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EXPLAINING INTERNATIONAL DIFFERENCES IN PUBLIC EXPENDITURE: AN EMPIRICAL STUDY*

by

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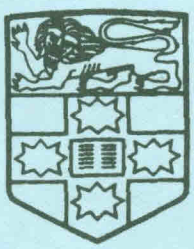

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1. Introduction

However one chooses to measure it, the degree of government intervention in OECD countries has expanded rapidly since 1960 . One aspect of this expansion is the growth in the ratio of general government (hereafter, public) expenditure to GDP. Although this measure of the size of government excludes those activities not covered in the national accounts budgetary framework, it nonetheless represents a significant component of public sector activity for which comprehensive and reliable data are available on a comparable basis. This paper is thus concerned with developments in the ratio of public expenditure to GDP. In the two decades up to 1980, the average OECD public expenditure share rose by over eighteen percentage points from 26.3 per cent in 1960 to 44.2 percent in 1980. Over this period, the role of government changed from a concern with the provision of goods and services of a collective nature, to a range of broader and more direct interventions in the income generation and distribution process. Reflecting this, the overall growth in public expenditure was accompanied by significant compositional changes, including a rise in the relative importance of government transfers and a decline in exhaustive expenditure on goods and services generally and capital outlays in particular.

The aim of this paper is to investigate the factors behind the size and growth of public expenditure in OECD countries between 1960 and 1980. Such an exercise is useful in at least two important respects: First, identification of the factors

contributing to the growth of public expenditure is important in understanding country differences in the level (and past growth) of public expenditure. This may in turn allow identification of those countries where public expenditure levels are high (or low) relative to experience elsewhere, after accounting for differences in the factors contributing to expenditure growth: Second, the analysis and results may shed light on the nature of the difficulties inherent in any longer-run policy aimed at public expenditure restraint, particularly where those factors responsible for past developments may continue to exert further upward pressures on expenditure.

By way of background, the following section presents and discusses the main public expenditure trends in OECD countries over the 1960-1980 period. The data which form the basis of the subsequent statistical analysis are then presented and briefly discussed. The analysis is conducted on total public expenditure, total current expenditure (current disbursements), and the two major components of disbursements, final consumption expenditure and transfer payments. In Section 3 a simple basic model which focuses on historical and political factors as the major elements behind the development of public expenditure is presented and estimated. This is followed in Section 4 by consideration of the role of a number of economic factors thought to influence the demand for public expenditure and the costs of supplying public services. The analysis sheds light on several hypotheses that have characterised previous research into the causes of the size and growth of government. In Section 5, the main results are brought to bear on one aspect of the question of

the appropriate size of public expenditures. In particular, an attempt is made to identify those countries where the public expenditure share diverges significantly from what one would expect (on the basis of the regression results) to persist in light of their historical, political and economic circumstances. The final section summarises the main findings of the paper and emphasises the major conclusions of the analysis.

2. Public Expenditure Trends, 1960-1980

The public expenditure data which form the basis of the following analysis include current and capital spending by Federal, State and local governments, after netting-out of all inter-governmental transfers. These data were taken from the Standardised National Accounts (SNA) compiled and published by the OECD in accordance with the guidelines laid down by the United Nations. They represent the most reliable and consistent public expenditure series available on a comparable basis for a broad range of industrialised countries (1). They thus represent the best data set for any comparative investigation into the size and growth of government. In order not to give undue weight to observations for the particular years selected as the beginning and end points of the sample period, three year averages were calculated for the years 1960-62 and 1978-80. It is these series which form the basis of the statistical analysis that follows.

Table 1 shows the main trends in the total level of public expenditure and in its major economic components (2). It is apparent from Table 1 that the level of public expenditure in

relation to GDP shows considerable diversity across countries. At both the beginning and end of the sample period, those countries with the largest share of public expenditure in GDP had ratios approximately twice those in the countries with the smallest public expenditure shares (although the countries concerned were not the same for each period). Thus, for total public expenditure, there has been no noticable change in the variability of the share across countries, at least as measured by the coefficient of variation. There has, however, been several marked changes in the rankings of individual countries, reflecting the very rapid rise in the expenditure share in Sweden, Denmark and the Netherlands, and the much slower rise in France, Germany and the United Kingdom. The extent of the growth of public expenditure can be gauged by the average rise in the expenditure share of 15.6 percentage points, from a base period value of 27.3 per cent. As a result of this increase, there were only four countries (Australia, Japan, Spain and United States) where the public expenditure share during 1978-80 had not exceeded the share in France during 1960-62, this being the highest share in any OECD country at that time.

Table 1 also illustrates that the overall growth in public expenditure has been accompanied by important compositional changes. The most significant of these has been the growth in the share of total spending devoted to current expenditures in general, and to transfer payments in particular. Indeed, on average over the period, the transfer payments share itself rose by 10 percentage points, almost two thirds of the average rise in the total public expenditure share. In 1960-62, the total level

Table 1: Public Expenditure in OECD Countries, 1960-1980

(percentage of GDP)

	Average 1960-62:				Average 1978-80:			
	Final Consumption Expenditure	Transfer Payments	Current Disbursements[a]	Total Public Expenditure	Final Consumption Expenditure	Transfer Payments	Current Disbursements[a]	Total Public Expenditure
Australia	9.9	9.7	19.6	23.1	16.6	13.4	30.0	33.4
Austria	12.7	13.5	26.2	32.7	18.1	25.0	43.1	49.2
Belgium	12.5	15.6	28.1	30.2	18.2	28.0	46.2	49.7
Canada	14.7	11.1	25.8	29.6	19.6	17.4	37.0	40.1
Denmark	14.3	8.7	23.0	26.4	25.4	23.7	49.1	53.4
Finland	12.1	10.0	22.1	26.7	18.6	16.1	34.7	38.7
France	13.1	18.7	31.8	35.8	15.0	27.4	42.4	45.6
Germany	13.9	14.8	28.7	34.0	19.8	22.8	42.6	47.9
Greece	11.5	6.2	17.7	17.7[e]	16.2	13.8	30.0	30.0[e]
Iceland[b]	8.3	12.5	20.8	25.4	11.0	15.1	26.1	35.5
Ireland	12.5	12.9	25.4	29.1	19.6	24.9	44.5	50.0
Italy	12.8	13.2	26.0	30.0	16.2	25.2	41.4	45.9
Japan	7.8	5.5	13.3	17.8	9.9	14.4	24.3	31.9
Luxembourg	10.1	16.1	26.2	31.0	16.0	29.4	45.4	53.0
Netherlands[c]	14.0	15.3	29.3	34.9	18.5	35.8	54.3	58.6
Norway	13.2	13.7	26.9	30.4	19.6	26.7	46.3	50.7
Portugal[d]	12.3	4.6	16.9	18.4	14.8	14.3	29.1	32.7
Spain	7.3	5.9	13.2	17.0	10.9	16.8	27.7	30.8
Sweden	16.1	11.1	27.2	31.5	28.2	27.0	55.2	60.4
Switzerland	9.5	8.4	17.9	17.9[e]	12.8	17.0	29.8	29.8[e]
United Kingdom	16.7	13.6	30.3	33.2	20.4	20.1	40.5	44.0
United States	17.6	8.5	26.1	28.5	17.7	14.4	32.1	33.5
Mean (unweighted)	12.4	11.3	23.7	27.3	17.4	21.3	38.7	42.9
Coefficient of variation	.0.22	0.34	0.23	0.22	0.25	0.30	0.24	0.23

Notes:
(a) Current disbursements is equal to the sum of final consumption expenditure and transfer payments
(b) Data for Iceland stops in 1975-77
(c) Data for Netherland stop in 1977-79
(d) Data for Portugal stop in 1975-76
(e) Current disbursements only for Greece and Switzerland

Source: OECD, Annual National Accounts, supplemented by data from OECD, Economic Outlook, various issues.

of public expenditure was comprised on average of 45.4 per cent on final consumption expenditure, 41.4 per cent on transfer payments and 13.2 per cent on gross investment expenditure: By 1978-80, these compositional proportions had changed to 40.6 per cent, 49.6 per cent and 9.8 per cent, respectively. Government gross investment expenditure declined in a number of countries over the period, not only relative to total public expenditure, but also relative to GDP. Again, however, there are considerable deviations from these broad trends for individual countries, although the coefficients of variation show little change in the overall variability across countries in the public expenditure share components. A slight increase in the measured variability of final consumption expenditure shares is offset by a similar decline in the variability of the transfer payments expenditure shares.

3. A Simple Political Institutionalist Model

The empirical analysis which follows begins from the proposition that the growth of government - and hence public expenditure - is the outcome of a complex nexus of economic, social and political interactions (3). Any explanation that does not take account of all of these factors and their interactions will necessarily be incomplete. The problem in practice is how to operationalise and hence assess the quantitiative impact of those social and political factors where conceptual and measurement difficulties abound. Ultimately, of course, all increases in public expenditure must reflect some combination of

increased demand for public services (or transfer payments) and increased costs of supplying a given level of provision. But for these factors to be translated into increased spending, account must be taken of the historical, social and political climate within which competing demands and other pressures are formulated, pursued and resolved. The broader background thus not only influences the relation between preferences and outcomes but also affects the preferences themselves. In this context, the approach of this paper has much in common with recent work by Lindbeck (1985b) on the growing importance of redistribution policy in government budgets, and with Wildavsky's (1985) emphasis on the importance of cultural factors in explaining the growth of government. In contrast, the conventional public choice perspective which emphasises optimisation within a given socio-political framework pays less attention to interactions between the framework itself and the preferences that develop within it (4).

Lindbeck's recent analysis emphasises the importance of looking beyond the more apparent motives which drive the demand for redistributive interventions by government. Account must also be taken of those background factors such as technological and demographic conditions which set the socio-economic framework within which motives are formulated and pursued. Furthermore, the targets and instruments of redistribution policy influence the driving forces and conditions that initiate further policy demands. Both Lindbeck and, more explicitly, Wildavsky (1985) emphasise the important role that governments play in shaping the overall social and political climate, and thus in influencing

what the community expects from, and demands of, government itself. In this way, the size of government and the scope of its intervention will ultimately have an important influence on the aspirations and demands for further government expansion.

In recognition of the important contributions noted above, a simple model is outlined which explains the size and growth of government in institutional terms which reflect historical and cultural influences, as well as the basic political structure and process (5). The role of economic factors in this model is extremely limited, although the results nevertheless provide some useful insights into the processes through which economic factors may exert their influence. These matters are pursued in more detail in the following section.

The basic model begins with the simple proposition that a key determinant of the share of public expenditure in GDP is the value that this share has attained in the past. This relationship needs to be interpreted as a long-run phenomenon, this being the main focus of the current study. It is not intended, for example, to reflect the fact that public expenditure is notoriously inflexible in the short-run and thus exhibits a considerable degree of lagged dependence over periods of up to five years or so. Rather, the relationship specified here is intended to reflect the idea that what we currently expect from government - and thus are willing to finance through higher taxes - is very much conditioned by the economic and social environment in which we find ourselves, and that this in turn is conditioned by the degree of government involvement in

the past. Or to put the point somewhat differently, fundamental preferences for the degree of government involvement in the economy differ across countries, in part reflecting what that society has become accustomed to in the past (6). These historical and cultural differences will be influenced by economic and political factors, but they will ultimately be reflected in past levels of public expenditure; and they will thus in turn influence existing levels (7).

On this interpretation, the ratio of public expenditure to GDP in the past is to be interpreted as a taste or preference variable, reflecting those basic historical, social and cultural differences between countries which defy quantification or measurement. Although these factors are difficult to quantify, they are unlikely to change significantly, except over very extended periods of time, or in the most extreme social, political or economic circumstances (8). It is thus safe to assume that they are contant over the length of time considered here. In order to make the basic idea operational, the share of public expenditure in GDP at the beginning of the sample period (i.e. averaged over the years 1960-62) has been selected as a major determinant of the public expenditure share in the period 1978-80, reflecting those historical and cultural factors referred to above. For ease of exposition, this variable will be referred to as the lagged dependent variable (LDV) in the following discussion and tables; it should be noted that the precise definition of LDV varies for each of the main public expenditure measure under consideration, being the value of each particular measure averaged over the 1960-62 period.

Table 2: Estimates of the Basic Models [a]

Equation Number	Dependent Variable	Independent Variables: [b] Intercept	LDV	NELEC	FEDDUM	$\bar{R}^2$
(1)	TPE_{78-80}	8.496 (1.41)	1.260*** (5.85)			0.61
(2)	FC_{78-80}	2.327 (0.83)	1.216*** (5.48)			0.58
(3)	TP_{78-80}	6.810** (2.39)	1.278*** (5.36)			0.57
(4)	CD_{78-80}	7.308 (1.25)	1.323*** (5.48)			0.58
(5)	TPE_{78-80}	4.056 (0.68)	1.233*** (6.68)	0.276* (1.92)	-7.698*** (2.94)	0.72
(6)	FCE_{78-80}	-1.564 (0.59)	1.137*** (6.00)	0.208*** (3.17)	-2.295* (1.93)	0.71
(7)	TP_{78-80}	5.957 (1.50)	1.258*** (5.51)	0.083 (0.74)	-4.022* (1.97)	0.61
(8)	CD_{78-80}	2.054 (0.33)	1.305*** (6.02)	0.282* (1.91)	-6.381** (2.37)	0.66

Notes: (a) The data used is that presented in Table 1 for the 22 OECD countries which form the cross-section sample. Estimated t-statistics are shown in brackets, and */**/*** indicates statistical significance at the ten/five/one per cent level (two-tailed tests).

(b) The independent variables used here and in the following tables are discussed in the main text and defined in the Appendix. LDV refers to the value of the dependent variable in the base period, i.e. averaged over the years 1960-62.

Estimates of the simple distributed lag model for the shares in GDP of total public expenditure (TPE), final consumption expenditure (FCE), transfer payments (TP) and current disbursements (CD = FCE + TP) are presented in equations (1) - (4) in the top half of Table 2 (9). These results point to a very close relationship across countries between the public expenditure shares at the end and beginning of the sample period, despite the considerable differences in the individual country experience already discussed. The explanatory power of LDV alone is strong, with close to 60 per cent of public expenditure share variations explained by this factor alone. The relationship is strongest for total public expenditure, although it remains very important for each of the major public expenditure components.

In all cases, the coefficient on the lagged variable is significantly greater than one, implying a positive relation between the size of the public expenditure share at the beginning of the sixties and its increase over the subsequent two decades. These results thus cast some doubt on the relevence of simple "international convergence" or "catch-up" theses of the growth of government, which imply a negative relation between the initial size of public expenditure and its subsequent growth. It is, of course, possible that use of a different meausure of the size of government (per capita public expenditure, for example) and different time periods might lend support to the convergence hypothesis. But since this particular aspect is not the main focus of this study, no attempt has been made to explore these possibilities further. Finally, it is worth observing that these basic equations (and those which follow) can be transformed into

equations explaining the absolute growth of public expenditure, by deducting the variable LDV from both sides. For this reason, separate equations explaining the growth of public expenditure have not been investigated.

The simple distributed lag model was extended to include two additional variables, both designed to capture elements of the underlying political and institutional background. The first variable is intended to reflect the degree of vote-bidding by politicians competing for office. The underlying rationale for this effect is that politicians will offer electorates increased levels of public expenditure during and immediately prior to election campaigns in order to increase their probability of (re-) election. One premise on which this argument is based is that voters fully appraise the benefits associated with increased public spending, but do not perceive the full costs (on current and/or future voters) associated with the implied increases in taxation and/or borrowings to finance budget deficits. However, this argument can equally well apply in reverse if the perceived costs associated with financing increased public expenditure exceed the associated perceived benefits (10). A second argument (not exclusive of the first) is that the beneficiaries of higher public spending will voice their support more vigorously than those who bear the associated cost, particularly when the former group are considerably smaller in number than the latter, and more easily organised. In such cases, the gains per person to the former group will far exceed the costs per person to taxpayers at large (11).

The important point, however, is that whatever the direction of these effects, they will exert more of an influence on public expenditure the more frequent are federal elections (12). The variable NELEC was thus defined as the number of national elections taking place in each country, standardised for the length of the sample period (13). The second variable (FEDDUM) was a simple zero-one dummy variable taking a value of unity in federal nations and zero elsewhere (14). The anticipation of a relation between FEDDUM and public expenditure is based on the view that the degree of centralisation of government has an influence on the possibilities for voters to affect the growth of public expenditure. There is a presumption in much of the literature (e.g. Breton; 1974) that a greater degree of decentralisation will lead to less public expenditure than otherwise, as voters have more possibilities to check excessive government expansion. On this argument, one would expect the sign on the variable FEDDUM to be negative. In contrast, Oates (1985) has argued that it is not possible a priori to determine the direction of the impact of the degree of fiscal centralisation on the size of public expenditure. Using standard public choice arguments, he notes that in a centralised system the level of public spending will conform to the preferences of the "overall" median voter. In a federal system the levels of public spending in each jurisdiction will conform to the preferences of the median voter within that jurisdiction. Wihtout additional information on voter tastes and locations, it is not possible to determine which of the two outcomes has the largest level of public expenditure.

Inclusion of these two new variables produced the results shown in the lower half of Table 2. The coefficients on both variables are, with one exception, significant and they do not detract from the important role played by the lagged variable, LDV. The positive coefficient on NELEC supports the vote-bidding hypothesis, and it appears that policitians respond to this by spending more public funds, primarily on provision of goods and services. There is no evidence that the frequency of elections has influenced public expenditure on transfer payments. The size of the coefficient on NELEC implies a rise in the total public expenditure share of 1.3 percentage points for each national election over the sample period, illustrating the importance of short-term electoral influences in the context of longer-term public expenditure trends (15). The coefficients on FEDDUM are all negative and significant, thus supporting the view that the greater degree of decentralisation in federal countries is associated with lower levels and growth rates of public expenditure (16). For public expenditure as a whole, this latter effect is numerically very important, implying an average expenditure share in federal countries some 7.7 percentage points below that in non-federal countries. Almost all of this reduction takes the form of lower current expenditure, mainly lower spending on transfer payments.

The results in the lower half of Table 2 thus provide strong support for the importance of basic political and institutional factors, in addition to longer-term historical and cultural influences, in determining the size and growth of public expenditure in OECD countries. The identified variables are

highly significant and quantitatively important, while the overall explanatory power of this basic model is high. There is, however, no explicit role in the model for economic factors, or other influences likely to affect the demand for, or costs of, public provision of goods and services, or for transfers. The role of such factors in determining public expediture shares is considered in more detail in the following section.

4. Additional Influences on the Size of Public Expenditure

In this section of the paper, a range of alternative explanations for the size and growth in public expenditures are considered. Of particular interest is the role that these factors play, either in addition to those factors already included in the basic model, or as replacements for them. In selecting the variables and hypotheses to test, attention is focused on those explanations of the size and growth of public expenditure that have featured most prominently in the literature to date. The additional influences to be considered fall under the following four categories of explanation; (i) Economic Performance; (ii) Revenue Structure; (iii) Demographic Factors; and (iv) Degree of Openness. Each of these explanations will first be considered separately, and then in combination where further analysis seems warranted. The additional variables employed are defined more precisely in the Appendix.

(i) Economic Performance

There are several ways in which the performance of the economy might be expected to impact on the development of public

expenditure. Higher rates of economic growth, for example, raise the capacity to finance increased public spending without needing to raise tax rates. Furthermore, increased capacity to pay will be accompanied by lower demands on public funds to finance unemployment benefits if economic growth is accompanied by high levels of employment. Against this, increased growth may produce demands for more spending in areas such as infrastructure investment and research and development. The net impact of economic growth on public expenditure is thus uncertain, although there is normally the presumption that the relationship will be inverse.

Related to the impact of economic growth on public expenditure is Wagner's law, which concerns the impact of the level of per capita national income on the share public expenditure in GDP. At its most basic level, Wagner's Law asserts that the income elasticity of demand for publicly-provided goods, services and transfers is greater than unity. As Bird (1971) has pointed out, there is nothing inevitable about this proposition that deems it worthy of the status of a law. Rather, it is an empirical observation that is testable, although two observations should be noted in the context of attempts to test it; first as Bird (1971) has observed, an international cross-section framework may not be appropriate for testing a hypothesis that is intended to explain economic developments over time within individual countries; second, and more fundamentally, the hypothesis relates explicitly to the demand for publicy-provided goods, whereas its testing is often based on public expenditure equations that are an amalgam

of demand and supply influences, a point emphasised by Borcherding (1985), Lyback (1986), and also by Smith (1978), albeit in the context of Baumol's (1967) unbalanced productivity growth model. Both difficulties apply to the current study, and for this reason the results reported below should be treated with caution.

Aspects of economic performance other than the level and growth of national income may also influence the public expenditure share. The impact of unemployment, for example, has already been referred to. The fact that spending on unemployment compensation is a very small proportion of total public expenditure suggests that this effect may be small, although it may have been more important at the margin (17). There is also the possibility that increased unemployment has put upward pressure on other areas of public expenditure, as well as inducing governments to introduce new initiatives in response to the growing number of unemployed people(18).

A third aspect of economic performance which may influence trends in public expenditure is the rate of inflation. Again, however, it is not clear what the net direction of any impact is likely to be. On the one hand, high inflation over a sustained period provides governments with fiscal drag as a means to finance increase public expenditure without needing to increase nominal tax rates, assuming that the tax system is not fully indexed. Against this, higher underlying rates of inflation may discourage governments from increasing public expenditure for fear that they may exacerbate demand pressures and/or add to cost

pressures when taxes are raised.

The relationship between economic performance and public expenditure shares is, of course, not necessarily uni-directional. Indeed, the view that the growth in public expenditure is an important causal factor behind the decline in economic performance has been widely expressed in recent years. To the extent that such a view is consistent with the kind of international cross-section data employed here, one is faced with simultaneity problems which raise questions of econometric technique and interpretation of results. However, much of the relevant international cross-section evidence does not confirm the view that public expenditure shares (or changes therein) are significantly related to either economic performance or to its downturn in recent times(19). In light of this evidence, simultaneity problems do not seem to be serious in practice, and they will thus not be considered further.

The impact of economic growth on public expenditure was tested by including two alternative variables into the basic model outlined in the previous section. These were, respectively, the average annual rate of real GDP growth over the sample period (ECGTH), and the average annual rate of per capita GDP growth (PCECGTH). For each of the four public expenditure measures, the estimated relation with both growth variables was inverse, although in only one case was the variable significant (at the ten per cent level). The results thus provide no evidence in support of the view that increased economic growth has led to higher public expenditure shares, at least over the

two decades up to 1980.

The impact of unemployment was also tested using two alternative measures. The first (UN80) measured the unemployment rate at the end of the sample period, while the second (CHUN) measured the change in unemployment over the sample period. In order to avoid problems associated with trends in participation rates, both unemployment variables were expressed as a percentage of the total population rather than the labour force. This definition also seems most appropriate to explain the share of public expenditure in total income in the economy, as opposed to labour income only. Both unemployment variables performed poorly, never approached significance and had negative coefficient estimates in all cases. Thus whatever the direct impact of unemployment on unemployment compensation expenditure itself, these effects do not translate into higher public expenditure shares overall.

The impact of inflation was assessed by including in the basic model the variable CPI, which measures the average annual rate of consumer price inflation. This produced the results shown in the top half of Table 3. The coefficient on CPI is negative in all four cases and significant for three of the public expenditure measures. The performance of the other variables is broadly unchanged, although the size and significance of FEDDUM is increased slightly. These results thus suggest that countries experiencing lower inflation rates have been characterised by higher public expenditure shares, particularly in the form of increased spending on transfer

Table 3: The Effects of (a) Inflation and (b) Revenue Structure on the Share of Public Expenditure in GDP[a]

Equation Number	Dependent Variable	Independent Variables[b] Intercept	LDV	NELEC	FEDDUM	CPI	TAXVIS	$\bar{R}^2$
(9)	TPE_{78-80}	13.850* (1.84)	1.134*** (6.31)	0.259* (1.93)	-10.101*** (3.69)	-0.821* (1.93)		0.76
(10)	FCE_{78-80}	0.571 (0.15)	1.081*** (5.33)	0.206*** (3.11)	-2.773* (2.08)	-0.174 (0.82)		0.70
(11)	TP_{78-80}	15.742*** (3.50)	1.109*** (5.75)	0.053 (0.57)	-6.714*** (3.57)	-0.904*** (3.13)		0.74
(12)	CD_{78-80}	15.319* (2.01)	1.130*** (5.56)	0.257* (1.97)	-9.430*** (3.53)	-1.053** (2.49)		0.74
(13)	TPE_{78-80}	-4.244 (0.59)	1.115*** (5.99)	0.286** (2.11)	-7.183** (2.89)		0.240* (1.80)	0.75
(14)	FCE_{78-80}	-3.115 (0.89)	1.080*** (5.18)	0.212*** (3.17)	-2.165* (1.77)		0.046 (0.70)	0.70
(15)	TP_{78-80}	-4.743 (0.98)	1.106*** (5.63)	0.081 (0.87)	-3.496* (2.04)		0.266*** (3.00)	0.73
(16)	CD_{78-80}	-8.134 (1.15)	1.119*** (5.32)	0.291** (2.19)	-5.689** (2.33)		0.306** (2.31)	0.73

Notes: (a) See Notes to Table 2
(b) Variables are defined in the Appendix

payments.

The last hypothesis to be tested was Wagner's Law, that the public expenditure share is related to the level of per capita income. The variable used to test this (PCY80) was expressed in US dollars at current (ie.1980) exchange rates. When this variable was included in the basic model in place of the lagged dependent variable, it was positive and significant in all cases except FCE. However, the explanatory power of these equations was much lower than for the basic model as shown in Table 2. Furthermore, when PCY80 and LDV were included together, the per capita income variable became insignificant, while LDV remained similar in size and significance to that shown in Table 2. These results thus suggest that while the evidence may be consistent with Wagner's Law, this does not offer the most powerful explanation of differences in public expenditure shares among industrialised economies (20).

(ii) Revenue Structure

The argument that government's ability to finance public expenditure may depend upon the precise methods used to raise revenue, is well-known. This idea has been emphasised by Wilensky (1981) who argues that the visibility of taxes is an important determinant of the public's willingness to pay them. Buchanan (1967) and Baumol and Oates (1985) have also emphasised that the tax structure will affect the actual (and perceived) distribution of tax-prices faced by individuals if public spending increases. It will therefore influence the degree of

community support for spending increases. In addition, where the revenue structure is such that individuals have difficulty establishing what their tax-prices actually are, the resulting fiscal illusion may lead to more support for increments to public expehditure than would occur under different revenue systems. These arguments suggest that the structure of government revenues may play an important role in determining the overall size of public expenditure (21). In attempting to test this proposition it must be borne in mind that what is relevant are voters' perceptions as to the degree of visibility of alternative taxes, which leaves the identification of visible taxes as somewhat ambiguious.

There is a second way in which the structure of government revenue may influence the total amount of funds available to governments. It can be argued that government borrowing to finance budget deficits is the least visible form of revenue, as no apparent burden is placed on current taxpayers. The validity of the argument underlying this idea has been the subject of extensive debate in the public economics literature. An alternative view - the Ricardian equivalence theorem - argues that budget deficits ultimately involve higher taxes, both to finance interest payments and to redeem public debt. Thus if taxpayers are rational, and if they take account of the welfare of future generations of taxpayers, imposing taxes now or deferring them through issuance of public debt makes no real difference.

A number of alternative variables were defined in order to

test for the impact of the structure of the revenue system. In each case, revenues collected from the identified subset of visible taxes were expressed as a proportion of total current receipts and averaged over the entire sample period. The first variable (TBDNI) includes as visible taxes all direct taxes as defined in the National Accounts; TBDN2 was defined as TBDNI plus social security contributions (by employees and employers). One problem with these two measures is that they both include taxes on corporate incomes, although it is difficult to argue that these are particularly visible. To overcome this, a third variable (PINCTAX) included the personal income tax as the only form of visible tax. Finally, the variable TAXVIS was defined as PINCTAX plus social security contributions.

In almost all cases, the visibility variables appeared with a positive sign, suggesting that fiscal drag has been a more important determinant of public expenditure trends than fiscal illusion. TBDN2 performed better than TBDN1, while TAXVIS performed better than PINCTAX, both results indicating that social security contributions are an important element in tax visibility. In all cases except FCE, the variable TAXVIS peformed best overall and was significant; the relevant results are reproduced in the lower half of Table 3. The significance of TAXVIS implies that the structure of taxation does influence the level of public expenditure in relation to GDP. However, since the coefficient on TAXVIS is positive, not negative as Wilensky's arguments would suggest, the underlying causal mechanism may be more the result of the interaction between high rates of inflation and hence nominal income growth, and progressive

elements in the tax system.

The other version of the visibility hypothesis also received very little support from the evidence. This version was tested by including the variable DEFFIN, defined as the average ratio of the budget deficit to total public expenditure, into the basic model. The variable appeared with the incorrect negative sign in all cases except expenditure on transfer payments. It was also insignificant in all cases, particularly for total public expenditure where one would expect it to perform best. The general insignificance of DEFFIN is consistent with Ricardian equivalence, although the strength of this evidence is extremely weak and not much weight should be attached to this aspect of the results.

(iii) Demographic Factors

Different groups in the population benefit from public expenditures to varying degrees and may thus be expected to support different levels of public spending, or a different composition of a given level of spending. The demand for public expenditure and for it components will thus depend upon the demographic structure of the population. This is not to deny the existence of conflicts, for example between the current generation of retired people who may be expected to favour more spending on age pensions and health now, and the current working population who may object to financing these outlays and be more concerned with the implications of existing arrangements for spending on the future generations of retirees. The age structure of the population will also affect the extent to which

existing entitlements to age-related benefits are translated into public expenditures on the relevant programmes. Indeed, a major longer-run concern in many OECD countries at the current time is whether the expenditure implications of existing entitlements to age pensions are sustainable in a situation where the proportion of aged people in the total population is expected to rise sharply in three to four decades.

In order to assess the extent to which the age structure of the population has affected the level and composition of public expenditure, two variables were defined: the first (OAPOP) measures the proportion of the total population aged 65 and over, and the second (YGPOP) measures the proportion of the total population aged 15 and under. A third variable (NWPOP) was defined as the sum of OAPOP and YFPOP; it is equal to the overall dependency ratio, or one minus the proportion of the population of working ages (i.e. between the ages of 15 and 65).

The locational structure of the population may also be expected to influence public expenditure. A heavily-urbanised population, for example, may allow public services to be provided at lower cost because of the possibilities to exploit economies of scale. While this hypothesis has implications that operate on the supply of (rather than the demand for) public services, these will nevertheless also translate into higher levels of expenditure. However, it is worth noting that Wagner emphasised the potential impact of urbanisation on public expenditure, in the context of the process of industrialisation. On this argument, the effect is expected to be positive, reflecting the

increased urbanisation which accompanies economic development, and the concommittant increased demand for public services and infrastructure.

In order to assess the overall impact of urbanisation, the variable URBDEN was defined to measure the proportion of the total population living in urban areas. When this variable was included in the basic model, the coefficient on URBDEN was negative in all four cases, providing more support for the supply-side explanation outlined above. However, the variable was not significant, although close to being so in three cases. It performed least well in the case of final consumption expenditure, where one would expect urbanisation to have its greatest effect (aside from public investment which is not considered separately here). This aspect of the results thus casts some doubt on their interpretation, and for this reason they are not presented in detail or discussed further.

The results presented in Table 4 assess the impact of the age structure of the population on public expenditure. They support the view that public expenditure absorbs a greater proportion of GDP in countries where the aged represent a greater proportion of the total population. On statistical grounds, the effect shows up strongest in the case of final consumption expenditure on goods and services. Spending on transfers - a large component of which is age pensions in most countries - is, surprisingly, not significant, although total current expenditure is, with a numerical response that is large. The estimated coefficient implies that the share of total current expenditure

Table 4: Age Structure of the Population and Public Expenditure as a Share of GDP[a]

Equation Number	Dependent Variable	Independent Variables:[b] Intercept	LDV	NELEC	FEDDUM	OAPOP	YGPOP	R^2
(17)	TPE_{78-80}	-2.626 (0.39)	1.054*** (5.23)	0.271* (1.99)	-7.597*** (3.07)	0.942* (1.77)		0.75
(18)	FCE_{78-80}	-5.564 (1.92)	0.930*** (4.88)	0.209*** (3.67)	-2.119* (1.99)	0.524** (2.36)		0.77
(19)	TP_{78-80}	0.653 (0.12)	1.086*** (4.36)	0.067 (0.52)	-4.010* (2.08)	0.617 (1.49)		0.63
(20)	CD_{78-80}	-5.194 (0.77)	1.029*** (4.24)	0.270* (1.98)	-6.205** (2.49)	1.132* (2.07)		0.71
(21)	TPE_{78-80}	12.999 (0.97)	1.178*** (5.86)	0.252 (0.15)	-7.893*** (2.97)		-0.293 (0.75)	0.71
(22)	FCE_{78-80}	1.534 (0.27)	1.101*** (5.47)	0.200*** (2.93)	-2.344* (1.93)		-0.106 (0.61)	0.70
(23)	TP_{78-80}	16.090 (1.69)	1.156*** (4.77)	0.048 (0.42)	-4.286** (2.11)		-0.347 (1.17)	0.61
(24)	CD_{78-80}	14.539 (1.04)	1.209*** (5.10)	0.247 (1.63)	-6.630*** (2.45)		-0.402 (0.99)	0.66

Notes: (a) See Notes to Table 2
(b) Variables are defined in the Appendix

in GDP rises by just over 1.1 percentage points for each percentage point increase in the share of the aged in the total population(22).

The results in the lower half of Table 4 suggest an inverse relation between the share of young people in the population and public expenditure, although this effect is not significant. The sign of this effect is somewhat surprising, since much public expenditure on such items as child care, pre-schools, health and family transfers is targeted on the young. However, whilst the aged can translate their preferences for public expenditures into voting strategies intended to influence decision making, voting rights are not extended to those aged under fifteen. This line of argument suggests that those aged over fifteen have been prepared to vote for higher public spending to meet their own increasing needs, but have not at the same time agreed to reductions elsewhere, where needs have grown less slowly or even declined. It suggests that the longer-run pressures on public expenditure arising from higher old-age dependency ratios will not in practice easily be offset by lower demands due to the projected decline in child-dependency ratios (23).

Finally, when the two demographic variables were combined to produce the total dependency ratio variable (PNW), a positive relation with all public expenditure variables except transfers was observed. However, the estimated coefficients were not significant, and because of this, along with the fact that these do not add materially to earlier results, details are not presented or discussed further.

(iv) Degree of Openness

One of the most notable findings of Cameron's (1978) study was the important positive relationship established between the growth of the public economy (measured in his study by the share of revenue in GDP) and the degree of dependence on international trade. Indeed, Cameron's results led him to conclude that; "... the openness of the economy is the best single predictor of the growth of public revenues relative to the economic product of a nation"(Cameron, op.cit., p.1254). A similar strong relationship between the share of total public expenditure in GDP and the degree of openness was evident in the results of Saunders and Klau (1985; Table 38, p.116), although they expressed some caution over the interpretation of this particular finding. Cameron drew upon earlier writings which suggested that the greater vulnerability of the domestic economic situation in open economies to conditions in the international trading system overall can be offset by increased state intervention (24). The argument has been applied by Lindbeck (1975;1976) to explain the growth of Welfare State expenditure in the Scandinavian countries.

Put simply, the argument suggests that governments can,through interventionist policies, dampen the effects on the domestic economy of disturbances arising elsewhere in the open trading system. Their ability to achieve this is likely to be greater the larger is the overall scope of government intervention, although it is changes at the margin that are of

prime importance. Thus the operation of automatic stabilisers like unemployment insurance and the income tax assist in this task, although labour market policies, subsidies and social insurance schemes may reinforce these effects. As Cameron himself asserts; "Governments in small open economies have tended to provide a variety of income supplements in the form of social security schemes, health insurance, unemployment benefits, job training, employment subsidies to firms, and even investment capital" (Cameron, op.cit., p.1260). Thus an important implication of the argument is that increased government intervention in open economies should primarily be in the form of income maintenance, broadly defined, or what corresponds most closely to the National Accounts concept of transfer payments.

It is certainly the case that public expenditure grew most rapidly over the sample period in a number of small open economies, where Cameron's arguments seem most relevant. However, an alternative explanation is that this reflects the smallness of these economies, rather than their openness. On this argument, the aggregate size of the economy will determine the extent to which there is scope for economies of scale in the provision of public services. The larger the economy, the greater such possibilities and thus ceteris paribus the lower the level of public expenditure required to support a given level of public services. Note that this argument is most applicable to explain developments in public spending on goods and services rather than transfer payments.

It is difficult in practice to distinguish between these two

hypotheses, because the degree of openness is quite strongly inversely related to overall economic size (25). However, the two hypotheses have different implications for the structure of public expenditure. In particular, the openness hypothesis points to higher spending on transfers in open economies, while the economies of scale argument points to higher spending on provision of collective goods and services in small economies. This observation thus provides the key to how the hypotheses may be distinguished empirically. In order to test and thus compare them, two new variables were defined; the first (TRADE) was defined as the average size of exports and imports in GDP, and the second (AGSIZE) as aggregate GDP expressed in US dollars. These two variables were included separately into the basic model, and produced the estimates shown in Table 5.

The first four equations in Table 5 show the TRADE variable to have the correct sign and to be significant in two instances. The inclusion of the TRADE variable reduces somewhat the size of the other coefficients in the equation other than those on NELEC (cf.Table 2), and the significance of the variable FEDDUM is reduced. However, the most important aspect of these first four equations is that the TRADE variable is insignificant in the transfer payments equation, whereas the above discussion suggests that this component of public expenditure should be most responsive to the underlying openness arguments. When the TRADE variable is replaced by the variable AGSIZE, it appears with the anticipated negative sign in all four equations and is significant in three of them. In the equation for final consumption expenditure, where the AGSIZE variable is most

Table 5: Testing the Degree of Openness and Economies of Scale Hypotheses [a]

Equation Number	Dependent Variable	Independent Variables:[b] Intercept	LDV	NELEC	FEDDUM	TRADE	AGSIZE X10^3	$\bar{R}^2$
(25)	TPE_{78-80}	2.508 (0.47)	1.059*** (5.91)	0.293** (2.34)	-6.145** (2.55)	0.160** (2.41)		0.78
(26)	FCE_{78-80}	-3.575 (1.28)	1.143*** (6.36)	0.211*** (3.38)	-1.796 (1.54)	0.051 (1.73)		0.74
(27)	TP_{78-80}	5.175 (1.34)	1.034*** (3.84)	0.085 (0.79)	-3.207 (1.56)	0.092 (1.47)		0.63
(28)	CD_{78-80}	0.828 (0.14)	1.148*** (5.14)	0.295** (2.11)	-5.107* (1.92)	0.128* (1.76)		0.70
(29)	TPE_{78-80}	4.322 (0.79)	1.267*** (7.46)	0.263* (1.99)	-5.600** (2.28)		-4.030* (2.10)	0.76
(30)	FCE_{78-80}	-3.071 (1.59)	1.358*** (9.31)	0.187*** (3.95)	-0.988 (1.09)		-3.069*** (4.23)	0.85
(31)	TP_{78-80}	6.338 (1.55)	1.246*** (5.33)	0.080 (0.71)	-3.619 (1.63)		-0.896 (0.54)	0.59
(32)	CD_{78-80}	2.115 (0.37)	1.350*** (6.64)	0.269* (1.96)	-4.590 (1.71)		-3.883* (1.93)	0.71

Notes: (a) See notes to Table 2
(b) Variables are defined in the Appendix

relevant, it is highly significant, although here (and elsewhere) the significance of the variable FEDDUM is again reduced. The only case where the AGSIZE variable produces noticeably inferior results to TRADE is in the case of transfer payments. However, the arguments underlying the inclusion of AGSIZE do not apply in this case and, as already observed, TRADE is itself not significant in this case. Overall, the results thus support the view that the economies of scale argument has more merit than the openness arguments proposed by Cameron.

(v) A Combined Explanation

Thus far in this section, the additional hypothesis and variables have each been considered in isolation. It remains to combine them into a single explanation which will replace the basic model of the previous section. As a first step in this process, the variables shown to be of importance as a result of the foregoing analysis, ie. CPI, TAXVIS, OAPOP and AGSIZE, were included together in a single equation. When this was done, the only variable which remained significant was the economies of scale measure, AGSIZE (26). The inflation variable (CPI) performed particularly poorly and was the first variable to be dropped from the analysis. Omission of CPI led to an improvement in the performance of the revenue structure variable, TAXVIS. This is not unduly surprising, since the visibility of taxes (and hence TAXVIS) is itself a reflection of fiscal drag resulting from continued inflation over the sample period (27). Thus these two variables are best seen as reflecting different aspects of the same underlying phenomenon, rather than competing explanations. In light of the superior performance of TAXVIS and

the greater plausability of the arguments which support it, this variable, rather than the inflation variable (CPI), was kept for further investigation.

Further experimentation with the three remaining variables produced the results shown in Table 6. While the variables TAXVIS and AGSIZE remained significant, this was not the case for the demographic structure variable (OAPOP), which was insignificant in all cases, even when the variable TAXVIS was excluded. However in this latter case, shown in equations (41)-(44), the coefficient on OAPOP was numerically quite large and was close to significance in all four instances. Thus while these results reinforce the important impact of tax visibility and economies of scale considerations, they provide less clear-cut evidence on the significance of demographic structure for public expenditure shares. Of the variables included in the basic model, the lagged dependent variable and the election frequency variable both remained significant and seem robust. In contrast, the federal dummy variable (FEDDUM) remained significant in the case of total public expenditure, but not for its components. However, the estimates suggest that the lower public spending which characterises federal nations primarily takes the form of lower current expenditures. The results in Table 6 thus indicate that while historical and political factors have an important role to play in explaining international differences in public expenditure, economic factors also contribute to any overall explanation.

Table 6 : Estimates of the Extended Model (a)

Equation Number	Dependent Variable		Independent Variables (b) Intercept	LDV	NELEC	FEDDUM	TAXVIS	OAPOP	AGSIZE ($\times 10^3$)	$\bar{R}^2$
(33)	TPE	78-80	-6.689 (1.05)	1.104*** (6.35)	0.272** (2.36)	-4.824* (2.09)	0.291* (2.11)	0.145 (0.27)	-4.824** (2.66)	0.82
(34)	FCE	78-80	-5.904** (2.38)	1.206*** (7.21)	0.192*** (4.18)	-0.916 (1.01)	0.036 (0.57)	0.228 (1.05)	-2.818*** (3.60)	0.86
(35)	TP	78-80	-5.009 (1.00)	1.076*** (5.06)	0.077 (0.84)	-2.410 (1.30)	0.315** (2.85)	-0.088 (0.21)	-2.171 (1.51)	0.73
(36)	CD	78-80	-10.691 (1.74)	1.106*** (5.45)	0.276** (2.47)	-3.356 (1.50)	0.351** (2.63)	0.175 (0.32)	-4.775** (2.69)	0.81
(37)	TPE	78-80	-6.333 (1.05)	1.123*** (7.32)	0.273** (2.44)	-4.723** (2.14)	0.310** (2.76)		-4.984*** (3.00)	0.83
(38)	FCE	78-80	-5.374** (2.20)	1.284*** (8.56)	0.192*** (4.16)	-0.754 (0.84)	0.067 (1.47)		-3.174*** (4.49)	0.86
(39)	TP	78-80	-5.286 (1.13)	1.059*** (5.54)	0.075 (0.84)	-2.469 (1.39)	0.302*** (3.41)		-2.094 (1.55)	0.75
(40)	CD	78-80	-10.310* (1.77)	1.137*** (6.62)	0.277** (2.56)	-3.242 (1.51)	0.374*** (3.39)		-4.973*** (3.08)	0.82
(41)	TPE	78-80	-1.163 (0.18)	1.117*** (5.84)	0.260* (2.05)	-5.990** (2.43)		0.769 (1.52)	-3.505* (1.87)	0.78
(42)	FCE	78-80	-5.206** (2.35)	1.207*** (7.35)	0.191*** (4.23)	-1.062 (1.23)		0.307 (1.71)	-2.654*** (3.63)	0.87
(43)	TP	78-80	1.085 (0.20)	1.081*** (4.23)	0.066 (0.59)	-3.684 (1.71)		0.602 (1.41)	-0.715 (0.44)	0.61
(44)	CD	78-80	-3.917 (0.60)	1.113*** (4.69)	0.262* (2.01)	-4.775* (1.88)		0.940 (1.71)	-3.166 (1.62)	0.74

Notes: (a) See Notes to Table 2

(b) Variables are defined in the Appendix

5. Some Implications of the Results

The results in Table 6 highlight the role played by historical, political and economic factors in the determination of the size and composition of public expenditures in OECD countries. The estimated equations provide support for several of the hypotheses outlined in the previous section, and they explain between 60 and 85 per cent of the observed inter-country variation in public expenditure which, as Table 1 highlights, is considerable. Although a considerable part of this overall explanation is due to the lagged variable alone (cf. Table 2), the additional variables are also significant and thus have a role to play in explaining the observed differences in public expenditure shares. It is thus of interest to explore some implications of these results, particularly those relating to recent attempts by OECD governments to curtail public expenditure. It is important to stress at the outset that this discussion should be treated with some caution. Its aim is not to question those conclusions which emerge from more detailed analysis of individual countries, but rather to highlight some general tendencies which may be profitably be explored in more detail on a country by country basis.

First, the role played by the lagged dependent variable throughout the analysis suggests a fundamental difficulty in trying to reduce the share of public expenditure in GDP. One aspect of the results that has been stressed throughout this paper is that what is expected of, and demanded from, governments is conditioned in part by past levels of government intervention. Unless this link between current aspirations and

demands and previous levels of public provision is severed, there will be relatively little prospect of a sustained reduction in public expenditure shares. This is not to deny the possibility of some basic reassessment of the role of government - indeed, many would see evidence of exactly this process currently underway in a number of countries - but to caution against undue optimism over the time taken for this to be translated into action. Governments have taken a long time to grow to their current size, and it is probably unrealistic to expect any immediate or dramatic decline. This line of argument also helps explain the apparent paradox that public opposition to the size and growth of government appears as strong in countries with large public expenditure ratios as in countries with much smaller ratios. This paradox is resolved once it is recognised that what is currently acceptable in terms of public expenditure is dependent upon perceptions of the role of government, which are in turn conditioned by past levels of government involvement in the economy.

Second, the results indicate that an essential requirement of any attempt to cut public expenditure shares is for politicians to cease those vote-buying tendencies to increase public spending which have characterised past electoral cycles. Again, this change is unlikely to take place quickly and in any case will depend upon (and hopefully respond to) changes in voter attitudes themselves.

Third, there is little likelihood that the economic factors highlighted in Table 6 will contribute significantly to any

future declines in public expenditure. There is clearly little that can be done to influence the scope for economies of scale in public service provision(although, of course, it may be possible to improve the efficiency of public services through other means). Similarly, the tax visibility influence will only help restrain the future growth of public expenditure if governments are prepared to offset fiscal drag through implementation of full tax indexation. Although this move has occurred in a number of countries, it is by no means universal. What is perhaps more likely is that governments will come under increasing pressure to reduce their reliance on personal income taxes (and social security contributions), as taxpayers become less willing to incur clearly-visible and ever-increasing average (and marginal) tax rates on incomes and earnings. Indeed, if governments do not respond to these pressures to change revenue structures through legislation, they may take place in any case as avoidance and evasion of income taxes become more widespread. In addition, changes in demographic structure will only put further upward pressure on public expenditure. As already observed, although the coefficients on OAPOP in Table 6 are not significant, they are nonetheless numerically quite large and suggest a sizeable impact on public expenditure as a result of future increases in old-age dependency (28).

There is one final implication of the results which merits further consideration. It is possible, on the basis of the final estimates prescribed in equations (33) to (36) in Table 6, to obtain predictions of the overall level and composition of public expenditure relative to GDP for each country in the sample. Such

predictions indicate what public expenditure would be in each country if its response to those historical, political and economic factors highlighted in this study were to be the average response for all OECD countries. By comparing these predictions with actual public expenditure shares, it is then possible to highlight countries which deviate markedly from predicted behaviour for OECD countries as a whole. Such an exercise does not, of course, identify countries where public expenditure is "too large" or "too small", even assuming that it is possible to give any meaning to such statements at the aggregate level. What they do provide is a more informative basis for comparing public expenditure shares, since they take account of those differences in country characteristics which have been shown to have an impact on public expenditure.

Before presenting and discussing the results of this exercise, it is important to emphasise that they are relevant to relative public expenditure shares only. The results have no bearing on the appropriativeness or otherwise of absolute public expenditure shares in GDP across all countries in the sample. The results do, however, go beyond direct international comparisons of public expenditure shares which are of limited use since they take no account of circumstances particular to individual countries. Furthermore, they may help to identify countries where pressures to restrain (or increase) public expenditure may be most pressing, at least in the relative sense described above.

The individual country deviations from the predicted public

expenditure shares based on equations (33) to (36) in Table 6, are presented in Table 7. As always with such an exercise, the results should be treated with caution appropriate to the degree of explanatory power of the equations themselves, and the possibility that omitted variables will influence the estimated deviations. The results are, nevertheless of considerable interest, particularly when viewed in conjunction with the actual public expenditure shares shown on the right hand side of Table 1.

The three countries with positive deviations for public expenditure as a whole and for components within it, are Denmark,Ireland and Sweden. In all three countries, the public expenditure share during 1978-80 was well above the OECD average (Table 1), and Denmark and Sweden experienced the highest absolute growth in the share over the period. In the case of Denmark and Ireland, the positive deviation overall is attributable to positive deviations in both elements of current expenditure, ie. provision of goods and services, and transfer payments. In contrast, the positive deviation in Sweden is due to spending on provision of goods and services only, with no deviation in the case of transfer payments. The final positive deviation worth noting relates to relative spending on transfer payments in the Netherlands; these were not only well above the shares prevailing in all other countries by the end of the period (Table 1), but also well above the predictions based on OECD experience overall.

Negative deviations for public expenditure overall are most

Table 7 : Public Expenditure Share Deviations

(Percentage points of GDP)

	Total Public Expenditure (TPE)	Final Consumption Expenditure (FCE)	Transfer Payments (TP)	Current Disbursements (CD)
Australia	-1.77	1.17	-2.43	-1.36
Austria	2.98	-0.68	4.22*	3.46*
Belgium	-3.82*	-2.33*	-2.29	-4.82*
Canada	-1.64	-1.29	0.36	-0.60
Denmark	4.09*	1.09	2.86	4.10*
Finland	-7.86*	0.08	-6.47*	-6.32*
France	-3.32	-0.64	-0.61	-1.46
Germany	0.32	1.23	-1.57	0.50
Greece	-0.75	-0.40	0.99	0.71
Iceland	-1.22	-0.47	-2.90	-3.60*
Ireland	6.09*	2.15*	3.76*	6.01*
Italy	-0.65	-1.32	1.21	-0.13
Japan	1.05	-0.66	0.35	-0.66
Luxembourg	3.46	1.23	0.59	1.53
Netherlands	2.54	-1.43	5.78*	4.46*
Norway	-0.92	-0.19	-1.27	-1.46
Portugal	3.20	0.94	0.80	2.21
Spain	-0.56	1.09	0.32	1.21
Sweden	4.71*	2.88*	0.98	4.10*
Switzerland	-1.59	-1.13	-1.47	-2.75
United Kingdom	-6.04*	-2.03*	-4.09*	-5.87*
United States	1.70	0.70	0.88	1.75

Note : An asterisk indicates that the actual value deviates from the regression prediction by more than one standard error.

noticeable in Belgium, Finland and the United Kingdom. Of these, both Belgium and the United Kingdom had actual public expenditure shares above the average for all OECD countries; while Finland's share was not far below average (Table 1). The overall negative deviations appear to result from negative deviations in the case of service provision expenditure in Belgium, transfer payments in Finland, and a combination of both in the United Kingdom.

Of equal interest to those countries with large deviations (in either direction) are those countries with very small deviations between actual and predicted public expenditure shares. Comparisons between these small deviations and actual public expenditure shares themselves is particularly revealing. Thus, for example, both Germany and Japan have small deviations, yet the actual total public expenditure share in Germany was fifty per cent higher than that in Japan. Similarly, small deviations are apparent in Spain and Greece (where the public expenditure share is close to 30 per cent) in Canada (where the public expenditure share is close to 40 per cent), and in Norway (where the public expenditure share is close to 50 per cent).

Such observations highlight the limited usefulness of direct international comparisons of actual public expenditures. Indeed, the above analysis suggests that such comparisons may be downright misleading. The reason for this, to repeat, is that the circumstances prevailing in individual countries have an impact on the level and composition of public expenditures in that country, and meaningful comparisons of public expenditure across countries should take account of such factors. The

results discussed in this section indicate that much of the observed variation in public expenditures across OECD countries is indeed the result of different circumstances in each country.

6. Conclusions

This paper has been concerned with an empirical investigation of the factors behind the growth in public expenditure in OECD countries in the two decades up to 1980. The experience of different countries over this period was very varied, both with regard to the level of public expenditure, its composition and its growth over the period. By the end of the period, the share of public expenditure in GDP was close to sixty per cent in the Netherlands and Sweden, while in Australia, Japan, Spain and the United States it was only just in excess of thirty per cent.

The analysis in the paper indicates that although there is considerable variation across countries in the share of GDP devoted to public expenditure, it is nonetheless possible to highlight a small number of factors which contribute considerably to explaining this variation. Among the factors highlighted as having an important influence on public expenditure are previous levels of public expenditure - used here as a proxy for historical factors and their influence on fundamental preferences for public expenditure - the frequency of national elections, whether there exists a federal system of government or not, and factors such as the age structure of the population, the structure of the tax system and the overall size of the economy.

Other factors investigated but given less support by the

results include the level of per capita income and overall economic performance, although there was some support for the view that lower inflation rates have allowed governments more freedom to raise public expenditure in relation to GDP. While the evidence is consistent with certain aspects of the view that public expenditure is larger and grows more rapidly the more open is the economy, there are certain features of these particular results which lead to rejection of this hypothesis in favour of an alternative explanation focusing on the greater scope for economies of scale in larger economies.

In the final section of the paper, the results produced by the above exercise were used to derive predicted public expenditure shares, with which the actual shares were then compared. It was argued that the resulting deviations provide a more soundly-based comparison of relative public expenditure shares in OECD countries than direct comparison of actual public expenditure shares. The estimates indicated large positive deviations for Denmark, Ireland and Sweden, and large negative deviations for Belgium, Finland and the United Kingdom. More importantly, the approach highlights the limited usefulness of direct comparisons of public expenditure, and suggests that in many instances such comparisons can be quite misleading.

Given the importance of such findings, it is appropriate to end on a note of caution. It is virtually always the case that international cross-section analysis involves some sacrifice of important institutional and other details of individual countries in order to maintain a sample that is broadly comparable and

consistent. For this reason, results should be seen as no more than suggestive, pointing to areas where more detailed analysis may best be directed. In the meantime, however, the results show that the growth of public expenditure in the past has been, at least in part, in response to demographic and economic changes that have been evolving. This response has taken place within a historical, social and political framework that seems to have exerted its own independent influence. In this sense, then, the results suggest that public expenditure is not in any fundamental sense out of control. However, the results also suggest that several factors will combine to make the task of reducing public expenditure relative to GDP extremely difficult. These problems are not insuperable and can be overcome if governments themselves have the political will to do so. On the basis of the evidence to date, however, this seems most unlikely, all the more so since the current situation and aspirations for the future seem to be so heavily conditioned and influenced by past developments.

FOOTNOTES

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1. These data thus measure only those activities of government that are "on-budget": excluded are such "off-budget" items as public enterprise activities, government guaranteed loans, and various forms of regulatory intervention. Also excluded are tax expenditures, i.e. government subsidisation of individuals, enterprises and activities which take the form of tax concessions rather than direct outlays. For a discussion of the size and scope of these "off-budget" items, see Break (1982) and Saunders and Klau (1985).

2. The series for gross capital formation is not shown explicitly in Table 1 and will not figure in the results presented below: it is clear from Table 1 that public investment expenditure has grown more slowly than current expenditure, although the level of public investment expenditure has also been subject to greater cyclical variation. It is for this latter reason that it was thought inappropriate to include public investment, given the longer-term perspective adopted in this paper.

3. Comprehensive surveys of the literature on the growth of government have been provided by Tarschys (1975) and Larkey, Stolp and Winer (1981).

4. This criticism applies equally to those applications of the public choice approach which focus on the relationship between politicians and (median) voters (eg. Piltzman, 1980; Meltzer and Richard, 1981), and to those which emphasise the role of the bureaucracy in influencing agenda-setting and other aspects of decision-making processes (eg. Borcherding, 1977; Niskanen, 1971). For a critical assessment of some aspects of the public choice literature, see Musgrave (1981). Another critic is Beck (1982) who has recently argued that: "The normative literature on bureaucracy has taught us very little about the causes of public sector growth" (Beck,op.cit.,p.177).

5. No attempt has been made to test the performance of a variable measuring the political persuasion of governments, despite the fact that a number of studies (eg. Castles

(1982), and the discussion in chapter 2 of Rose (1984) point to the importance of such variables. Their exclusion here reflects the view that these variables capture societal preferences for public expenditure which are proxied by other variables, discussed further below.

6. This observation may also help explain the apparent paradox that disillusionment with government appears at least as strong and more widespread in countries like Australia and the United States with small public expenditure ratios, as it is in countries with much larger ratios.

7. As Wildavsky has recently put it, "...cultural change precedes and dominates budgetary change: the size of the State today is a function of its political culture yesterday". (Wildavsky, op.cit., p.353).

8. The relevance to Peacock and Wiseman's (1967) emphasis on the role of large scale social upheavals in determining the growth of public expenditure is obvious.

9. Hereafter, the subscripts 78-80 and 60-62 refer, respectively, to the value of the relevant variable averaged over these two periods. The sample size on which the estimates in Table 2 and subsequent tables are based is twenty two, corresponding to the countries shown in Table 1.

10. In a recent paper, Brennan (1985) has argued that the recent disillusionment with government may have arisen because the perceived benefits of expansion exceeded the perceived associated costs ex ante, whereas the reverse has applied, ex post.

11. For a recent application of this argument, see Lindbeck (1985a).

12. For an interesting attempt to assess the importance of national elections for the size and composition of government expenditure (and revenue) in Australia, see Gruen (1985).

13. As is clear from Table 1, the sample period was shortened in some countries due to lack of the relevant data. To allow for this, the variable NELEC was defined as the number of elections divided by the number of years for which the data were available, expressed as a percentage. It is thus equivalent to the average number of years between national elections, or the inverse of the average length of term of government.

14. An alternative measure of the degree of fiscal centralisation, the proportion of central government expenditures in total general government expenditure, was also experimented with. However, the results based on this variable were inferior to those using FEDDUM, and they have therefore not been presented or discussed further.

15. Taking the sample period as constituting the twenty one years 1961-1979, then the election effect for total public expenditure is equal to (0.276 x 100)/21 = 1.31.

16. A similar finding has been reported by Cameron (1978) and in a recent study by Solano (1983). Oates (1985) also finds that the ratio of tax revenues to GDP is lower among industrialised countries with federal systems of government when employing a zero-one dummy variable. His coefficient estimate is of a similar magnitude to that for total public expenditure reported in Table 2. (See Oates,op.cit.,footnote 10, p.755).

17. Between 1960 and 1980, the unemployment rate rose on average for the twenty two countries in the sample from 2.4 per cent to 4.6 per cent of the labour force. Over this period, the share of total public expenditure devoted to unemployment compensation rose from 1.2 per cent to 2.3 per cent. These latter figures refer to averages for fifteen OECD countries, and are derived from OECD (1985).

18. See, for example, the paper by Sinfield in OECD (1984) and the commentary on this paper by Sorensen.

19. See Korpi (1985); Peacocks and Ricketts (1978); Saunders (1985).

20. A similar finding is reported in OECD (1983), p.11.

21. An alternative implication of Wilensky's basic idea is that there will be a positive relation between the degree of reliance on visible taxes and the proportion of public expenditure financed by deficit-induced borrowing.

22. During the sample period, the proportion of aged persons in the population rose on average from 9.9 per cent in 1960-61 to 12.4 per cent in 78-80. Combined with the estimates in Table 4, this would have caused a rise in the share of total public expenditure in GDP of just over 2.8 percentage points, compared with the observed rise of close to 16 percentage points (Table 1).

23. In addition, it is well-known that the unit cost to public funds of aged persons has in the past far exceeded the unit cost of supporting children.

24. This argument has traditionally been applied to the situation of fixed exchange rates. Under floating exchange rates the argument may have somewhat less validity. However, for much of the sample period of this study, the fixed exchange rate assumption is the more appropriate.

25. For the sample used here, the correlation coefficient between the variables TRADE and AGSIZE was -0.49.

26. The results reported below were repeated with the variable TRADE included, both in addition to AGSIZE and as a

replacement for it. Overall, these tests confirmed the superior performance of AGSIZE and did not markedly affect the performance of the other additional variables, although the demographic variable OAPOP performed better when accompanied by TRADE than AGSIZE.

27. The sample correlation coefficient between CPI and TAXVIS was -0.55.

28. Recent population projections by the United Nations (1982) suggest a rise in the old-age dependency ratio in the OECD from 12.1 per cent in 1955 to 17.3 per cent by 2025. The estimates in equation (41) of Table 6 imply a rise in the total public expenditure share in GDP of 4.5 percentage points as a result of this; the estimates in equation (17) Table 4 suggests a corresponding increase in the public expenditure share of 5.5 percentage points.

APPENDIX

This Appendix provides precise definitions of the variables discussed in Sections 3 and 4 of the main text. The major source for all these data was the data files of the OECD, the OECD Annual National Accounts and Historical Statistics, (various issues).

The public expenditure variables which form the basis of the analysis (TPE; FCE; TP and CD) refer, respectively, to total general government outlays, final consumption expenditure, transfer payments and current disbursements, all expressed as a percentage of GDP. The subscripts accompanying these variables in the text refer to the years over which they were averaged. (Source: OECD Annual National Accounts).

FEDDUM: A zero-one dummy variable taking a value of unity in Federal nations, and zero elsewhere.

NELEC: The number of national elections held in each country over the sample period, divided by the length of the sample (in years) and multiplied by 100.

ECGTR: The average annual rate of real GDP growth between 1960 and 1980. (Source: OECD Historical Statistics 1960-1980).

PCECGTR: The average annual rate of per capita real GDP growth between 1960 and 1980. (Source: OECD Historical Statistics 1960-1980).

UN80: The rate of unemployment in 1980 on a national basis, expressed as a percentage of the total population. (Source: OECD Labour Force Statistics.

CHUN: The difference between UN80 and UN60, defined similarly.

CPI: The annual average rate of consumer price inflation between 1960 and 1980 (Source: OECD Historical Statistics 1960-1980).

PCY80: Per capita GDP in 1980, expressed in US dollars at 1980 exchange rates (Source: OECD Historical Statistics 1960-1980).

YBDN1: The share of direct tax receipts in total current receipts of government, averaged over the years 1960 to 1980 (Source: OECD Annual National Accounts.

YBDN2: The share of direct tax receipts and social security contributions in total current receipts, averaged over 1960-1980 (Source: OECD Annual National Accounts).

PINCTAX: The share of individual income tax receipts in total current receipts, averaged over 1960-1980. (Sources: OECD Revenue Statistics of OECD Member Countries and Annual National Accounts).

TAXVIS: The share of individual income tax receipts and social security contributions in total current receipts, averaged over 1960-1980. (Sources: As for PINCTAX).

DEFFIN: The percentage share of the general government budget deficit in total general government outlays, averaged over the years 1960-80. (Source: OECD Annual National Accounts).

OAPOP: The percentage of the total population aged sixty five or older, averaged over the years 1970-80.
(Source: OECD population statistics, supplemented by population data from the World Bank).

YGPOP: The percentage of the total population aged fifteen or under, averaged over the years 1970-80. (Source: As for OAPOP)

NWPOP: The sum of OAPOP and YGPOP.

URBDEN: The percentage of the population living in urban areas, averaged over the years 1970-80. (Source: OECD and World Bank population statistics).

TRADE: The average share of exports and imports in GDP, averaged over the years 1970-80. (Source: OECD Annual National Accounts).

AGSIZE: Total GDP in 1980 expressed in US dollars at 1980 exchange rates. (Source: OECD Historical Statistics 1960-1980.

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