

Professor Uzawa did not disagree with many of the points made by Professor Modigliani in his introduction to the discussion. He insisted that a major purpose of his paper had been to extend the traditional Samuelsonian analysis of social overhead capital and public goods. The traditional analysis did not consider the redistributive activities of the state, nor, in particular, did it envisage the instability that could emerge within specific redistributive systems. In order to analyse this instability and the role of social capital, he had deliberately selected a very simple model which abstracted from technical progress, capital accumulation and economic behaviour in other parts of the system. He did not accept the criticisms that had been made of his use of wage-units to measure income and prices, for his results could be derived in terms of money income and nominal prices.

C100
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3 The Public Choice Approach to the Explanation of Collective Consumption

Bruno S. Frey

UNIVERSITY OF ZÜRICH

This paper is about a major development in public sector economics that directly bears on collective consumption and its financing, and which is based on the economic theory of politics, otherwise known as Public Choice. The discussion puts particular emphasis on the research results reached in the last two or three years with respect to quantification of the hypotheses derived (in particular 'politico-economic models'). These research results are relatively little known, but serve well to illustrate the new approach. The paper will attempt to show the consequences of using the Public Choice approach. The author believes that this constitutes a major change of view, with three areas of economics - positive economic theory, forecasting and economic policy - being particularly affected.

The first part of this paper contrasts the traditional and the Public Choice views of the public sector. Section II discusses three basic variants of the politico-economic model and presents some empirical research results that have been achieved in testing them. The next section (III) points up some possible and worthwhile extensions of politico-economic models, and the concluding section deals with their consequences for public sector economics, and for collective consumption and its financing in particular.

I VIEWS OF THE PUBLIC SECTOR

I THE TRADITIONAL APPROACH

Economic analysis of the public sector has traditionally been dominated by two approaches. The first approach is that of a *positive theory* of the public sector which attempts to explain public expenditures by means of *socio-economic factors* such as per capital income, degree of urbanisation and population density, using multiple cross-section regressions. This approach has been championed by fiscal economists (especially Fabricant, 1952; for a survey of the large number of empirical studies see Pryor, 1968; Bahl, 1969 and Wilensky, 1970); it has mostly been applied to local communities and has been able to account for a considerable share (over 70 per cent) of the variance in public outlays. It is based on purely *ad hoc* assumptions; i.e. the political process and the behaviour of decision-makers that leads to the observed expenditure levels is not considered.¹ This approach does not provide a refutable theory about the public sector but is rather an example of 'measurement without theory'. For this reason it has (with a few exceptions) been given up recently, and thus need not be considered further here.

The second approach, which has been widely accepted in economics as a basis for economic policy, is that of a *normative theory* of the public sector based on the assumption that governments *maximise a social welfare function*, subject to the constraints imposed by the economic system. The normative approach has been formalised in:

- (1) The theory of quantitative economic policy (Tinbergen, 1956; Theil, 1968), and, subsequently, in the theory of optimal control (e.g. Chow, 1973), which derive how the government should optimally use its policy instruments (among them public expenditures and their financing) to maximise social welfare.
- (2) The theory of optimal taxation (see e.g. Diamond and Mirrlees, 1971), which determines the minimal social loss brought about by tax distortions given an exogenously determined tax collection.

¹ Political scientists (e.g. Casstevens and Press, 1963; Dawson and Robinson, 1963; Fry and Winter, 1970) concerned about the seeming absence of 'political' influences on public expenditures in this approach have made a strong effort to introduce determinants such as the amount of party competition, the size of political participation, or the distribution of power between the legislative and executive branches. On the whole these attempts have failed. For an account and criticism of this 'comparative policy analysis', see Frey and Pommerehne (1978).

The normative theory, however, gives a basically mistaken view of the public sector for two reasons:

- (1) Government and the rest of the public sector are not exogenous to the politico-economic system as assumed, but rather *endogenous*. In particular, government is held responsible for the state of the economy by the population (voters and interest groups).
- (2) Government has in general *little incentive* to undertake the policies suggested by maximising the social welfare function, assuming that such a function existed.² (The ideology pursued may be believed to represent the common good, but this may deviate from the social welfare function.) Government is no 'benevolent dictator' but rather acts according to its own interests, of which the most important one is to survive, i.e. to stay in power.

Thus the basic assumptions of the normative theory of the public sector are highly questionable, and there are good grounds for considering a different approach.

2 THE PUBLIC CHOICE VIEW

The economic theory of politics attempts to overcome the basic problems connected with traditional public sector analysis. Here the public sector is taken to be a part of a more extended social system which includes both political and economic subsectors. Government behaviour is endogenous, and is analysed with the help of modern economic theory.

The basic unit of analysis is the individual who responds systematically to positive and negative incentives. This economic model of behaviour corresponds closely to the socio-psychological model of human beings (see Stroebe and Frey, 1979 for a more extended discussion). It has proved useful to assume that individuals are neither saints nor villains, but that they are primarily interested in their own utility.

The behaviour of *all* actors and in *all* situations (i.e. in the marketplace or in politics) is explained by the same model: the individual utility function is maximised subject to various constraints imposed

² As has been well known since Arrow (1951), and has been expanded by Plott (1967), Kramer (1973), Fishburn (1973) and others, there exists in general no social welfare function based on individual preferences.

from outside such as earning capacity (budget constraint), time or existing institutions.

On the one side, the individual's behaviour leads to a *demand* for the output of the political sector. Individuals have various means available to them for making their wishes known in the political sector, including the use of exit (switching their vote from the government to an opposition party, for example) and voice (protest with a party or on the streets). Using the individual utility function for deriving the demand for public services makes it possible to take into account that it may be more profitable for an individual to invest her/his effort and resources in the political process rather than in productive market activity in order to reach his/her goals. It explains, for example, under what circumstances it pays to establish or join an interest group in order to get government transfers.

On the other side, the *supply* of public sector output is the result of *utility*-maximising individuals acting as politicians, government officials and civil servants.

For the purpose of analysis it is often useful to take existing institutions (such as interest groups on the demand side, and parties, government and bureaucracy on the supply side) as given in order to concentrate on their interaction. The utility-maximising approach does not require us always to go all the way down to the level of the individual; it suffices that the institutions 'acting' be analysable in terms of the behaviour of individuals.

In the Public Choice context, collective consumption and its financing is explained by a general theory of the politico-economic process which includes all types of government activity. The basic motivations and constraints leading to non-budgetary activity (such as the promulgation of laws and statutes) are the same as those leading to budgetary choices regarding exhaustive (consumption and investment) and transfer expenditures. Public expenditures and their financing through taxes and other means are analysed jointly, quite in contrast to optimum taxation literature which takes one of the two sides of the fiscal account – expenditures for which a certain tax sum must be collected – as exogenously given (see Buchanan, 1976).

Public Choice has developed very rapidly in recent years; for general surveys see Mueller (1976, 1979) or Frey (1978). Non-specialists are often only aware of the pathbreaking contribution of Downs (1957), but his theory of party competition covers only a small part of the whole field and constitutes a rather special case. Public sector economics should also take into account the recent quantitative analyses that have

been done using econometric methods. As these deal with the interaction of the economic and political sectors, they are able to capture the determinants of collective consumption and its financing. This part of modern political economy is known as politico-economic modelling:

II POLITICO-ECONOMIC MODELS – VARIANTS AND EMPIRICAL RESULTS

In the simplest case, the interdependence between the economic and the political sectors of society can be studied by considering the behaviour of two decision-makers with respect to public services: the voters, demanding; and the government, supplying.

I VARIANTS

Three variants of this basic politico-economic model may be distinguished according to the institutional assumptions made about the degree of independence held by the public sector on the supply side of the political process.

1.1 Median voter model

In a system of simple majority voting (and single peaked preferences for individuals), the voter in the median position throws the decisive vote. In particular he/she decides what that combination of collective expenditures and taxes is to be that is to give her/him the greatest net benefit. The supply side (government) is assumed to fulfil the median voter's demands completely.

Empirical estimates of income and tax price elasticities can be derived by regressing first public expenditure (broken down into its various components) and then taxes, both times on income, the tax burden of the median voter, and other explanatory variables such as the population's age distribution. Median voter models have been applied on the basis of cross-section analysis in a great many studies, such as for explaining school expenditures in US communities (e.g. Barr and Davis, 1966; Barlow, 1970; Bergstrom and Goodman, 1973) or expenditures of various sorts in Swiss cities (Pommerehne, 1978). The model can also be used to assess the importance of voters' 'illusion' (i.e. incomplete or biased information) about public expenditures and taxes. Thus it has been shown that the more complicated the tax system, the less voters

realise what their tax burden actually is – and the higher therefore are public outlays (Wagner, 1976; Pommerehne and Schneider, 1978).

The central assumption of the median voter model is that government supplies exactly what the median voter demands, i.e. it has no discretionary power or goals of its own. The model is therefore only applicable in those very specific cases in which direct voting exclusively dominates the political process, and propositions are amended until they agree with the median voter's wishes. It is often inappropriately applied in research (see also Romer and Rosenthal, 1978), as for example when it is used to explain the development of public expenditures in representative democracies such as the United States, England and FR Germany (see e.g. Peltzman, 1979; Meltzer and Richard, 1979).

1.2 Party competition

The second variant of the politico-economic model focuses on the outcome of the competition of parties for votes in order to come to power. A voter casts her/his vote for that party which best corresponds to his/her preferences. The programmes advanced by the parties in this quest for votes are put into practice because there is continuous need to win and retain votes, and thus continuous competition.

In the case of two parties that have to maximise votes in order to win, the median voter is again decisive. With more than two parties the outcome is largely undetermined because of the many coalition possibilities.

The model of party competition has rarely been directly empirically tested (but see Kaspar, 1971); it has more often been the case that only some partial and indirect consequences have been considered. One of the main reasons for this is that the assumption of continuous electoral competition and of only two parties – with not even additional potential competitors – does not reflect the actual situation existent in most countries (see Rae, 1971).

1.3 Monopoly government

The third variant of the politico-economic model concentrates on the government's behaviour and considers voters only to the extent that they influence this behaviour. Elections are assumed to take place discontinuously, and voters to forget much of what government has promised and done in the past. Government is taken as having a prominent position as compared to the opposition party(s) because it

controls the economic policy instruments, has much greater influence on the mass media, and is continually in the public's eye. It therefore does not have to respond directly to the opposition's policy but can to a large extent behave as if it were in a monopoly position. In contrast to party competition models, politicians and parties do not go into politics solely in order to gain power but to put their programmes into practice. Government has discretionary power which it can use to further its own goals, but such a monopoly government cannot do whatever it wants. It is subject to constraints, exactly the same as a monopolist on a market is subject to the constraint of a falling demand curve. In a democracy, the most important constraint the government faces is the need to be re-elected. Even a dictator has to retain a minimum level of support in order to survive as otherwise the costs of holding down the populace become too heavy, leaving her/him and the ruling élite no 'rent' from the dictatorship.

The three variants of the politico-economic model here considered are closely related; they may, in fact, be looked upon as a continuum. If a monopoly government is subject to a strongly binding re-election constraint, it must pursue a vote-maximising policy in order to stay in power, i.e. it must behave in the same way as it would under a system of perfect party competition. And, as already mentioned, the party competition model leads to the same median outcome as simple majority voting when there are only two parties.

2 EMPIRICAL RESULTS

The politico-economic model variant with the best prospects for the future seems to be that of monopoly government with both utility-maximising voters and government politicians actively engaged in the political process. The theoretical model sketched above has been empirically analysed with the help of multiple regressions (OLS and TSLS estimates) for several representative democracies and various post-war periods, usually on the basis of quarterly data.³

A politico-economic model of this variant is composed of two basic sets of equations:

(1) The voters' *evaluation function* (shown by the lower loop in Figure

³ The general model has also been econometrically tested for Switzerland, a country with strong elements of direct democracy in the form of referenda and initiatives, but where the government also has discretionary power. See Schneider, Pommerehne and Frey (1978).

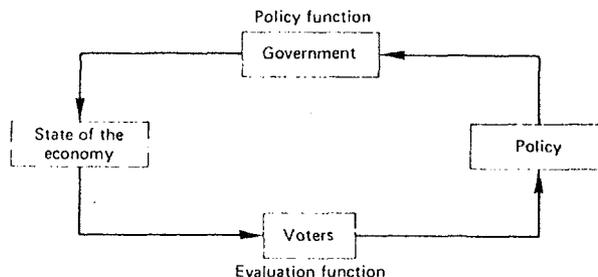


FIG. 3.1 Basic interactions in a politico-economic model with monopoly government

- 3.1) gives the relationship transmitting economic impulses to the political sector and determining the standing of the government with the voters. It shows the political reaction of the population when the state of the economy changes. This reaction can be measured either by election results (taking place every third or fourth year) or by political popularity surveys (usually done monthly by survey research institutes such as Gallop).
- (2) The policy function (upper loop in Figure 3.1) describes the government's use of the economic policy instruments at its disposal (in particular public expenditures and taxes) in order to influence the state of the economy in a direction it considers to be favourable to itself.

The two basic functions will now be discussed in turn.

2.1 Evaluation function

Voters have little incentive to become informed about political matters because each one knows that he/she has extremely little influence upon the outcome (see Downs, 1957). They minimise their exertions when voting by simply attributing the state of the economy to government activity. When they are satisfied with economic conditions, they tend to support the government; when they are dissatisfied, they tend to switch

to the opposition party (or parties). The most important elements defining economic conditions from the point of view of the voters are unemployment, inflation and growth of real income. Decreases in unemployment and inflation and increases in growth are expected to raise the government's vote or popularity share. There are, of course, a great many other factors besides these economic factors that have an impact on the government's standing with the voters. They are however either of a long-run nature (such as the composition of the voting population according to age and occupation), and thus may be captured by the constant term; or they are stochastic (such as internal scandals or foreign policy influences) and are captured by the error term in the regression.

Empirical studies done so far have shown superior results for popularity functions over vote functions, because there are many more observations for a given time period. A typical popularity function is that for the United States over the period 1953 (second quarter) to 1976 (third quarter), i.e. covering the presidencies of Eisenhower, Kennedy, Johnson, Nixon and Ford:

Popularity of the President (%) =		
-1.58*	Rate of inflation (%)	} Economic determinants
(-2.89)		
-4.07*	Rate of unemployment (%)	
(-6.44)		
+0.52*	Growth rate of real disposable income (%)	
(2.19)		
+86.1*	Eisenhower (first term)	} Popularity level specific to each president
(24.6)		
+82.9*	Eisenhower (second term)	
(19.0)		
+108.6*	Kennedy	
(23.7)		
+99.7*	Johnson	
(23.9)		
+86.2*	Nixon	
(21.3)		
+97.5*	Ford	
(11.1)		

+0.46*	Eisenhower (first and second terms)	} Popularity depreciation specific to presidents /presidential teams
(2.91)		
-2.06*	Kennedy and Johnson	
(-9.91)		
-0.26	Nixon (first term)	
(-0.86)		
-5.24*	Watergate scandal	
(-6.31)		

$\bar{R}^2 = 0.87$, Durbin-Watson = 1.61. *t*-values in parentheses.

Coefficients that are statistically significant at the 95% level are indicated by an asterisk.

(Source: Frey and Schneider, 1979a).

The popularity function shown above is composed of three sets of determinants:

- (1) Economic influences. According to this estimate, an increase in the rate of inflation of 1 percentage point tends to decrease the president's popularity by 1.58 percentage points (with a *t*-value of -2.89); an increase in the rate of unemployment of one percentage point reduces presidential popularity by 4.07 percentage points; and a 1 percentage point increase in real income growth increases presidential popularity by 0.52 percentage points. These economic variables all have a statistically significant impact on popularity according to the *t*-test.
- (2) The second set of determinants measures each president's specific popularity with the voters independent of all other influences (i.e. the constant term of the regression is broken up and is attributed to the various presidents). It may be seen that Kennedy, Johnson and Ford enjoyed the highest levels of support (108.6, 99.7 and 97.5 respectively).
- (3) The third set of determinants measures the 'autonomous' popularity loss or depreciation presidents are subject to during their term, independent of economic conditions. The estimates indicate that presidents Kennedy and Johnson (taken jointly) experienced a marked loss in popularity (see the statistically significant coefficient of -2.06), but that Eisenhower actually became more and more popular. Nixon did not experience a popularity loss over his first term (the coefficient -0.26 is statistically insignificant), but his popularity fell drastically during the Watergate scandal (1973-74).

In the context of politico-economic models the voters' evaluation of the government's performance, based on the state of the economy, is of very

great interest because it serves as one of the two basic links between the economy and the polity. Table 3.1 shows the partial impact on government popularity of the three economic variables of inflation, unemployment and real growth in seven countries and over various time periods. This table only serves to give a general impression; because of differences in the variables included in the popularity function, the underlying data, estimation procedures, etc., the coefficients are not strictly comparable.⁴

TABLE 3.1 THE PARTIAL EFFECT OF THREE ECONOMIC VARIABLES ON GOVERNMENT POPULARITY IN SEVEN WESTERN DEMOCRACIES IN POST-WAR PERIODS

Country and period	Partial coefficients of economic variables		
	Rate of inflation	Rate of unemployment	Growth rate of real disposable income
	%	%	%
FR Germany 1957-75	-1.5**	-1.7**	0.6*
France 1968-77	-0.81**	-1.26**	—
United Kingdom 1959-74	-0.6**	-6.0**	0.8**
Sweden 1967-73	-0.9**	-5.2**	0.3*
Austria 1960-77	-0.6*	-1.4**	—
United States President 1953-76	-1.6**	-4.1**	0.5**
Australia 1960-77	-0.9**	-2.4**	0.1

* and ** indicate statistical significance at the 90% and 95% levels of significance respectively. The estimates for the United Kingdom and Austria refer to the popularity lead of the government relative to the major opposition party. For definitions of the variables, sources of data, statistical procedures and full estimation results, see the original papers.

Sources: Germany, United Kingdom, United States: various papers by Frey and Schneider, see e.g. 1978a, 1978b, 1979a.

France: Lafay, 1978.

Sweden: Kirchgassner, 1976, Table 4.9.

Austria: Breuss, 1979, p. 51.

Australia: Schneider and Pommerehne, 1979, Table 5.

⁴ The coefficients of the economic variables in popularity functions are also quite sensitive to changes in the time periods covered, which may be due to shifts in voters' evaluations and/or to econometric estimation problems.

It can be seen from Table 3.1 that both inflation and unemployment generally have a statistically significant impact on government popularity in western democracies. A 1 percentage point increase in unemployment has a marginally greater impact on popularity than an equivalent increase in the rate of inflation. The growth of real income does not have a significant effect in some of the countries. It thus may be concluded that economic conditions do have an influence on how the voters evaluate the government's performance in representative democracies. The same seems to hold true for direct democracies. It can be shown for Switzerland that the better economic conditions are, the more favourably the population tends to vote on the referenda proposed by the government regardless of their specific content (Schneider, Pommerehne and Frey, 1978). The same seems to be true in communist countries. As there are no elections there in the western sense in which voters can evaluate the government's (or party's) performance, the number of changes in cabinet positions can instead be taken as an indicator. It has been shown (Lafay, 1979) that the worse economic conditions in East European communist countries are, the more frequent are changes in cabinet positions.

2.2 Policy function

Various assumptions about the utility function of the government can be made in the monopoly government version of politico-economic models. The probably best known model of this kind analysing political business cycles (Nordhaus, 1975) assumes that the government maximises its utility by reaching the highest possible vote share at the forthcoming election. This assumption, however, would lead to optimal policies that make little sense and that deviate greatly from actual policies (Fair, 1975).⁵ Another assumption of the monopoly government model is that governments derive utility from catering to the preferences of their traditional voting base. Left-wing governments are taken to heavily emphasise policies aimed at reaching full employment because this is in the interest of the lower strata of the population that traditionally support socialist parties; following the same reasoning, right-wing governments are taken to pursue policies leading to price stability (Hibbs, 1977). This approach does not clearly distinguish between the government's utility function and constraints imposed on

⁵ Such as bringing about a *real* growth in national income of 20% (!) in the election year in the United States.

the government from outside. This distinction is made however if it is assumed that the government wishes to pursue its own ideological goals, but that it is subject to a re-election constraint and has to take into account budgetary and balance of payment constraints and limitations on its activity imposed by the public bureaucracy as well.

A model along these lines has been empirically tested for the United States, the United Kingdom and Germany (Frey and Schneider, 1978a, 1978b, 1979b). In this model government politicians concentrate on the crucial re-election constraint because they cannot realise their ideological goals if they are not in power.

For simplicity's sake, a government can be taken as differentiating between two states of the world, according to the degree of popularity it enjoys:

- (1) When the government considers its popularity higher than what it thinks is necessary to win the forthcoming election, it can allow itself to undertake policies in line with its ideological ideals. A left-wing government will tend to increase public expenditures and taxes in order to raise the state's share in the national income and therewith socialise the economy, and a right-wing government will tend to decrease public expenditures and taxes in order to encourage the private sector.
- (2) If, on the other hand, the government's popularity level is so low that it is afraid of losing the next election, it is forced to undertake policies that will increase its re-election prospects. The government politicians are well aware that their popularity and re-election chances heavily depend on economic conditions. They will therefore (regardless of their ideological bias) undertake an expansionary policy (i.e. increasing public expenditures and decreasing taxes) in order to raise employment and real growth. The negative effect of the increased inflation that may result from such an expansionary policy is under normal circumstances viewed as being considerably smaller than the positive political effects derived from rising employment and growth.⁶ This is especially so as the increase in inflation is lagged, and its effect on popularity may be felt only *after* the election.

Table 3.2 shows the qualitative estimation results for three policy

⁶ Using a popularity function such as that shown in Table 3.1, simulation experiments with econometric models have shown that an economic upswing increases government popularity except when the rate of inflation is very high.

instruments in the three countries mentioned. The results shown in the table may be summarised as follows:

- (1) In all three countries, governments undertake expansionary policies when they are afraid of losing the forthcoming election: exhaustive and transfer public expenditures are increased, and taxes are decreased, as compared to the government's general course.⁷
- (2) When governments are confident of winning the next election, left-wing governments (Labour in the UK, Social Democrats in FR Germany) tend to increase public expenditures and taxes. Under this condition right-wing governments (Republican presidents in the US, Tories in the UK, Christian Democrats in FR Germany) tend to decrease public expenditures and taxes.

The econometric estimates shown in Table 3.2 thus tend to support the

TABLE 3.2 DETERMINANTS OF PUBLIC EXPENDITURES AND TAXES. UNITED STATES (1953-75), UNITED KINGDOM (1962-74), FR GERMANY (1951-75). QUALITATIVE RESULTS BASED ON ECONOMETRIC ESTIMATES WITH QUARTERLY DATA

Government policy instruments	Government's expectations concerning the next election								
	Fearful of losing ⇒ popularity- raising policy			Confident of winning ⇒ ideological policy					
				Left-wing governments			Right-wing governments		
	US	UK	G	US	UK	G	US	UK	G
Public expenditures									
(a) Exhaustive	+	+	+	?	(+)	+	-	(-)	-
(b) Transfers	+	+	+	?	(+)	+	-	(-)	(-)
Taxes		-	-		(+)	+		(-)	-

A + sign indicates that the respective economic policy instrument is increased; a - sign, that it is decreased, as compared to the general trend. (+) and (-) indicate that the corresponding parameter estimates are not statistically significant at the 95% level. ? indicates inconclusive results.

Source: Frey and Schneider, 1978a, 1978b, 1979b.

⁷ It should be noted that the estimation period extends up to 1975; i.e. it does not cover the period of very high inflation that came thereafter.

theoretical hypotheses developed. The empirical estimates also indicate that when governments are afraid that they will not be re-elected, they pursue an expansionary policy all the more vigorously the nearer the forthcoming elections are. This suggests the existence of a 'political business cycle' that is deliberately produced by government in order to further its election chances.

The monopoly variant of politico-economic models performs quite well in explaining collective consumption and taxes of the public sector despite its very simple structure. Some useful extensions will be discussed in the next section.

IV EXTENSIONS OF THE PUBLIC SECTOR

The politico-economic models empirically estimated so far have a very simple structure and disregard many important features of reality. Work is now under way to extend the model in various directions, in particular to introduce:

- (i) additional decision-makers in the public sector;
- (ii) interactions within the nation's public sector, and with the outside world;
- (iii) specific subsectors within the economy.

These aspects will be sketched briefly in order to show the potential for increasing the verisimilitude of politico-economic models and therewith their ability to explain collective consumption and its financing.

I ADDITIONAL DECISION-MAKERS IN THE PUBLIC SECTOR

Governments are not homogeneous units but are composed of various factions or are—and this is the usual case in representative democracies—*coalitions* of various parties with differing goals and constraints. So far it has proved difficult to construct theories of coalition formation which are non-trivial (see e.g. Taylor and Laver, 1973; DeSwaan, 1973). It seems that the theory which fares best empirically is simply that parties that are close to each other in the ideological spectrum tend to form coalitions with one another.

In most countries of the world the government is not elected directly by the electorate, but rather via *parliament*. Even if the government is elected directly by the populace, the relationship between it and parliament is of great importance (as for example in the case of the US President and Congress).

Considerable progress has been made in introducing the *central bank* as an actor in its own right in the politico-economic system. In the context of explaining collective consumption, this is of great importance as the central bank has an important rôle to play with regard to its financing. Thus Gordon (1978) has tested whether the supply of money has any systematic relationship to elections; and Parkin and Bade (1978) have looked at whether the institutional arrangements with respect to the central bank's independence *vis à vis* government has any impact on its policy. These studies are, however, empirical, and do not attempt to formulate a theory of central bank behaviour. The central bank is integrated into an overall politico-economic model by Frey and Schneider (1978c) with the hypothesis that the central bank can pursue a policy of its own liking (essentially, to strive for price stability) provided that it does not conflict too strongly with the government's aims. If conflict goes beyond a certain level of intensity, the central bank is forced to support the government's fiscal policy with monetary policy because the bank's 'independence' will otherwise be threatened by governmental measures to bring it in line.

A very important actor within the public sector that must be taken into account in politico-economic models is the *public bureaucracy*. So far no satisfactory theoretical approach has been developed that can be tested econometrically at the macrolevel. Tullock's (1965) and Downs' (1967) analyses only treat the internal structure of hierarchical organisations; Niskanen (1971) employs a special institutional set-up relevant for the United States, but of little relevance elsewhere; and Wildavsky's (1964) incremental hypothesis is too general to capture important aspects of public bureaucracy. Work is presently under way in various places that promises to overcome these shortcomings.

2 INTERACTION AMONG PUBLIC SECTORS

Most democratic countries have a federal constitution with *various levels of government* having at least some degree of independence. The executives at the communal, state and federal levels act differently because they have different priorities. As one goes down to the lower levels the governments have to seek re-election from increasingly narrower sets of voters, and with the possibility of resorting to debt instead of taxes to finance their expenditures rapidly decreasing. The expenditure behaviour of the different federal units is to a great extent determined by the amounts of transfers. In explaining collective consumption and its financing, it would seem to be of great importance

to study the behaviour of the different federal units, and to extend the politico-economic models accordingly.

It is equally important to consider the interaction of the national public sector with governments, central banks and public bureaucracies of other *nations*. This applies in particular for business cycle policy. In many countries (such as England, FR Germany, and Switzerland) internal policy is strongly influenced by the balance of payments, of which a considerable part - namely capital movements - remains largely unexplained in traditional economic models. It is clear, however, that a large amount of capital movement and investment is due to political considerations (relative security⁸) as well as to expectations about future government policy (changes in the exchange rate, the extent of intervention in flexible exchange rates, anti-inflation measures, etc.). These aspects can only be dealt with in the context of a model that includes the behaviour of both economic and political decision-makers. Suggestions as to how to construct *international politico-economic models* may be gained from world simulation models developed by political scientists (see e.g. Hooke and Zinner, 1976; Bremer, 1977; Ward and Guetzkow, 1978).

So far no politico-economic models have been constructed that include federal and/or international aspects, but here again work is under way and results may be expected soon.

3 ECONOMIC BRANCHES WITHIN THE PUBLIC SECTOR

Nationalised industries supply a large part of what is collectively consumed. Some of them act as if they were private, but most of them show a behaviour different from that of private enterprises. Economics has an old and extremely well-developed normative theory of collective enterprises, but extremely little is known about their actual behaviour. As long as this is the case collective consumption and its financing cannot be adequately accounted for. It can be expected that nationalised industries will respond quite differently to economic influences such as changes in relative prices (for example, due to the imposition of emission taxes), the main reason being that they are not subject to the tests of the market and because deficits are covered by the public purse. The manager of a public enterprise gains little by cutting the quality and

⁸ Private enterprises (as well as government agencies) put heavy emphasis on the expected political stability of a country in which investments are being considered, especially out of fear concerning strikes, worker unrest and possible expropriation.

amount of service in order to reduce the deficit as he/she may then face a violent protest from the consumers, which may put an end to her/his career. There is a long way to go from these micro and partial considerations to a well-developed theory of the behaviour of the public enterprise sector, but it is certainly well worth doing.

The largest single branch of collective consumption (according to national accounting standards) is devoted to military purposes. Despite its huge size, present economic and econometric models treat the military sector as exogenous. A very important factor influencing economic fluctuations and the structure of the economy thus remains unexplained, and economic models are accordingly of limited use for positive analysis, and for forecasting especially. In attempting to integrate the defence sector politico-economic model builders may profit from the work that has been done on arms races. These models go back to Richardson (1960; see also the exposition and extension in Boulding, 1962) and have recently been developed in two further directions (see Lambelet, 1971, 1973; Intriligator, 1975; McGuire, 1977):

- (1) The mechanistic reaction pattern of one nation's military expenditures to the threats imposed by the military build-up of other nations has been improved by using a classical utility-maximising framework subject to budget constraints.
- (2) The arms race models have been subjected to econometric testing.

The integration of the politico-economic models as sketched above and the arms race models is still to be done (for an interesting attempt see Cusack and Nincic, 1978). The outlook seems to be very promising for theoretically and empirically explaining this very important sector of collective consumption.

V CONSEQUENCES

The Public Choice view of the public sector and in particular of collective consumption and its financing has important consequences for positive economic theory, forecasting and economic policy.

I POSITIVE ECONOMIC THEORY

The Public Choice view (especially in the form of politico-economic models) allows us to extend traditional purely economic and econometric models to include a public sector whose behaviour is described with

the same underlying theoretical concepts (utility-maximising individuals) as are used for explaining market behaviour. This constitutes a welcome addition to economic analysis wherever the public sector plays an important role – and where does it not in modern societies?

2 FORECASTING

Economists often find themselves in an awkward position when they are asked by the government (or central bank) to make macroeconomic forecasts. The future economic situation depends very crucially on what the government itself will do. So what the government is in fact asking is for the economic experts to tell it what it itself is going to do. Lacking a *theory* of government behaviour, economists either resort to purely conditional forecasts which are of little use to the government, or naively try to guess what the government will probably do.

Using the Public Choice approach as a basis, a theoretically based forecast of the likely future behaviour of the public sector may be provided that will allow for better forecasting of the whole system, including the market sector.⁹

3 ECONOMIC POLICY

With respect to government advising, the Public Choice view asks for a radically new perspective (see Buchanan, 1977; also Frey, 1979). If the public sector is accepted as being an endogenous part of the politico-economic system, there is little point in telling government what it should do in order to further 'social welfare' (or rather, what the adviser believes that to be). The adviser has to accept that all political decision-makers pursue their own goals, and that their activities are constrained by the interdependence of the politico-economic system. If this system were completely 'closed', its development could not be influenced by the economic advisers at all but would proceed along a path determined by the parameters of the system. Due to incomplete information, the system is, however, partly 'open', i.e. there is room for advising due to the superior knowledge of the economic experts. There are two distinct

⁹ For FR Germany, *ex ante* and *ex post* forecasts of the main macroeconomic variables using a politico-economic model of the monopoly government variant have given superior results compared to those of a traditional econometric model (Frey and Schneider, 1979b).

levels at which the economist can offer his/her advice in the hope of being heard and followed:

- (1) At the constitutional level, at which the ground rules of the current politico-economic process are determined. Voluntary contracts among individuals and groups exploiting the possibilities for mutually advantageous arrangements can be formed at this level because there is at least partial uncertainty about one's future position in the society. The economic adviser can make suggestions about such arrangements, and can work out the compromises and compensations that may be necessary in order to make contracts and thus co-operation attractive.
- (2) At the level of the current politico-economic process, where the decision-makers can and will only take advice that is in their self-interest. The economist may advise the voters about how well the present government pursues its economic policy in order to help them make political decisions (especially at election time) that are sensible from the point of view of the voters' own preferences. The economists may also be called upon by the government to advise it on how to manage the economy in order to fulfil its ideological goals and be re-elected. The opposition parties may ask for advice on economic aspects of the election programme that will improve their chances of winning the voters' approval and therewith being elected to power. In the current political process the economic adviser has no choice but to be 'partisan'; otherwise, her/his advice will not be listened to. Assuming that the ground rules are adequately set at the constitutional level, the pursuit of self-interest and the resulting competition in the political sphere should tend to further everyone's welfare (analogous to the market system under adequate conditions). This is indeed the basic idea of democracy.

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