Public Finance Variations: A New Approach*

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Few themes have aroused so much interest and contention as the search for environmental determinants of public policy. One major problem area in this debate concerns the identification of explanatory variables accounting for the cross-country variation in public expenditures. As no agreement has been reached about the basic issues involved, it seems appropriate to formulate a new approach to the problem of accounting for public finance patterns. An argument is presented to the effect that the employment of more rigorous econometric tools may help us draw an outline of the structural pattern behind the public household. The analysis indicates that we must abandon the idea of identifying stable structures that describe the relationships between the public household and the environment.

Introduction

The purpose of this paper is to evaluate the theory that environmental factors constitute a major determinant of the cross-sectional or longitudinal variation in the size and growth of the public sector in various nations. Though research has been interested in identifying the sources of variation in welfare spending for quite some time, there is as yet no agreement as to which determinants explain its extent. Some argue that political factors play a significant role in shaping patterns of expenditure (Wilensky 1976; Castles 1982; Schmidt 1982; Hibbs 1977; Hibbs & Fassbender 1980; Whitely 1980). Others have denied this pointing either to the role of demographic factors (Wilensky 1975) and economic variables (Cameron 1978) or formulating an incremental approach (Alt & Chrystal 1981).

It has also been suggested that culture is a determinant (Wildavsky 1985). Furthermore there is no consensus as to the nature of the public expenditure variation, some arguing in favor of the convergence hypothesis — that the variation between nations with a mixed economy is decreasing — and others denying any such seminal trend (see the literature overview in Castles 1982). In particular, it seems difficult to arrive at *stable* estimates of relationships

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between dependent and independent variables; if one cross-sectional slice is chosen then we get one finding; if another slice is taken then we get a different result. In such a predicament one may try to sort out whatever structural stability exists and then attempt to pin down the structural variability typical of the data. Thus, instead of trying to find a universal relationship between expenditure variables and environmental factors we will instead locate when and where such relationships do exist (Westlund & Lane 1983).

It is important to emphasize the implications of the choice of the dependent variables for the evaluation of the environmental theory that economic, political or social factors determine levels or growth rates in public finance systems. If one argues that politics are important for policy outputs in a public finance setting, then it may make a difference which public expenditure or revenue item is chosen. However, the test of the environmental theory is not to be dependent on the choice of expenditure or revenue item in a completely arbitrary fashion; conceivably, we might get one answer if one type of public expenditure item is selected and another if some other type is chosen. Should the analysis focus upon revenue items or expenditure items, upon total outlays or some subaggregations, upon variables of the total public sector or on variables of different public bodies at various levels of government? No satisfactory solution to this problem has been suggested in the literature on policy determinants. The indeterminacy typical of the problem of selecting the dependent variables may account for the inconclusiveness that characterizes the finding concerning public expenditure determination. In order to resolve some of the inconclusiveness concerning the policy determination problem, we suggest an approach which draws theoretically upon the public finance tradition (Musgrave 1959; Buchanan & Flowers 1980) and employs empirical techniques which allow us to draw upon as much of the variation in the data as possible when testing the theory that environmental forces are a major determinant of public finance variations.

The Approach

In a public finance perspective public expenditure belongs, of course, to the public household. The set of public expenditure items is potentially very large depending on the aggregation level chosen; the public budget has a set of variables which may be approached in terms of a simple input- output model of the political budgeting process (Figure 1).

National patterns of public spending are typically described by means of some monetary indicator adjusted according to the size of the population of the country. Other indicators for public policies sometimes supplement per capita measures or percentage indices of GDP, but we will use only monetary indices. The public finance data have been taken from the OECD statistical
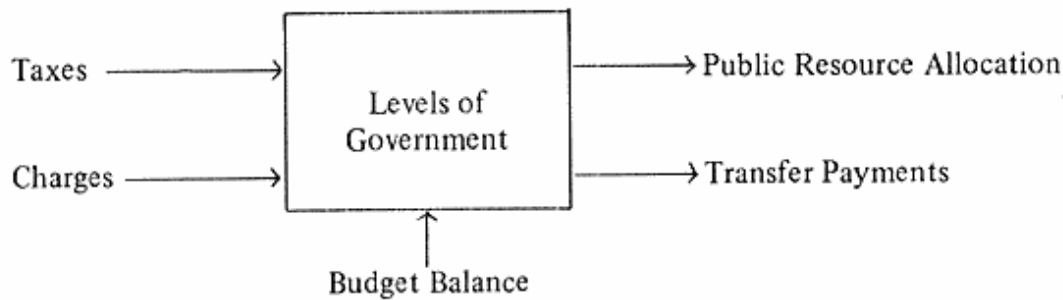
Figure 1. Structure of Public Finance Systems

publications, which are fairly comprehensive for our set of countries (Appendix I). What are the dependent variables? B. Guy Peters and M.O. Heisler have emphasized the difficulties in conceptualizing and measuring what the government and public sector stand for (Peters & Heisler 1983).

For purposes of analysis, the variables of the model may be broken down in various ways. In comparative research on the properties of political budget-making systems, the availability of data on various public finance items constrains the choice of variables to be covered. Since our purpose is to analyse the relationships between so-called determinants and public finance variables, we have included only those public finance items for which there is information for most of the years and most of the countries that the structural analysis aims to cover. Though the focus chosen means that some interesting categories could not be included in the analysis, we still faced a real choice when picking a set of dependent variables from the fairly large set for which the OECD publications contain data. Roughly fifteen revenue or expenditure items may be included, given the choice of such a long time period and such a large number of nations (Appendix I). There are two possible strategies for maximizing the number of years covered and the number of countries studied; either we regress each of the public finance items for which there is data in accordance with our criteria or we try to reduce the number of dependent variables by the identification of communalities. If the first strategy is chosen, we run into the addition problem, meaning that there is no natural method for summing up the separate findings from the regression analysis of each item into an overall judgement about environmental determinism. We suggest that the second strategy is the best one, following the suggestion by A.T. Peacock and J. Wiseman that factor analysis is a suitable tool in the present state of public finance knowledge (Peacock & Wiseman 1979).

If we could identify a few latent variables among the manifest variables chosen, then the search for determinans would have a clearer objective, and the findings in the structural analysis would be more easily interpretable. Firstly, we make a distinction between input-output items on the one hand and on the

other properties that refer to internal transactions within the public finance systems, like fiscal centralization and the transfer of grants. We will treat the distribution of the expenditure 'cake' between various levels of governments as an independent variable of potential relevance in explaining the size and growth of the public sector (Tarschys 1975). Secondly, we employ an explanatory factor analysis to find out whether the public finance variables for which there are comparable data, are reducible to a manageable set of dimensions. A special type of factor analysis must be resorted to: 'Super P factor analysis' (Park 1973), which combines cross-sectional and longitudinal data in order or solve equations covering the total time and space variation. Had we resorted to factor analysis of some cross-sectional slice we would have run into the very difficulty that we were trying to avoid — the dependence of the findings on the arbitrary choice of one or other space or time slice.

When it comes to the specification of the variables in the set of independent variables, it seems natural to follow the debate on the 'Does politics matter' theme (Schmidt 1983; Alt & Chrystal 1983). The number of variables that pertain to the political background of the public finance system (Appendix I) is maximized given the constraints that follow from the comparative ambition to cover sixteen nations over a longer time span. We have added economic variables to the set of independent variables, as the literature also contains hypotheses about the implications for public spending of the level and growth of the economy, of the openness of the economy, industry, unemployment and inflation.

A large list of independent variables may be identified which is of potential interest in an explanation of patterns of expenditure in a comparative context. The set of independent variables thus arrived at is of course much too cumbersome; it has to be reduced in some way. The first step is to classify the set of independent variables according to the traditional trichotomy: economy, polity and society. The next step would be to select on a theoretical basis a few variables that pertain to each of these major categories. The third step is to employ again the so-called Super P factor analysis in order to cover as much as possible of the variation during the time period selected for our cases.

Factor Analyses

The factor analysis of the indicators on the dependent variables is presented in Table 1 which shows that data reduction is a real possibility.

It appears from the factor analysis that three dimensions catch roughly 90% of the variation in the data; moreover, these three dimensions admit of an interesting theoretical interpretation on the basis of traditional conceptual distinctions in the public finance literature. The first dimension would constitute the allocation branch — measured by the indicator final government

Table 1. Factor analysis: Dependent Variables (Varimax Rotation)

		Factor 1	Factor 2	Factor 3
General Govern- ment	Current Disbursements/GDP	.77	.60	—.09
	Current Receipts/GDP	.75	.58	.28
	Taxes/GDP	.87	.16	.33
	Budgetary Balance/GDP	—.00	—.02	.97
	Social Security Contributions/GDP	.17	.94	.01
	Social Security Expenditures/GDP	.39	.84	—.11
	Government Final Consumption/GDP	.79	.30	—.08
Central Govern- ment	Current Disbursements/GDP	.94	.07	—.20
	Current Receipts/GDP	.95	.03	.09
	Taxes/GDP	.93	.03	.00
	Budgetary Balance/GDP	.04	—.13	.93
	GDP (log)	—.07	.81	—.11
	Explained variance (%)	53.4	19.7	14.8

consumption — made up of a set of pure and impure public goods as well as merit goods in the Musgravian terminology (Musgrave 1959). The indicator selected does not display the highest factor loading on this dimension, but it is more specific than the general revenue variables which belong to the same dimension (taxes, current disbursements, current receipts). The finding is, of course, that the analysis of structural determinants would not be difficult had we selected instead some other indicator such as current receipts. The second dimension would cover the distribution branch — still following Musgravian concepts — where the main items are transfer payments of various kinds (social security expenditures). Interestingly, the second dimension includes no central government finance variables, but some general public finance variables correlate with the social expenditure variables. The fact that current disbursement and current receipts also load on the second latent variable supports the theoretical interpretation suggested here. Transfer payments must, of course, be paid for through the public finance system, but several nations use mechanisms other than the central government budget to deal with these items, thus accounting for the pattern of factor loadings. Thirdly, the factor analysis singles our data concerning budgetary balance as a separate dimension. If revenues and expenditure do not match, the public sector resorts to deficit spending. Obviously, we have here a variation that is independent of the variation in public resource allocation and public transfers; not surprisingly the two main indicators on budgetary balance — total public sector surplus and central government budget deficit — go together, which means that we can select one of them — central government surplus — as our indicator. It is difficult to argue con-

Table 2. Factor Analysis: Independent Variables (Varimax Rotation)

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	
Centralization	.55	—.02	—.32	.57	.06	—.01	
IMPEX-index	.02	—.14	.10	.89	.08	—.11	
Agricultural employment	—.90	—.06	—.24	—.07	—.08	.09	
Age structure: 65 year —	.32	—.05	.56	—.23	.43	—.04	
Unemployment	—.62	.30	—.04	.09	.48	.09	
Inflation rate	.03	—.11	.05	.13	.78	.20	
GDP (real) growth	—.14	.22	.17	.02	—.62	.46	
Trade union density	.02	—.23	.86	.24	.02	—.01	
Socialist vote	.25	—.22	.71	—.07	—.26	—.37	
Conservative vote	.13	.80	—.07	—.21	—.13	—.23	
Socialist cabinet	.19	—.75	.32	—.01	.00	—.06	
Conservative cabinet	.04	.91	—.03	—.14	—.09	.13	
Governmental change	—.03	.04	—.01	—.09	.05	.64	
Party system volatility	.22	—.14	—.32	—.01	.02	.66	
GDP (LN)	.74	.07	.13	—.11	.16	.31	
Polulation (LN)	.45	.45	—.18	—.66	—.01	.06	
Explained variance (%)	21.7	16.9	11.8	8.8	8.4	6.4	(74.0)

vincingly for the selection of either of the two indicators — general government or central government budgetary balance. Most of the attention which focusses upon the budgetary balance of the public sector tends to concentrate on the relation between central government revenue and expenditure. Actually, total government balance is more important, as a large central government deficit may be covered by financial transactions within the public finance system, the central government borrowing from surpluses elsewhere in the system. However, since the two budgetary balances go together we select the variable which is usually employed when deficit spending is discussed.

The factor analysis of the indicators on the independent variables allows us to identify six dimensions in the set of independent variables.

The six dimensions capture about 75% of the variation, and they may be interpreted in the following manner:

(1) *modernization:* this dimension is tapped by two variables which are inversely related, age structure and size of agricultural employment. This is hardly surprising as the development of a post-industrial economy has implied both a continued reduction of the population engaged in agriculture and a steady growth in the number of retired people.

(2) *conservative strength:* some crucial measures of the partisan character of government and parliament go together such as conservative vote, conservative cabinets and socialist cabinet (negative). There is here some support

for the contention of Castles that the conservative dimension in the political environment of the public household is sui generis and should not be identified with a general political party dimension (Castles 1982).

(3) *left-wing strength:* as Schmidt has emphasized, the power of the left in a society is not only a matter of the political position of socialist and communist parties; of equal importance is the access to power of the trade union movement which is partly a function of its organizational density. It appears that measures of the position of the trade union movement and the position of the socialist parties go together and constitute a dimension separate from that of the position of the conservative camp in a society.

(4) *openness of the economy:* the index on economic interaction between nations belongs to the same factor as the size of a nation measured by the number of inhabitants. It seems as if the extent of openness in an economy depends on how large a nation is. The larger the nation the less openness there is, indicating that we may expect to find openness among the smaller European democracies.

(5) *the economic dimension:* GDP growth, level of unemployment and inflation rate have been singled out as a separate dimension. It appears that all three major economic variables go together to a great degree. This is particularly true for inflation rate and GDP growth, which are naturally inversely related.

(6) *political stability:* the level of change in government turnover as well as in voter alignments constitutes a separate dimension, which is of potential interest in explaining public finance patterns. It has been argued that changes in expenditure depend not only on the partisan character of government, but also upon the rate of change in government, higher rates being conducive to expenditure growth.

The findings of the factor analysis indicate that a compromise between a maximum and a minimum strategy is called for with regard to the set of independent variables. It is neither necessary to include whatever variable one may find nor to go to great lengths in trying to reduce the number of variables to two or three dimensions. The analysis of structural connections between the dependent variables and the independent variables is based on a combined cross-sectional and longitudinal file. The research strategy includes two steps. First we look for invariant relationships. Secondly, we try to locate relationships that only hold true for some time period and some countries.

The analysis consists of two separate sections, one focussing upon *levels* of public expenditure and the other on *changes* in public expenditure. It could be the case that there are structural connections between political factors and public finance items in a dynamic perspective when a major change is implemented in the expenditure pattern. Such a finding does not necessarily imply that political factors are relevant statistically for the explanation of variations in expenditure levels.

Public Finance Levels

It is a classic concept in the public finance tradition (Head 1974; Musgrave & Peacock 1967; Buchanan 1975) that the provision of a minimal level of public goods is a necessary condition for social order and the peaceful operation of exchange in various markets. The implication is that we should not expect any extensive variation in one indicator — final government consumption — between the nations studied — at least during the first decade covered. However, the expansion of the welfare state means, in a public finance conceptual framework, that the public sector has moved into the provision of semi-public goods or merit goods such as education and health care. The implication is then the opposite, i.e. we may expect a growing variation between our nations as we move into the next few decades, because preferences may vary considerably as regards merit goods and semi-public goods.

Theoretically, we have to test two hypotheses, one stating that the country variation will tend to increase as the government increasingly allocates semi-public and merit goods; the second — the convergence hypothesis — argues that country differences in preferences for allocation patterns will decrease over time as all nations tend to regard the provision of certain goods as citizen rights, the richer a nation becomes and the more visible the welfare state in any one nation becomes for all the other nations. The convergence hypothesis is based on a variety of assumptions about the development patterns of the post-industrial state (Galbraith 1967; Bell 1973), which cannot be tested here. The purpose here is limited as we wish to analyse how large the variation in public finance system is and how it has developed over time. It is convenient to focus upon two statistical measures of the variation, the coefficient of variation (CV) and the eta-squared statistic (E^2) in relation to Table 3, which has the data for the 1950's, 1960's and 1970's.

The data indicate that in the post-war decade we find little variation between the nations as they focus on classical public goods (CV = .17). The high E^2-scores indicate clearly that the between country differences are stable during the fifties. The second major finding is also in accordance with the public finance framework; the expansion of government during the sixties and the seventies has resulted in increased country variation, because spending on impure public goods implies greater freedom for governments at various levels to take action as regards goods and services when it is considered that markets do not perform adequately. Thus, we find that the CV-score is up considerably during the seventies and the decreasing values of the E^2 indicate that the between nation differences are not as stable as they used to be. For the 1970s we find a CV-value of .24 to be compared with the figure for the fifties. Concerning final government consumption, the conclusion is obvious: there is no support in the data for the convergence theme. The spread between nations

Table 3. Variations in Levels

	Final Governmental Consumption			Social Security Expenditures			Central Government Budgetary Balance		
	1950's	1960's	1970's	1950's	1960's	1970's	1950's	1960's	1970's
Austria	13.06	13.55	16.18	9.69	11.45	12.33	2.46	2.79	1 23
Belgium	12.12	13.16	15.73	9.53	11.99	17.40	—.42	.00	—1.13
Denmark	12.01	15.60	22.60	6.81	9.26	12.89	*	*	.06
F R Germany	13.84	15.11	18.82	12.04	11.04	12.35	2.55	1.46	1.32
Finland	11.85	14.55	16.69	*	5.86	6.89	*	4.53	4.82
France	13.58	13.21	13.99	12.45	14.27	17.26	2.10	2.97	1.55
Greece	12.09	11.96	13.87	5.12	6.93	7.82	.15	1.35	—.20
Ireland	12.54	13.10	18.32	5.83	7.06	11.88	.38	.79	—1.59
Italy	11.80	14.50	15.77	9.45	11.27	15.40	.51	1.79	—2 18
Netherlands	13.95	15.23	17.32	7.88	13.14	20.71	3.08	3.75	2.79
Norway	11.15	14.08	16.79	5.73	9.45	13.67	4.73	4.69	5.11
Portugal	10.04	12.73	14.19	2.43	3.15	5.79	1.50	.73	.46
Spain	8.91	8.23	9.20	*	4.62	9.25	*	2.76	2.25
Sweden	14.88	17.99	24.59	6.18	8.49	13.45	2.25	3.28	1.48
Switzerland	9.95	10.17	11.86	5.56	5.91	8.66	2.14	2.10	1.52
United Kingdom	17.47	17.06	19.71	5.91	7.00	8.96	1.59	2.50	1.¹7
Total	12.55	13.76	16.60	7.48	8.81	12.29	1.79	2.36	1.17
E^2-score	.86	.84	.83	.93	.87	.83	.65	.64	.54
CV-score	.17	.18	.24	.38	.38	.36	.96	.72	2.31

has increased and the pattern of between nation differences is less stable. The size of public transfers expresses equity considerations according to public finance theory. The national ambition in this field of public expenditure is bound to vary as a function of the prevailing political preference function. In nations where equality has a firm basis in the political machinery we would expect high levels of transfer payments as a percentage of GDP. Naturally we expect to find higher levels of redistribution effort as the welfare state matures over time. The data in Table 3 support our expectations. The variation in the redistributive ambitions is quite large for all the three decades, CV= .38 in the 50s, .38 in the 60s, .36 in the 70s. The high E^2-values indicate that the variation between the nations is larger than the variation within the nations. The fact that the convergence hypothesis receives some support in relation to social security expenditures may be explained by different arguments: increasing affluence tends to bring about insurance action, an intense welfare effort in one nation calls for similar levels of spending in other nations (the demonstration effect), or similar organizations or age groups may be strong enough to effectively demand more transfer payments — at least for their own groups.

It is a well-known fact that the effect of the development in the world economy during the seventies was that nations faced growing difficulties in matching expenditure with revenues. The data concerning the budgetary

balance of the central government in Table 3 confirm the general impression as the average net surplus is down considerably (from 2.4% in the sixties to 1.2% in the seventies). Not surprisingly we find a lot of variation both between the countries and within the countries as regards budgetary balance.

To sum up, if the various systems of public finance are analysed in terms of three dimensions — final government consumption, transfer payments and budgetary balance — we may establish that there is a clear *pattern of variation* that calls for a search for determinants of various kinds. It appears that the transfer payments vary more extensively between the nations than public resource allocation, and that the pattern of variation in budgetary balance is much less stable countrywise than the variation in the other two dimensions. Finally, the data confirm the convergence hypothesis only as regards transfer payments. Thus, if there is a pattern of variation in the *levels* of these public finance dimensions that is stable over time in terms of between nation differences, then we must ask if there are political, economic or institutional traits in these nations that explain the pattern derived.

In looking for determinants of levels of final government consumption, public transfers and budgetary balance we have two objectives: on the one hand to identify time invariant structures, and on the other to unravel whatever structural connections may obtain during certain time periods. Let us begin by looking at simple correlations for final government consumption (Appendix II).

We find a few stable structures in the post-war period that account for the variation in final government consumption; the level of public resource allocation is affected by agricultural employment ($r = -.55$), age structure ($r = .53$), centralization ($r = .52$), trade-union density ($r = .45$), socialist vote and cabinet (.33) and openness of economy (.29). If we allow for structural variability it is also possible to identify other determinants: GDP growth (61-62 and 71-72), conservative vote (51-52), (77-78), conservative cabinet (51-52 and 77-78), government stability (61-62) and party system change (71-72). The correlation analysis does not support statements to the effect that political variables are the essential explanatory factors. However, trade union strength and the position of the socialist parties appear to have a stable impact upon final government consumption together with two demographic variables and one variable of the public finance system. It may be the case that other variables have an impact upon government final consumption, but the causal pattern is not invariant; sometimes these variables do have an impact, sometimes they do not. As suggested above, focussing on only some cross-sectional slice may lead to findings that have a limited validity. Turning to regression analysis we must ask how the factors that appear to have a lasting impact upon final government consumption relate to each other. Table 4 has the answer.

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Table 4. Regression Analysis: Final Government Consumption/GDP: Pooled Data

	OLS				Pseudo-GLS*			
	Coefficient	t-statistic	R^2	R^{-2}	Coefficient	t-statistic	R^2	R^{-2}
Centralization	.110	7.14	.48	.46	—.086	2.60	.72	.72
Trade union density	.042	4.50			.082	2.28		
Age structure	.435	4.87			—.026	.30		
IMPEX-index	—.033	—4.86			—.009	.47		
Socialist cabinet	.012	3.82			—.001	.34		
Agricultural employm.	—.041	2.36			—.313	4.41		

* See Kmenta 1971:511, Pindyck & Rubinfeld 1981:259.

Employing the OLS technique supplemented by the GLS technique we may establish in a pooled regression that three variables are of causal importance: agricultural employment, trade union density and centralization. Thus, the analysis of partial effects does not corroborate any *general* statement about the impact of political parties on public resource allocation. The positive finding is that trade union strength does seem to have a lasting impact on final government expenditure. Most interestingly, the effect of age structure vanishes when the other variables are kept constant and autorregressivity is controlled.

So much for the invariant relationships, i.e. relations between the dependent variable and the set of independent variables that are structurally stable over time and space. Let us look at various cross-sectional slices on the basis of 2-year periods in order to locate time periods in which we have stronger connections between government final consumption and environmental factors. First we tested a political model for each of these cross-sectional slices regressing levels of government final consumption on trade-union density, socialist vote and socialist cabinet. The findings may be summarized in the following manner: the variation in goodness of fit is considerable, because for some time periods — roughly up until 1964 — the political model explains little whereas for the time periods after 1965 the political model has some explanatory power. At most the political model explains about 60% of the variation (in 1967-68) when the political model works at its best and where socialist cabinet is the strongest of the explanatory variables. However, it must be emphasized that there is no uniform trend towards an increase in the explanatory relevance of the political model; in 1977-78 the model only captures 27% of the variation in the dependent variable. The analysis of the various cross-sectional slices confirms the finding from the overall analysis that trade-union density is the best predictor of government final consumption when only a set of political variables are considered. Turning to a model with other independent variables

included in a model with one political variable, we tested for the partial effect of the political variable over various time periods. The test is a partial confirmation of the 'Politics Matter' theme as it appears that the political variable in a combined model is often the best predictor for those time periods when the combined model functions best — roughly 50% of the variation. There is thus an interesting finding; political factors appear to grow in importance as determinants of the country variation in the allocation branch of the public finance system. We suggest the following interpretation; at the end of World War 2 most European nations had to concentrate their public effort on more or less pure public goods, the provision of which is not so closely related to the partisan character of government. During the fifties and the sixties the expansion of the GDP meant that provision of semi-public goods and merit goods became possible to a much greater extent, which provided the opportunity for socialist groups to use government to correct for market outcomes. The conclusion is that politics matter in relation to the outputs of the allocation branch, but the relation is not an invariant one. We must allow for *structural variability*.

If politics matter for certain time periods in relation to the allocation branch, what is its impact on the distribution branch? Here we would expect to find strong associations as the ideology of socialist parties causes these parties to emphasize transfer payments as a tool for achieving income redistribution. Let us first look at correlations for the whole time period (Appendix III). We find a few invariant relationships with regard to the variation in levels of public transfers. The following factors appear to have a lasting impact on the redistribution effort: centralization ($r = .53$), age structure ($r = .52$), agriculture ($r = -.47$), conservative cabinet ($r = .30$) and conservative vote ($r = .15$). Surprisingly, we cannot find that trade union power or the position of the socialist parties exert a stable impact upon transfer payments. Even more surprisingly, the relationship between conservative party strength and social security expenditures is positive. Some variables seem to be relevant only for some time periods: openness of economy(51-52), (75-76 and 77-78), unemployment (53-54), inflation (53-54) and GDP growth (55-56), (61-62), trade union density (51-52). Thus, we are reminded again of the fact that the selection of the cross-sectional slice may affect the conclusions arrived at which are generalized to other time periods in which they may fail.

The analysis indicates that there may be one configuration between the independent variables and transfer payments and another configuration between the same independent variables and public resource allocation. We find that other factors are relevant for the explanation of transfer payments. How do these factors relate to each other? Let us look at a pooled regression (Table 5).

Table 5. Regression Analysis: Social Security Expenditure/GDP: Pooled Data

| | OLS | | | | Pseudo-GLS | | | |
	Coefficient	t-statistic	R^2	R^{-2}	Coefficient	t-statistic	R^2	R^{-2}
Centralization	-126	8.67	.43	.43	.086	4.56	.79	.78
Conservative vote	—.041	—2.35			.002	.52		
Age structure	.767	9.31			.009	1.98		
Conservative								
Cabinet	.035	7.79			.095	3.95		

The regression estimates do not corroborate the standard assumptions about the factors that are conducive to differences in ambition with regard to redistribution. Only centralization in the public finance system has an impact if a model including age structure, conservative vote and conservative cabinet in addition to centralization is tested.

Perhaps we can find a stronger impact during some of the time periods? Again, we tested two models on a series of cross-sectional data covering the various two-year periods in order to locate any structurally variant determinant on levels of social security expenditure. The findings are not as positive as in the case concerning government final consumption. A political model explains little most of the time. Surprisingly, it is best during the first decade. In the sixties and the seventies the model lacks virtually any explanatory power. A combined model performs better. When such a combined model does well (1953-54, 1977-78), it appears that the political variable included is outweighed by the non-political ones, particularly age structure, industry and IMPEX.

The third dimension — budgetary balance — remains to be considered. We found a few invariant relationships (Appendix IV).

The level of budgetary surplus appears to be a function of: unemployment (r = —.51), socialist vote (r = .30) and conservative vote (r = —.21). The relation between level of unemployment and budgetary deficit is not difficult to account for, but how do we explain that the strength of the socialist parties is positively related to budgetary balance whereas the strength of conservative parties is negatively related to budgetary balance? It seems as if budgetary balance may be affected by other variables as well, but their impact varies in both strength and direction with the time period selected. The pooled regression singles out unemployment as a crucial determinant of budgetary balance.

Trying a combined model on the various two-year periods we established that politics matters little for the determination of levels of budgetary balance in public finance systems on a national level. Central government budgetary deficits vary more often as a function of variables like unemployment during the seventies, GDP growth in the early fifties and inflation in 1967-68 and

1971-72. When a political model works — between 1957 and 1964 — we get the same surprising result that a socialist cabinet positively affects the level of budget surplus.

To sum up, politics matters for level of public finance dimensions, but not in a uniform manner over all time periods or in the same way for the three basic dimensions. Political variables are relevant from an explanatory point of view with regard to levels of government final consumption for several periods of time, mainly since the mid-sixties. The direction of the impact is clear: the stronger the socialist side or the trade unions the larger the allocation branch. As regards the two other dimensions, social security expenditures and budgetary balance, the findings do not support the hypothesis that environmental factors in general or political variables in particular account to any extent for the variation. There are hardly any stable relationships and not even for short time periods is it possible to locate strong impacts.

Growth Rates

One finding from the analysis of the variation in levels of public finance effort — final government consumption and social security payments — is *stability.* The between country differences are substantial but not extreme, and more important the country differences are larger than the intra country differences over time. Stability does not imply lack of change. Actually, we expect to find a great deal of one type of change, *growth,* as the post-war period contains the expansionary years of the welfare state. Table 6 presents a first picture of the variation in growth rates in our dimensions.

The overall expansion rates hardly require extensive comment; of course, final government expenditure and transfer payments grow whereas the budgetary balance moves the other way. The average growth rate is somewhat larger for social security payments than for public resource allocation; in the 50s we have 7% versus 5.1%, in the 60s 9% versus 6.9% and in the 70s we have 8.9% versus 6.3%. The drastic change in economic conditions for public finance appears in the reversal of the growth rates in budgetary balance from the fifties and the sixties to the seventies (14, —26 and —46%).

The findings concerning the CV-scores and the E^2-values are more interesting. The variation in growth rates is very different from the pattern of variation in the levels of the public finance dimensions. Growth rates fluctuate considerably both in time and space. The country variation is quite substantial for all three dimensions for all three periods of time. Moreover, the within nation differences are also large, which implies that we cannot expect a unique set of nations that persistently displays high growth rates in all the years studied. What factors account for the extensive fluctuations in the growth rates in the public finance dimensions? If politics does not matter that much in

Table 6. Variations in Growth in Percentage (Fixed Prices)

	Final Government Consumption			Social Security Expenditure			Central Government Budgetary Deficit		
	1950's	1960's	1970's	1950's	1960's	1970's	1950's	1960's	1970's
Austria	7.00	6.21	6.17	9.21	6.58	5.83	34.02	8.78	—3.16
Belgium	2.62	5.81	6.72	4.52	7.63	8.12	59.22	-350.51	-118.18
Denmark	5.53	10.27	5.57	5.96	12.36	6.84	*	*	—49.00
F R Germany	5.57	6.69	5.83	8.59	3.49	5.87	1.61	—29.46	13.13
Finland	6.07	7.42	5.97	*	6.05	7.16	*	4.98	.83
France	6.49	5.38	5.59	6.96	7.17	7.55	49.26	10.77	-137.69
Greece	6.11	8.22	8.29	7.92	11.13	7.28	—19.01	40.26	27.70
Ireland	.67	5.91	14.27	1.73	8.26	14.49	18.85	-179.70	3.36
Italy	6.35	7.78	4.51	11.50	8.78	5.71	—5.41	—.59	15.85
Netherlands	*	7.05	5.26	*	10.41	8.77	*	.33	—8.03
Norway	6.55	7.15	6.16	9.29	8.71	8.02	7.48	7.53	—2.07
Portugal	6.38	8.42	6.06	7.07	7.82	28.46	10.38	—1.41	132.74
Spain	3.62	7.06	7.26	*	27.65	10.33	*	3.41	—2.27
Sweden	6.36	7.01	5.67	6.94	7.91	8.07	10.01	19.37	-533.87
Switzerland	3.76	5.86	3.60	6.03	6.58	7.64	—14.20	52.13	3.50
United Kingdom	.70	3.48	4.28	5.22	4.71	5.61	21.41	46.18	—31.30
Total	5.10	6.86	6.33	6.99	8.97	8.85	13.91	—25.65	—46.28
E^2-score	.13	.12	.15	.10	.13	.31	.07	.21	.17
CV-score	1.10	.61	.96	1.01	1.60	1.00	5.98	8.85	7.25

relation to levels of public finance dimensions, then maybe political variables are more relevant in relation to change? Before we jump to any conclusions about the conditions for growth in public finance systems we must call to mind the methodological distinction between invariant structures and structural variability over space and time. First we focus on stable relations over time and space, then we look for structural connections within each country. Table 7 has the data for the first public finance dimension: final government consumption.

Though the finding concerning the existence of invariant conditions for final government consumption growth is negative, it is an important one; there is no factor in the set of independent variables that is a condition for change in final government consumption for all countries for all the years studied. Let us then proceed to inquire into the existence of relations that may explain each country's pattern of growth. Focussing on final government expenditure we find a number of country specific connections, several in some countries. Let us consider the political variables. In some nations conservative vote and conservative cabinet have a positive impact, whereas in others the impact is negative; the same applies to socialist vote and cabinet. Trade union strength does affect growth rates in some nations, but the direction of the relation varies, not simply the magnitude. If politics does not uniformly affect public

Table 7. Correlation Matrix: Final Government Consumption (Growth)

	Centra-lization	IMPEX index	Agricult. employm.	Age struc.	Unem-ployment	Infl. rate	GDP growth	Trade un.dens.	Soc vote	Con vote	Soc cabi	Con cabi	Govern change	Partysyst. instability
Total period	.05	.13	.10	−.08	.02	.08	.14	.02	−.07	−.03	−.00	−.01	−.03	.11
Austria	−.05	−.02	.11	.03	.01	.47	.18	.01	−.19	.22	−.06	.06	−.07	.09
Belgium	.22	.30	−.52	.54	−.28	.31	−.17	.54	−.45	−.29	−.63	.63	−.05	.19
Denmark	.49	−.18	.03	.05	−.52	−.01	.10	−.03	.01	.37	−.21	—	−.27	−.17
F R Germany	.08	−.33	.03	−.11	−.48	.17	.01	−.18	.04	−.13	−.07	.07	.27	.12
Finland	−.35	−.21	.28	.10	−.31	−.27	−.23	−.09	−.17	−.06	.01	—	−.32	.10
France	−.26	.06	−.19	−.03	−.05	.32	.02	−.01	−.01	−.20	.23	.22	.29	.02
Greece	.15	.19	.60	.02	−.17	.24	−.25	—	.20	−.13	—	−.29	.17	.58
Ireland	.44	.87	−.47	−.01	.22	.15	.42	.57	.05	.07	—	−.12	−.11	−.01
Italy	−.44	−.37	.32	−.35	−.22	−.41	.11	−.44	.39	.48	—	—	−.01	.03
The Netherlands	−.60	.12	.55	−.24	−.56	−.28	.28	−.18	−.31	.58	−.31	.31	−.24	−.31
Norway	−.14	−.12	.02	−.04	.13	.02	.22	.04	−.08	.05	.17	—	−.15	.01
Portugal	−.34	−.00	−.05	−.07	—	−.10	.27	—	—	—	—	—	—	—
Spain	.23	.24	−.17	.18	.15	−.06	.19	—	—	—	—	—	—	—
Sweden	.20	−.23	.49	−.13	−.29	−.04	−.01	−.14	.19	−.16	.05	—	−.14	−.20
Switzerland	−.28	.13	−.41	−.00	−.30	.27	.31	−.08	−.09	.18	—	—	—	−.10
United Kingdom	.35	−.06	−.26	.49	.03	.24	.01	.11	−.28	−.12	.08	−.08	−.10	.31

finance growth, then perhaps GDP growth or other economic variables operate more clearly? It is not true that the higher the GDP growth the higher the rate of expansion in final government consumption. For some nations there is such a relation: Ireland, the Netherlands, Portugal and Switzerland. But in some nations the reverse relation holds: Belgium, Finland and Greece. The same kind of variation in the direction of the relation appears with regard to inflation, unemployment and openness of economy. Also, it seems as if age structure may have a positive impact in some nations (Belgium, United Kingdom) but quite the opposite in other nations (Italy and the Netherlands). If the search for determinants of the growth in public resource allocation is an abortive one, then maybe we will succeed in the attempt to find a set of conditions that uniformly affects change in social security expenditure in a clear way. Table 8 has the correlations, which offer a crude picture.

Again we may establish that there are no general factors operating which affect the change in transfer payments uniformly in the different countries and during the various periods of time. The correlations between this public finance dimension and the set of independent variables are very low in a combined cross-sectional and longitudinal data set. Looking at the country specific patterns, we can identify a number of connections which are sometimes positive, sometimes negative, depending on the country studied. The standard idea of socialist cabinets raising transfer payments is hardly corroborated in the data; nor is it always the case that the stronger the conservative side in society (conservative vote and conservative cabinet) the lower the redistribution effort.

In order to test whether growth rates may be regressed on a set of environmental factors, we resorted to a time series analysis of the growth pattern of each nation covering the whole time period. Two models were estimated for each of the two dependent variables, growth rates in governmental final consumption and social security expenditure. The political model performs poorly as regards explanation of the growth in social security expenditure, but displays some explanatory relevance for the changes in government final consumption, particularly for Belgium, Ireland and Italy. However, there is no single political variable that has the same impact when a political model is relevant. By resorting to a model that includes nonpolitical factors, it is possible to explain parts of the variation in growth rates. For some nations a combined model is relevant regarding social security expenditure: Finland, Ireland, Norway and Portugal, but the factors vary from case to case. The same finding recurs with regard to the explanation of change in government final consumption. In nations like Austria, Belgium, Denmark and West Germany, we are able to detect some environmental impact, but there is no factor that operates the same way in all these cases.

To sum up, the findings concerning the relevance of environmental factors

Table 8. Correlation Matrix: Social Security Expenditures (Growth)

	Centra-lization	IMPEX-index	Agricul. employ	Age struct	Unemp-loyment	Infla-rate	GDP growth	Trade union D.	Soc vote	Con vote	Soc cab	Con cab	Govern change	Party syst. instability
Total period	−.10	.02	.13	−.09	.02	.05	−.02	.03	−.03	−.07	.03	−.04	.06	−.03
Austria	−.31	−.37	−.38	−.36	.33	.49	−.28	.02	−.39	.05	−.21	.21	−.19	−.16
Belgium	.15	.13	−.26	.39	−.20	.23	−.21	.25	−.32	−.22	−.40	.40	.11	.06
Denmark	−.38	−.04	.06	.02	−.06	.11	−.46	.05	.04	.03	.01	—	−.24	−.08
Germany FR of	.10	.25	.06	.12	.32	.19	−.29	.11	.01	−.06	.04	−.04	.13	−.13
Finland	−.03	−.02	.41	.11	−.03	−.02	.03	.05	.22	.10	.03	—	.07	−.00
France	−.50	−.59	.37	−.28	−.68	−.45	.50	−.37	−.70	.29	−.10	.08	−.16	−.23
Greece	.08	−.04	−.71	.03	.28	−.27	−.22	—	.09	.05	—	−.16	.17	−.35
Ireland	.39	.82	−.48	−.13	.16	.20	.40	.51	.12	.15	—	−.13	−.14	−.08
Italy	.02	−.26	.15	−.15	−.06	−.26	.15	−.27	.17	.09	—	—	−.12	−.00
The Netherlands	−.16	−.06	.23	.08	−.37	−.05	.13	−.21	−.29	.30	−.21	.21	.29	−.11
Norway	−.01	−.52	.07	−.06	−.05	−.24	−.36	.10	.30	.08	.05	—	−.20	−.02
Portugal	.82	.20	−.47	.60	—	.65	−.24	—	—	—	—	—	—	—
Spain	−.40	−.31	.22	−.37	−.20	−.13	−.00	—	—	—	—	—	—	—
Sweden	.19	.02	−.08	.17	.24	−.33	−.01	.13	−.00	.03	−.00	—	−.24	−.06
Switzerland	.12	.07	−.33	.15	−.20	.23	.12	−.08	−.29	−.14	—	—	—	.02
United Kingdom	.16	.04	−.16	.14	.29	.03	−.14	.09	−.07	−.21	.30	−.30	−.16	.04

in general and political variables in particular for explaining the quite substantial variation in growth rates for the three public finance dimensions are hardly impressive. It is not the case that economic, political or institutional variables uniformly affect change in public finance systems. The standard idea that the strength of the socialist side in society affects the rate of change in social security expenditure is falsified. Allowing for structural variability, estimating a number of time series models, two for each country, does not change the picture. In order to understand change in public finance systems in Western Europe we must look for other variables than those traditionally specified in the 'Does Politics Matter Theme'.

Conclusion

In the expanding literature on the determinants of policy outputs and policy outcomes there is as yet no consensus on how the pattern of variation in public finance variables in European democracies is to be interpreted. We have two findings that may be emphasized based on a research strategy that bypasses the difficulties in selecting one time period for cross-sectional analysis or one nation for longitudinal analysis creating severe methodological problems of valid induction. By employing techniques that will allow us to analyse the total variation (Super P factor analysis, correlations for combined cross-sectional longitudinal data, pooled regression) the instability in the results in the earlier 'Does Politics Matter' discussion may be removed in so far as the comparative analysis of public finance systems in Western Europe is concerned. Firstly, we can establish that the convergence theme has limited validity as it only applies to social security expenditure. It is not the case generally that public finance systems are becoming more similar. Secondly, we find that political variables — various indicators of the strength and position of socialist parties, conservative parties and the trade unions — have a sharply delimited impact on public finance dimensions. We cannot talk about these variables as essential determinants for all aspects of public finance. There is a relationship between the level of final government consumption and trade union density, and there is a negative relationship between socialist vote and the level of unemployment — but that is all if we are looking for invariant relations. A clear but negative finding is that levels of transfer payments and change in public finance items or growth rates cannot be accounted for by any general factors. We must allow for structural variability or the fact that the policy determinants may have differential impacts in different time periods and different countries. Any general statements to the effect that public sector growth is crucially dependent on the strength and position of the left is not corroborated if the whole time period is covered.

REFERENCES

Alt, J. & Chrystal, A.K. 1981. 'Electoral Cycles, Budget Controls and Public Expenditure', *Journal of Public Policy* 1981:1.

Alt, J. & Chrystal, A.K. 1983. *Political Economics.* Berkeley: University of California Press.

Bain, G.S. & Price, R. 1980. *Profiles of Union Growth: A Comparative Statistical Portrait of Eight Countries.* Oxford: Blackwell.

Bell, D. 1973. *The Coming of Post-Industrial Society.* New York: Basic.

Beyme, K. von. 1982. *Parteien in westlichen Demokratien.* München: Piper.

Buchanan, J. 1975. *The Limits of Liberty: Between Anarchy and Leviathan.* Chicago: Chicago U.P.

Buchanan, J. M. & Flowers, M.R. 1980. *The Public Finances.* Homewood.

Cameron, D. 1978. 'The Expansion of the Public Economy: A Comparative Analysis', *APSR,* 72.

Castles, F.G. ed. 1982. *The Impact of Parties.* Beverly Hills: Sage.

Dye, T.R. 1966. *Politics, Economics and the Public.* Chicago: Rand McNally.

Galbraith, J.K. 1967. *The New Industrial State.* Boston: Houghton Mifflin.

Head, J.G. 1974. *Public Goods and Public Welfare.* Durham: Duke U.P.

Hibbs, D. 1977. 'Political Parties and Macroeconomic Policy', *APSR,* 71.

Hibbs, D. & Fassbender, H. ed. 1980. *Contemporary Political Economy.* Amsterdam: North-Holland.

Kjellberg, A. 1983. *Facklig Organisering i 12 Länder.* Lund: Arkiv.

Kmenta, J. 1971. *Elements of Econometrics.* New York: Macmillan.

Mackie, T.T. & Rose, R. 1982. *The International Almanac of Electoral History.* London: Macmillan.

Madsen, H.J. 1978. POETICS: A Political Economic Timeseries Cross-Section System of Data: 1920 - 75. Aarhus: Dept. of Political Science (mimeo).

Musgrave, R.A. 1959. *The Theory of Public Finance.* New York: McGraw Hill.

Musgrave, R.A. & Peacock, A.T. eds. 1967. *Classics on the Theory of Public Finance.* New York: St Martin's Press.

OECD Economic Outlook.

OECD National Accounts.

OECD Labour Force Statistics.

OECD Observer.

Park, T.-W. 1973. 'Measuring the Dynamic Patterns of Development: The Case of Asia 1049-1968', *Multivariate Behavioral Research,* 8.

Peacock, A.T. & Wiseman, J. 1979. 'Approaches to the Analysis of Government Expenditure Growth', *Public Finance Quarterly* 7, pp. 3-23.

Peters, B.G. & Heisler, M.O. 1983. 'Thinking About Public Sector Growth' in Taylor, C.L. (ed.) *Why Governments Grow: Measuring Public Sector Size.* Beverly Hills: Sage.

Rose, R. 1984. *Understanding Big Government: The Programme Approach.* London: Sage.

Pindyck, R.S. & Rubinfeld, D.L. 1981. *Econometric Models and Economic Forecasts.* New York: McGraw-Hill.

Schmidt, M.G. 1982. *Wohlfahrtsstaatliche Politik unter bürgerlichen und sozialdemokratischen Regierungen.* Frankfurt: Campus Verlag.

Schmidt, M.G. 1983. 'The Welfare State and the Economy in Periods of Economic Crisis: A Comparative Study of Twenty-three OECD Nations', *European Journal of Political Research,* 11, pp. 1-26.

Tarschys, D. 1975. 'The Growth of Public Expenditure: Nine Modes of Explanation', *Scandinavian Political Studies,* 10.

UN Statistical Yearbook.

Westlund, A. & Lane, J.E. 1983. 'The Relevance of the Concept of Structural Variability to the Social Sciences', *Quality and Quantity,* 17, ff. 189-201.

Whiteley, P. ed. 1980. *Models of Political Economy.* Beverly Hills: Sage.

Wildavsky, A. 1985. 'The Logic of Public Sector Growth', in Lane, J.E. (ed.) *The Politics of the Public and the Private*. London: Sage.

Wilensky, H. 1975. *The Welfare State and Equality*. Berkeley: University of California Press.

Wilensky, H. 1976. 'The "New Corporatism", Centralization and the Welfare State', in *Sage Professional Papers in Contemporary Political Sociology*, No. 20.

Appendix I

Variables	Definition	Sources
General government:		
Current disbursements	Final consumption expenditures, interest of public debt, subsidies, and social security transfers	OECD: OECD: Table 9: line 23
Current receipts	Direct and indirect taxes, and social security contributions	OECD: Table 9: line 12
Budgetary balance	Current receipts minus current disbursements	
Taxes	Indirect taxes plus direct taxes	OECD: Table 9: line 5 + line 6
Social security contributions		OECD: Table 9: line 8
Social security expenditures		OECD: Table 9: line 17 + line 18
Government final consumption	Current purchases of goods and services for public administration, defence, health and education; it excludes all transfer payments	OECD: Table 9: line 13
Central government:		
Current disbursements		OECD: Table 10: line 23
Current receipts		OECD: Table : line 12
Taxes		OECD: Table 10: line 5 + line 6
Budgetary balance		OECD: Table 10: line 12 — line 23
Centralization	Central government: transfers to subsectors of general government/ current disbursements	OECD: Table 10: line 21.1/line 23
IMPEX-index	Imports plus exports/GDP	
Agricultural employment	Agricultural employment as percentage of civilian employment	Labour force statistics; OECD Observer
Age structure	Proportion of population 65 year and over	Labour force statistics
Unemployment		OECD Economic Outlook; Yearbook of labour statistics; Madsen
Inflation		OECD Economic Outlook; UN Statistical yearbook; Madsen
GDP real growth		OECD Economic Outlook; UN Statistical yearbook; Madsen
Trade union density	Membership of trade union in relation to potential membership	Kjellberg, Bain & Price among others
Socialist vote	Socialist and/or social democratic parties	Mackie & Rose
Conservative vote	Conservative and/or christ. democratic parties	Mackie & Rose
Socialist cabinet	Socialist prime minister	Beyme
Conservative cabinet	Conservative prime minister	Beyme
Governmental change	Number of governments	Beyme among others
Party system volatility	Net changes for all the parties within a party system between two elections	Mackie & Rose