Table 2.

For the U.K., popularity is substituted by government lead relative to the main opposition party and the "time to election" refers to be expected elections. The size of the deficit is taken as an absolute value and is not squared. The right-wing parties are the Conservatives (U.K.) and the Christian Democratic Party (alone or in coalition with non-socialist parties, FRG); the left-wing parties are Labour and the Social Democratic Party (alone or in coalition with the Free Democratic Party), respectively.

For the USA the ideological actions in the presence of a popularity surplus has been identified with presidential administrations. For reasons of space these results are not reproduced here.

All the parameters are (with one exception) statistically significant. The estimations support the theoretical hypotheses that a government pursues the more vigorously an expansionary policy the larger its popularity deficit, and that left-wing parties tend to spend significantly more than right-wing parties. There is clear evidence for a politico-economic cycle in all countries: Exhaustive expenditures are increased before each election which the government is not confident to win (the coefficient referring to the "time before elections" is highly significantly different from zero). There is thus - ceteris paribus - a tendency to embark on an expansionary policy before elections in order to increase popularity and election chances.

The inflation-unemployment trade-off with complete knowledge.

The steady state equilibrium model discussed in part 3 may be used to study the short-run behaviour within an election period [Nordhaus 1975]. The voters are assumed to have a decaying memory of the past, they are concerned with the current election period, only. The government maximises votes at the next elections. Using standard **optimisation** techniques, the following typical cycle results: Immediately after an election victory the government undertakes a deflationary policy by increasing unemployment in order to combat inflation. Over the course of the term the rate of unemployment is continuously reduced and reaches the myopic point at the election date.

Voters' discounting of the past is not a necessary requirement for the creation of **such** a politico-economic cycle. Assuming no discounting of the electorate it is still optimal for the government to generate a stable business cycle equal to the election period. At the beginning of the term the economy moves towards a turnpike - which corresponds to the long-run welfare optimum of the voters - and before the elections it moves away [MacRae 1975].

Intuitively, this cycle is produced because a deflationary policy at the beginning of the election period constitutes an investment for the future (the Phillips curve is shifted inwards due to a depression of inflation expectations), and the inflation following towards the end of the term hurts the government little because its shadow price for the following election period is zero.

The crucial requirement for the (theoretical) existence of the cycle is that voters are irrationally concerned with the current election period, only. Rational voters would act strategically: In the election year they would overstate their preference for price stability and would actually demand a deflationary policy, inducing the party in power to promote the social welfare in the long run. This requires, however, that the voters are exactly as sophisticated and informed as the government [MacRae 1975].

The optimal election cycle produced by the government is quite similar if it is assumed that the voters are sensitive not to the level but to changes in the rate of unemployment. At election time, the optimal point on the Phillips curve would be when the trade-off is near to the origin and unemployment has been falling before the elections. This would be achieved in the area between points A and B, e.g. at E in fig.2.

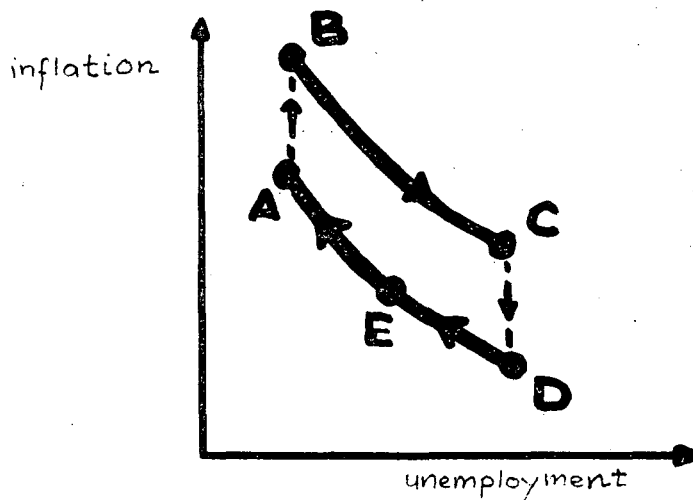


Fig. 2

A significant increase of inflation (shift of the trade-off from A to B) takes place only after the elections have taken place. Immediately following the elections a restrictive policy is pursued until about one year before the election which increases unemployment (movement from A to C) and shifts the Phillips curve inwards (from C to D).

[Lindbeck 1975, 1976].

to empirically test their models

The casual attempts undertaken by the authors mentioned are highly satisfactory, because the movement of the rates of unemployment and inflation is looked at without holding other influences constant (though these are considered to be important, e.g. foreign trade movements in Sweden in Lindbeck's analysis). There may, of course, exist an election cycle even if it does not show up ⁱⁿ the raw variables because it may be swamped by other influences [this is e.g. the case in Germany, see Frey 1976 c]. On the other hand, unemployment and inflation may fluctuate in the manner of an election cycle, but this may be due to different factors from the government's effort to win elections.

Economy-wide macro-econometric model. According to one particular econometric (or rather politometric) estimate American voters are myopic and interested in the real growth rate of per capita GNP, only [Fair 1975]. Presidential administrations are assumed to maximise the probability of winning the next elections. They act within the framework pictured by a quarterly macro-econometric model with 26 stochastic equations and 78 exogenous variables. The instruments available to the presidents are the value of goods purchased by the government (in real terms) and the value of government securities outstanding (in current dollar terms).

The government's goal simply consists in bringing about the maximum real growth rate of economy. The nonlinear optimisat-

ion problem is solved by using a computer gradient algorithm, which does not guarantee to find the true optimum. The results under the provision that the administrations have complete knowledge of the economic structure given by the econometric model are presented in table 4.

Table 4

Administration	growth rate of real GNP in the election year %		number of pre- election quarters that the optimal GNP reaches its trough
	actual	optimal	
Eisenhower (first term)	1.9	17.5	7
Eisenhower (sec. term)	2.3	18.5	6 - 8
Kennedy - Johnson	5.7	21.0	7
Johnson	4.7	9.6	8
Nixon (first term)	6.6	23.8	6
Source: Fair [1975, p.28]			

The optimal policy consists in bringing about a trough 6 - 8 quarters before the elections, i.e. in the first three quarters of the preelection year. The most restrictive use of the fiscal policy instrument is one quarter earlier. This politically induced cycle enables to increase the real growth rate of national income to about 20% in the election year. [Fair 1975].

This election year induced real growth rate seems unbelievably high. The actual growth rate has indeed been much

lower (see table 4), American presidents thus have missed by far the target devised in the model, though they have managed to achieve a higher than average growth rate in election years compared to non-election years [Tufte 1974]. The following explanations are offered [Fair 1975, p.29]: The presidents may be restricted in their vote-maximising policies by Congress and the Federal Reserve, the government may think that the voters judge its performance according to additional (or other criteria), or the government may pursue non-vote maximising goals.

Even leaving the question of what economic variables influence the electorate's choice aside (Fair's estimate is in conflict with the other studies mentioned above), these explanations are ad hoc, only. The main shortcoming of this approach is that an explicit model of politico-economic interdependence covering all the decision-makers deemed relevant is missing.

4.3 Election - Related Cycles

An Election-Related Cycle is produced by forces which (for some reason) call for a change in policy which, however, takes place, only when the government changes. According to constitutional provisions such a change of the party in power takes place at regular election time. Election-Related Cycles are of variable duration because the disposition of the government does not occur at each election date. Only one example of such a cycle is provided here.

Infrastructural Cycle. The long gestation period which often characterizes infrastructural investment, coupled with the necessity to become identified in the voters' minds with certain programs may produce regular longrun cycles. When there is an oversupply of infrastructural capital relative to demand, the government sees no need to undertake further infrastructural investments but rather stresses other issues.

At this stage economic growth is rapid due to a low private capital coefficient and there is little inflation because there are no bottlenecks to the expansion of private production. The electorate is satisfied and reelects the party in power. The growth of private production converts the oversupply after some time into a deficit of infrastructure. Growth is hampered and inflationary pressures appear leading to a popularity fall of the government. The government which has run all the former elections on different issues (and has been successful with this strategy) fears to loose even more votes if it abruptly changes its policy. It therefore does not push infrastructural investments, which would anyway increase the situation at best in the following election term. The opposition party, on the other hand, is free to take up the promising new issue of the lack of infrastructure and will win the upcoming elections. [This freedom of action of the opposition compared to the government has been pointed out by Downs 1957, ch.4; see also Bernholz 1972, ch.6]. The new government will keep investing into infrastructure as long as there is no output effect which produces an oversupply compared to current demand. This draws new issues to the voters' attention and paves the way to an electoral victory of the party now in the opposition, starting a new cycle [Frey 1968].

4.4 Election Independent Cycles

There are politico-economic cycles - even in democracies - which are unrelated to elections. They are brought about by forces which become politically effective even if there are no elections. There is a wide variety of causes for such cycles.

Issue-attention cycle. In modern societies some social problems go through a cycle of public attention which is strongly influenced by the communications media. These problems must meet three characteristics: A minority only must be negatively affected; their suffering must at the same time yield benefits to a majority or powerful minority; the social problem has no intrinsically exciting qualities, but aspects may be made dramatic by the media. The duration of the cycle is variable but the sequence is given: (1) At the pre-problem stage highly undesirable social conditions exist but have not yet captured widespread public attention; (2) Usually due to some dramatic incidence, there is alarmed discovery about the problem and an euphoric enthusiasm about the possibilities for solution without a fundamental reordering of society; (3) The high costs of significant progress is realized, in particular that major sacrifices by large groups would be required; (4) The intense public interest gradually declines, partly because of the costs, partly because the public becomes bored and the competing media turn to new issues. The average level of attention and public effort is, however, almost always higher after a social concern has gone through the cycle, mostly because of their institutionalization. [Downs 1972].

Public goods cycle. A similar cycle has been analyzed in the case of the demand for, and supply of, public goods, [Frey 1974 b]: In the second stage following an initial disequilibrium between demand and supply there is an over-demand for public goods because benefits are necessarily stressed in the political process while costs are neglected because they are (by definition) not directly related to benefits, and the distribution of indirect costs (higher taxes, higher prices etc.) are practically unknown. The government thus has an incentive to take action to increase the supply of the public good. In the third stage the voters and interest groups all try to get around paying the costs of the induced government activity which is

possible because of the separation of benefits and costs of public goods.

Marxist cycles. According to the Marxist view, business cycles serve the interests of the capitalist class. Periodic recessions are essential to the maintenance of capitalist political and social control. The class instinct of the business community tells them that a regime of continuous full employment is contrary to their interests: The "sack" loses its role as a disciplinary measure and strikes for wage increases create political tensions. The business leaders are anxious to teach workers a lesson though they know that a recession means a cut in profits. They form a powerful coalition with the rentiers who as fixed nominal income receivers are harmed by the inflation going with the boom. The government is forced to create a recession. The concomitant fall in profits (and inflation) leads the business community after some time to ask for an expansionary policy. The government obeys and reestablishes full-employment [Kalecki 1943, for some empirical evidence see Feiwel 1974].

According to another Marxist view there is no conflict between the political and economic dimensions of class conflict in the state of full employment. The share of profit typically falls during the second half of an expansion. Capitalists need not rely on "class instinct" to realize that sustained full employment is unsound. A recession is a necessary condition for the first highly profitable phase of expansion, and puts an end to the unprofitable latter phase of the boom. A constant "reserve army" of unemployed is not sufficient to reestablish control over the workers. Those still employed feel threatened only when the rate of unemployment increases, which requires a policy of intermittent recessions. The government is completely subservient to capitalists' wishes: Its objective is to maximise corporate profits [Boddy and Crotty 1975, Crotty and Rapping 1976].

(Socialist) planning cycles. In a collectivist state, the planning authority has by necessity a lower time preference than consumers. The official plans stressing capital investment conflict with the population's desire for increases in consumption goods. Social dissatisfaction arises and pressures are put on the planners to change allocation criteria. With the progressive economic and political difficulties, the planners are forced to raise the output of consumption goods which removes the tensions. After some time the planning authorities' preferences regain control leading to a shift to investment and starting a new cycle [Oliveira 1960]. Generalising, all the oscillation of economic activity in European socialist countries may be attributed to the conflict between the overambitious central plans and the ability to carry it out successfully [Bajt 1971]. Communist China's cyclical fluctuations are also seen as the result of a vicious circle where economic progress leads to extreme stress in (Maoist) ideology, which in turn leads to economic crisis, followed by a relaxation of ideology [Eckstein 1968, Richman 1969].

5. Concluding Remarks

5.1 The wide variety of approaches

The discussion shows that the politico-economic models are composed of a large variety of building blocks. There are, of course, still many more variants possible, many of which are of potential interest. Even if models in the neoclassical tradition are considered, only, it is striking how many different assumptions are made e.g. concerning government behaviour or information. Some models assume complete knowledge of government politicians or that the voters know as much as the government, others assume that the politicians and voters have limited knowledge.

5.2 On politico-economic cycles

With respect to political business cycles there is the same wide variety of causes leading to differences in sequence, movements and length. Compared to the level of theoretical formalisation achieved, the empirical tests undertaken so far are often quite unsatisfactory. Politico-economic cycles are up to now not rigorously contrasted with the traditional business cycles.

Some of the authors [Nordham 1975, Lindbeck 1975] offer various suggestions of what can be done against political business cycles: The electoral periods should be lengthened; economic policy should be taken out of the hands of politicians and given to non-partisan institutions; the base of political participation should be broadened in the direction of indicative planning; and the economists and citizens should show a more critical view towards inflation.

These suggestions do, however, not take sufficient account of the following basic problems: The approach purports to construct closed models of both the economic and political systems. Most of the suggestions offered to overcome poli-

cal business cycles come from outside the politico-economic systems pictured, which clearly violates the basic tenets of the approach. A viable solution can come only from within the politico-economic system. One possibility which meets this intension is social learning: The voters must start realizing that the government produces cycles in order to improve its reelection chances. This learning process may come about automatically or may be brought ^{about} ~~up~~ as a result of an educational system designed at the "constitutional stage" [see Buchanan 1975].

The learning process leads the voters to punish governments which undertake an expansionary policy towards the election. This behaviour changes the election models discussed, in particular the unemployment-inflation models by Nordhaus (1975) and MacRae (1975):

- (a) The location of the steady state equilibrium on the long-run trade-off, may drastically change;
- (b) There is no stable and continually repeating cycle, but the optimal movement evolves over time and may be transformed into something quite different.

5.3 Evaluation

There is no need to discuss the achievements of politico-economic modelling compared to the traditional "pure" economic approaches; they should have become obvious from the discussion.

All politico-economic models surveyed in this paper must be characterized as additive-interdependent: A "pure" economic sector is amended by a "pure" political sector and their links of interdependence are studied. In the study of the political economy of the unemployment-inflation trade-off the "purely" economic Phillips-relationship is taken and a political sector (i.e. the government depending on voters) is added. The same is true for the approaches using "pure" econometric models. In one study,

the predictive performance of a "pure" econometric model is even compared to the performance of a politico-econometric model [Frey and Schneider 1975].

In reality, there is no "pure" economic sector. The economic relationships are changed by the existence and interference of politics. This is e.g. obvious if there is social learning affecting expectations. When the voters realize that the government tends to produce a political business cycle, their inflation expectations are no longer determined solely by the most recent inflation rates as assumed in the "pure" economic Phillips-curve. The government's vote (or utility) maximising policy thus transforms the "economic" trade-off. This applies not only to inflation expectations in the Phillips-curve trade-off but in principle to all "economic" relationships. There is no "pure" econometric model which can additively be amended by a political sector.

Future research must confront this problem and must endeavour to construct politico-economic models in which the economic and political sectors pervade and transform each other. So far, there has been only little and partial research in this direction but it is certain to be exciting.

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